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NAS WHITING FIELD
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REMEDIAL INVESTIGATION FOR SITES 5, 7, 29, 35 AND 38 NAS WHITING FIELD FL
3/29/2005
TETRA TECH NUS

Rev.1
03/29/05

Remedial Investigation
for
Sites 05, 07, 29, 35, and 38

Naval Air Station Whiting Field
Milton, Florida
USEPA ID No. FL2170023244

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order CTO 0079

March 2005

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03/29/05

REMEDIAL INVESTIGATION
FOR
SITES 05, 07, 29, 35, and 38

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA
USEPA ID NO. FL2170023244

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
Foster Plaza 7
Pittsburgh, Pennsylvania 15220

CONTRACT NUMBER N62467-94-D-0888
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PREPARED UNDER THE SUPERVISION OF:

TERRY HANSEN
TASK ORDER MANAGER
FLORIDA LICENSE No. PG-000234
TETRA TECH NUS, INC.
TALLAHASSEE, FLORIDA

APPROVED FOR SUBMITTAL BY:

Mark T. Perry *for*

DEBRA M. HUMBERT
PROGRAM MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA

Naval Facilities Engineering Command

PROFESSIONAL REVIEW CERTIFICATION

Remedial Investigation Report
Sites 05, 07, 29, 35, and 38
Naval Air Station Whiting Field, Milton, Florida

This Remedial Investigation Report was prepared under the direct supervision of the undersigned geologist using geologic and hydrogeologic principles standard to the profession at the time the report was prepared. If existing conditions differ from those described, the undersigned geologist will be notified to evaluate the effects of additional information on the assessment described in this report. This report was developed specifically for the referenced sites and should not be construed to apply to any other site.

Terry Hansen, P.G.
Florida License No. 234

07APR05
Date

FOREWORD

To meet its mission objectives, the United States Navy (Navy) performs a variety of operations, some requiring the use, handling, storage, or disposal of hazardous materials. Through accidental spills and leaks and conventional methods of past disposal, hazardous materials may have entered the environment. With growing knowledge of the long-term effects of hazardous materials on the environment, the United States Department of Defense initiated various programs to investigate and remediate conditions related to suspected past releases of hazardous materials at its facilities.

One of these programs is the Installation Restoration (IR) program. This program complies with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), the Resource Conservation and Recovery Act (RCRA), and the Hazardous and Solid Waste Amendments of 1984. These acts establish the means to assess and clean up hazardous waste sites for both private-sector and federal facilities. CERCLA and SARA form the basis for what is commonly known as the Superfund Program.

Originally, the Navy's part of this program was called the Naval Assessment and Control of Installation Pollutants (NACIP) program. Early reports reflect the NACIP process and terminology. The Navy eventually adopted the program structure and terminology of the standard IR program.

The IR program consists of Preliminary Assessment (PA) and Site Inspections (SIs), Remedial Investigation (RI) and Feasibility Study (FS), and Remedial Design (RD) and Remedial Action at sites where chemicals were allegedly spilled or disposed of. The PA and SI identify the presence of pollutants. The nature and extent of contamination as well as the selected remedial solutions are determined during the RI/FS. The RD and Remedial Action are performed to complete implementation of the solution.

The Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) manages and the United States Environmental Protection Agency (USEPA) and the Florida Department of Environmental Protection (FDEP) [formerly the Florida Department of Environmental Regulation (FDER)] oversee the Navy environmental program at Naval Air Station (NAS) Whiting Field. All aspects of the

program are conducted in compliance with state and federal regulations, as ensured by the participation of these regulatory agencies.

Questions regarding the CERCLA program at NAS Whiting Field should be addressed to Ms. Linda Martin, Code 1859, at (843) 820-5574.

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ACRONYMS

ABB-ES	ABB Environmental Services, Inc.
ARARs	Applicable or relevant and appropriate requirements
AVGAS	Aviation Gasoline
BERA	Baseline Ecological Risk Assessment
bls	below land surface
BOS	Base Operating Services
BR&E	Brown and Root Environmental Services, Inc.
BSL	Background Screening Level
BTAG	Baseline Toxicity Assessment Guidelines
BTEX	benzene, toluene, ethylbenzene, xylenes
BTEXM	benzene, toluene, ethylbenzene, xylenes, and methyl-tert-butyl-ethylene
CCI	CH2M Hill Constructors, Inc.
CCME	Canadian Council of Ministers of the Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
COPC	Contaminant of Potential Concern
cPAH	carcinogenic polynuclear aromatic hydrocarbon
CSF	Cancer Slope Factor
DBH	Diameter at Breast Height
DCE	dichloroethene
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DE1	Florida Direct Exposure Limit for Residential
DE2	Florida Direct Exposure Limit for Industrial
DNAPLs	Dense Non-aqueous Phase Liquids
DON	Department of the Navy
DPT	Direct Push Technology
ECAO	Environmental Criteria and Assessment Office
EE	Envirodyne Engineers, Inc.
EP Tox	Extraction Procedure Toxicity
EPC	Exposure Point Concentration
ERA	Ecological Risk Assessment

F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDER	Florida Department of Environmental Regulations
FID	Flame Ionization Detector
FL-PRO	Florida Petroleum Range Organics
FR	Federal Register
FFS	Focused Feasibility Study
FS	Feasibility Study
ft	Foot/Feet
ft^2	Square Feet
GC	Gas Chromatograph
GCTLs	Groundwater Clean-up Target Levels
G&M	Geraghty & Miller, Inc.
GIR	General Information Report
HEAST	Health Effects Assessment Summary Table
HHRA	Human Health Risk Assessment
HI	Hazard Index
HLA	Harding Lawson Associates
HQ	Hazard Quotient
HRS	Hazard Ranking System
ICR	Incremental Cancer Risk
ILCR	Incremental Lifetime Cancer Risk
IR	Installation Restoration
IRA	Interim Removal Action
IRIS	Integrated Risk Information System
LC_{25}	25% Lethal Concentration
LC_{50}	50% Lethal Concentration
LCS	Laboratory Control Sample
LE	Leachability
LOAEL	Lowest Observed Adverse Effect Level
LOEC	Lowest Observable Effect Concentration
MDL	Method Detection Limit
mg	milligrams
mg/kg	milligrams per kilogram
mg/kg/day	milligrams per kilograms per day
mg/L	milligrams per liter
MS	Matrix Spike

MSD	Matrix Spike Duplicate
MtBE	methyl-tert-butyl-ethylene
NACIP	Naval Assessment and Control of Installation Pollutants
NAS	Naval Air Station
Navy	United States Navy
NCEA	National Center for Environmental Assessment
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFA	No Further Action
NFESC	Naval Facilities Engineering Service Center
NOAEL	No Observed Adverse Effect Level
NOEC	No Observable Effect Concentration
NPL	National Priorities List
ORNL	Oak Ridge National Laboratory
OVA	Organic Vapor Analyzer
PA	Preliminary Assessment
PAH	Polynuclear Aromatic Hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PDWS	Primary Drinking Water Standard
ppm	parts per million
PRG	Preliminary Remediation Goal
PSC	Potential Source of Contamination
QA	Quality Assurance
QC	Quality Control
RA	Risk Assessment
RAGS	Risk Assessment Guidance for Superfund
RD	Remedial Design
RfC	Reference Concentration
RfD	Reference Dose
RI	Remedial Investigation
RI/FS	Remedial Investigation and Feasibility Study
RL	Reporting Limit
RME	Reasonable Maximum Exposure
SARA	Superfund Amendments and Reauthorization Act
SCTLs	Soil Cleanup Target Levels
SDWS	Secondary Drinking Water Standard
SERA	Screening-level ecological risk assessment

SAs	Site Assessments
SMDPs	Scientific/Management Decision Points
SOP	Standard Operating Procedure
SOUTHNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command
SOW	Statement of Work
SPLP	Synthetic Precipitation Leaching Procedure
SSI	Site Screening Investigation
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCE	trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TEF	Toxicity Equivalency Factors
TICs	Tentatively Identified Compounds
TRPH	Total Recoverable Petroleum Hydrocarbon
TtNUS	Tetra Tech NUS, Inc.
µg/L	micrograms per liter
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

Tetra Tech NUS, Inc., (TtNUS) under contract to the Department of the Navy, SOUTHNAVFACENGCOM is submitting this RI report for Sites 05, 07, 29, 35, and 38 at NAS Whiting Field (USEPA ID No. FL2170023244) located north of Milton, Florida. This RI report was prepared on behalf of the Navy at NAS Whiting Field under contract number N62467-94-D-0888. This RI report was developed based on the results of a field investigation conducted according to the Work Plan for RI and FS for Sites 07, 29, 35, 38, 39, 40, and PSC 1485C (TtNUS, 1999a) and the Work Plan Addendum for Site 05A.

The purpose of this RI report is to document field investigation activities associated with the RI of the soil for Sites 05, 07, 29, 35, and 38 and to report the results from the soil investigation. The report also presents recommendations for the sites based on the findings. Site 40, the basewide groundwater, Site 39, Clear Creek, will be discussed in separate RI reports. PSC 1485C was initially included in this investigation; however, it has since been designated as Site 41, and will be discussed in a separate RI report. The impact on groundwater from Sites 05, 07, 29, 35, and 38 soil leaching will be addressed in the Site 39 and 40 RI Reports.

Site 05 was previously investigated and closed; however, Site 05 was not investigated for possible pesticide/polychlorinated biphenyl (PCB) contamination. As a result, the pesticide/PCB contamination investigation at Site 05 was initially conducted as Site 05A. After further review, the NAS Whiting Field Partnering Team determined Site 05 should be reopened and the pesticide/PCB contamination investigated as part of Site 05. Four surface soil borings and four subsurface soil borings were advanced at Site 05 for the purpose of investigation the possible pesticide/PCB contamination. The samples collected from the borings were analyzed for pesticides, PCBs, and inorganics. Vanadium was detected above the FDEP Direct Exposure Limit for Residential Use (DE1) Soil Cleanup Target Level (SCTL). Pesticides/PCBs and several inorganics were detected above the USEPA Risk Assessment Guidance for Superfund (RAGS). One pesticide and one inorganic were detected above the FDEP SCTL for leaching to groundwater. After a human health risk assessment (HHRA) and a screening-level ecological risk assessment (SERA) were conducted, it was determined no risks are present. No further action (NFA) is recommended.

Site 07 is the South Field Fuel Farm. Twelve surface and 36 subsurface soil borings were advanced at Site 07. The samples collected from the borings were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), inorganics, and total recoverable petroleum hydrocarbons (TRPH). Samples were also collected from seven additional subsurface soil borings; however, they were only analyzed for benzene, toluene, ethylbenzene, xylenes, methyl-tert-butyl-ethylene (MtBE; BTEXM),

naphthalene, and 1- and 2-methylnaphthalene. One VOC, 10 SVOCs, TRPH, and 18 inorganic analytes were detected in the surface soil. Four VOCs, 19 SVOCs, TRPH, and 19 inorganic analytes were detected in the subsurface soil. Vanadium was detected above the FDEP DE1 SCTL in the surface soil. Also, benzo(a)pyrene, fluoranthene, phenanthrene, pyrene, aluminum, chromium, iron, manganese, vanadium, and cyanide were detected above the USEPA Region IV RAGS in the surface soil. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene were detected above the FDEP DE1 SCTL. Iron was detected above the FDEP DE1 SCTL and USEPA Region IX Preliminary Remediation Goals (PRGs), and vanadium was detected above the FDEP DE1 SCTL in the subsurface soil. According to the HHRA, a risk exists from benzo(a)pyrene contamination. For this reason a focused feasibility study (FFS) is recommended.

Site 29 is the Auto Hobby Shop. Six surface soil borings and 12 subsurface soil borings were advanced at Site 29. The samples collected from the borings were analyzed for VOCs, SVOCs, inorganics, and TRPH. One VOC, three SVOCs, TRPH, and 16 inorganics were detected in the surface soil. Bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, aluminum, cadmium, chromium, iron, vanadium, and zinc were detected above the USEPA Region IV RAGS. Vanadium was detected above the FDEP DE1 SCTL and chromium was detected above the USEPA Region IX PRGs. According to the HHRA and SERA no risks are present. This site is recommended for NFA.

Site 35 is the Public Works Maintenance Facility. Thirteen subsurface soil borings using direct push technology (DPT) were advanced at Site 35. The samples collected from the borings were analyzed for VOCs, polynuclear aromatic hydrocarbons (PAHs), TRPH, and inorganics. Iron was detected above the FDEP DE1 SCTL and the USEPA Region IV RAGS; vanadium and benzo(a)pyrene were detected above the FDEP DE1 SCTL; and chromium was detected above the USEPA Region IX PRGs. According to the HHRA a risk exists from benzo(a)pyrene contamination. For this reason a FFS is recommended.

Site 38 is the Former Golf Course Maintenance Building. Nineteen surface soil and 19 subsurface soil borings were advanced at Site 38. The samples collected from the borings were analyzed for VOCs, SVOCs, pesticides, PCBs, TRPH, and inorganics. One VOC, six pesticides, TRPH, and 17 inorganics were detected in the surface soil. Eighteen inorganics were detected in the subsurface soil. Alpha-chlordane and gamma-chlordane were detected above the FDEP DE1 SCTL and the USEPA Residential PRG. Heptachlor epoxide and TRPH were detected above the FDEP DE1 SCTLs. Vanadium was detected above the FDEP DE1 SCTL. CH2M Hill (CCI) conducted an Interim Removal Action (IRA) to remove the contaminated surface soil. According to the HHRA and SERA conducted after the IRA, no risks are present. This site is recommended for NFA.

1.0 INTRODUCTION

TtNUS under contract to the Department of Navy, SOUTHNAVFACENGCOM is submitting this RI Report for Sites 05, 07, 29, 35, and 38 at NAS Whiting Field located north of Milton, Florida. This RI report was prepared on behalf of the Navy at NAS Whiting Field under contract No. N62467-94-D-0888. The RI report was developed based on the results of a field investigation conducted according to the Work Plan for RI and FS for Sites 07, 29, 35, 38, 39, 40, and PSC 1485C (TtNUS, 1999a) and Work Plan Addendum for Site 05A.

1.1 PURPOSE OF REPORT

The purpose of this RI report is to document field investigation activities associated with the RI of the soil for Sites 05 (pesticide/PCB investigation), 07, 29, 35, and 38 and to report the results from the soil investigation. The report also presents recommendations for the sites based on the findings. Site 41, the pesticide storage building, Site 40, the basewide groundwater, and Site 39, Clear Creek, will be discussed in separate RI reports. The impact on groundwater from Sites 05 (pesticide/PCB investigation), 07, 29, 35, and 38 soil leaching will be addressed in the Site 40 and 39 RI Report.

1.2 PHYSICAL DESCRIPTION OF NAS WHITING FIELD

1.2.1 Facility Background

NAS Whiting Field (Figure 1-1) is located in Santa Rosa County, in Florida's northwest coastal area, approximately 5.5 miles north of Milton and 25 miles northeast of Pensacola. Mobile, Alabama, is approximately 70 miles west of the NAS, and Tallahassee, the capital of Florida, is 174 miles to the east. The installation was constructed in the early 1940s and has served as a naval aviation training facility since then. NAS Whiting Field presently consists of two airfields (North and South Fields) and provides the support facilities for flight and academic training. Figure 1-1 presents the installation layout and locations of the sites at NAS Whiting Field. A summary of the IR sites and a description of historic operations at the facility are presented in Table 1-1 of this report, and Appendix A of the NAS Whiting Field General Information Report (GIR) [ABB Environmental Services, Inc. (ABB-ES), 1998].

Land surrounding NAS Whiting Field consists primarily of agricultural land to the northwest, residential

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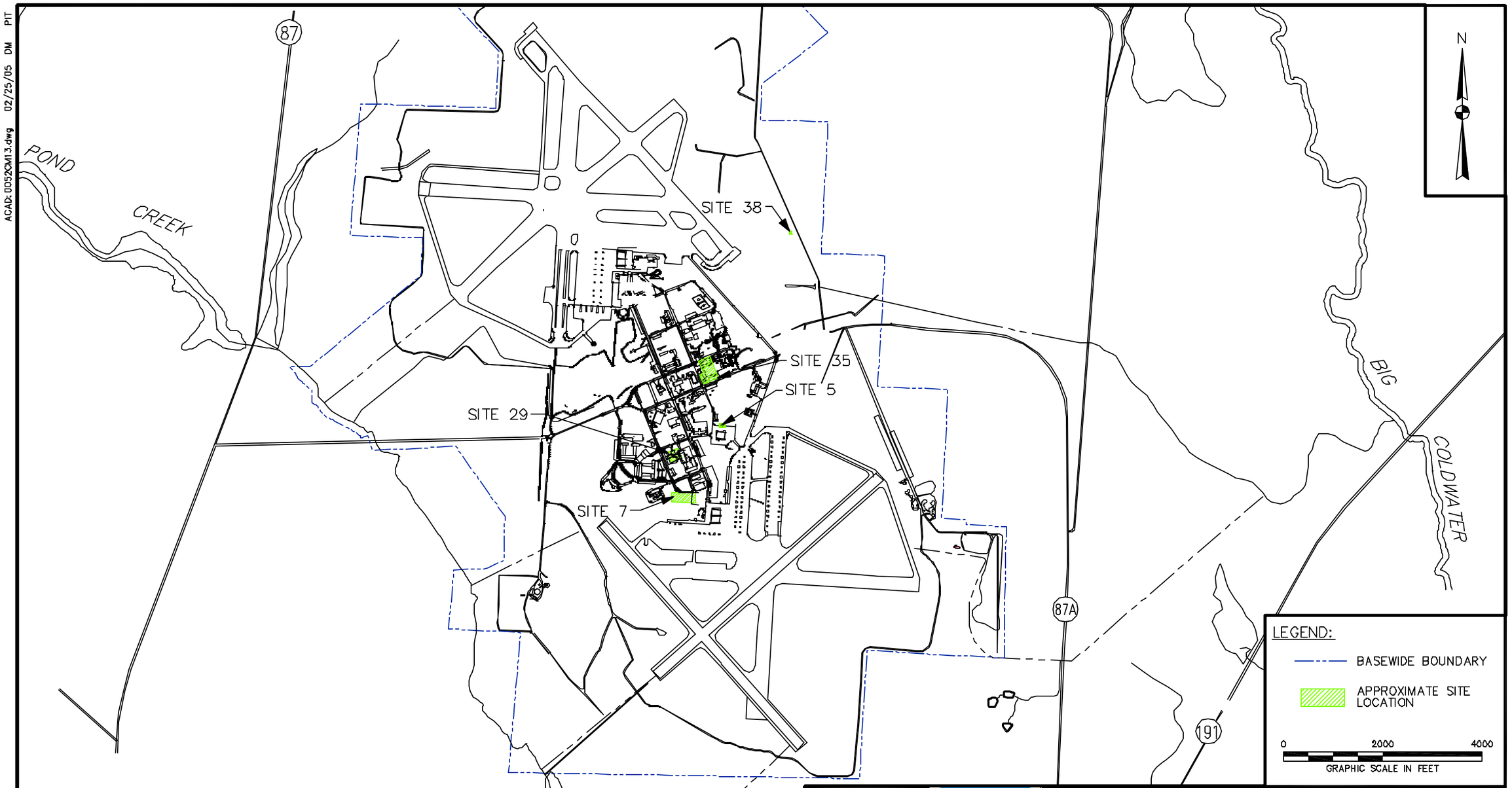

DRAWN BY DM	DATE 2/25/05	SITE LOCATION MAP REMEDIAL INVESTIGATION REPORT WHITING FIELD, MILTON, FLORIDA	CONTRACT NO. 0052
CHECKED BY	DATE		OWNER NO. 0000
REVISED BY	DATE		APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1-1 / REV. 0

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FORM CADD NO. SDIV-BH.DWG – REV 1 – 9/10/98

TABLE 1-1 SUMMARY OF POTENTIAL DISPOSAL SITES FOR SITES 05, 07, 29, 35, AND 38

NAS WHITING FIELD
MILTON, FLORIDA

Site No.	Site Name and Type	Location	Period of Operation	Types of Material Disposed of	Comments
05	Battery Acid Seepage Pit (contaminated soil)	South Field, southwest of Building 1454	1964–1984	Waste electrolyte solution containing heavy metals and waste battery acid.	Pits located 110 feet (ft) from potable supply well (W-S2).
07	South AVGAS Tank Sludge Disposal Area (landfill and tanks)	South Field, west of Building 1406	1943–1968	Tank-bottom sludge containing tetraethyl lead.	Sludge disposed of in shallow holes near tanks.
29	Auto Hobby Shop	Area around Building 1404	1943–present	Paint, oils, and solvents.	Abandoned underground waste oil tanks.
35	Public Works Maintenance Facility, Building 1429	Industrial Area, Building 1429	1943–present	Fuel, soil, and solvents.	A service station with a pump island and seven USTs was formerly at this site. The station was used for maintenance of vehicles and equipment. Three USTs were abandoned in 1984.
38	Former Golf Course Maintenance Building, Building 2877	Northeast Perimeter Road, golf course	Unknown to 1994	Metals, solvents, grease, and pesticides.	Battery reconditioning was conducted in this building until 1979. Pesticides were also stored and mixed in the building until 1983.

Notes: UST – underground storage tank
ft – foot/feet

and forested area to the south and southwest, and forests along the remaining boundaries. Located on an upland area, elevations at NAS Whiting Field range from 50 to 190 feet (ft) above sea level. The facility is bounded by low-lying receiving water: Clear Creek to the west and south, and Big Coldwater Creek to the east; tributaries of the Blackwater River. The Blackwater River discharges to the estuarine waters of the East Bay of the Escambia Bay coastal system. Both Clear Creek and Big Coldwater Creek are classified by the FDEP as Class II Waters Recreation-Propagation and Management of Fish and Wildlife. Blackwater River is classified as Outstanding Florida Water. Outstanding Waters are considered to be of exceptional recreational and ecological significance.

1.2.2 Site Description and History

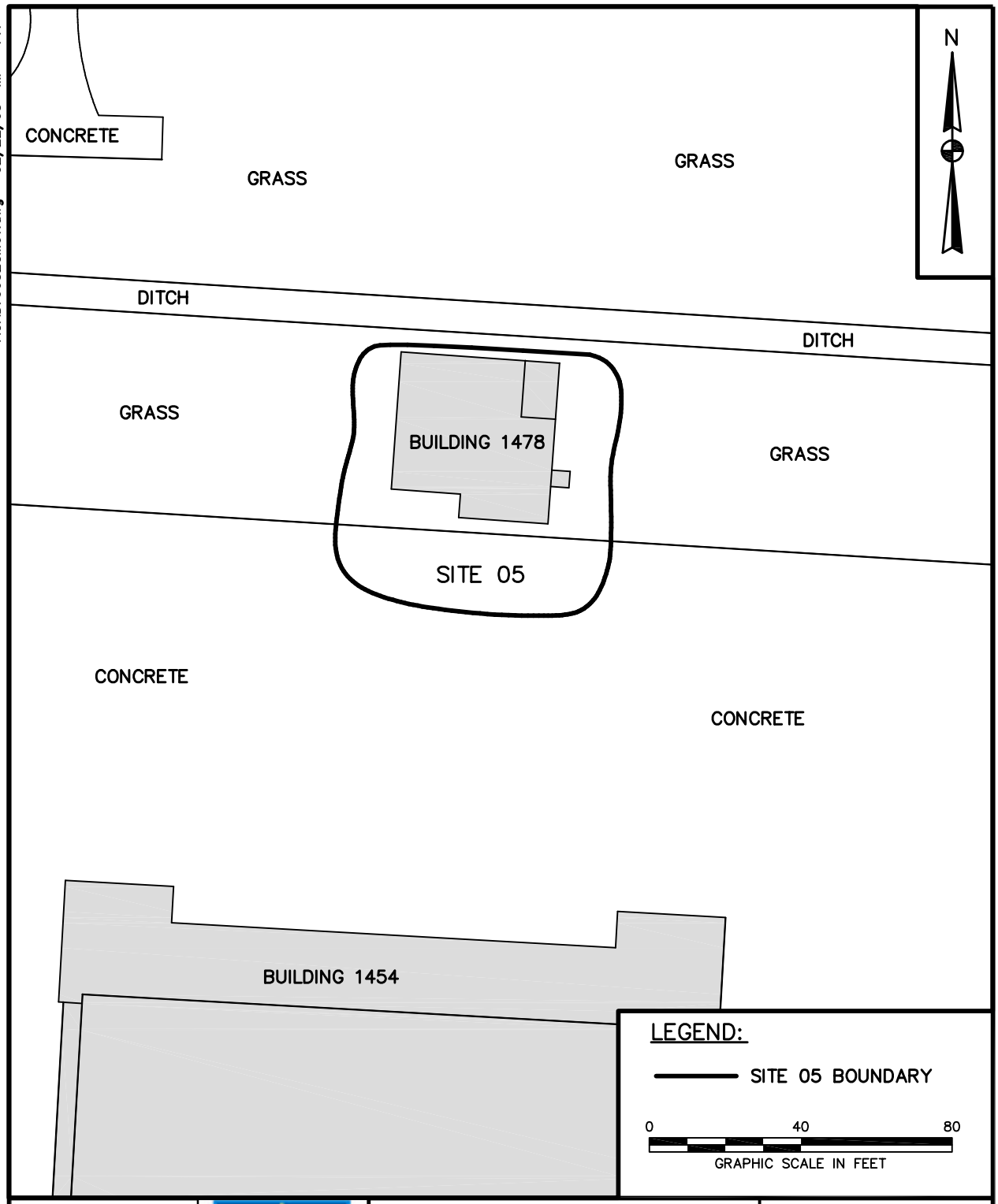
1.2.2.1 Site 05: The Battery Acid Seepage Pit

The Battery Shop, Building 1478, (Figure 1-2) was the site of battery waste acid and electrolyte solution disposal from 1967 until 1984. Waste solutions with sodium bicarbonate and tap water were poured down the drain of a sink in the building and discharged to a dry well west of the building. The dry well consisted of a section of 60-inch-diameter concrete culvert set vertically in the ground and filled with gravel. The sink drain was disconnected from the dry well in 1984 and connected to the sanitary sewer. An estimated 180 gallons of battery waste electrolyte solution was discharged to the dry well annually during the period of operation [Envirodyne Engineers Inc. (EE), 1985].

Originally, Building 1478 was called the Old Transformer Repair Shop and from the 1940's until 1964 the building was used for electrical transformer repair. Transformers were reportedly drained of dielectric fluid possibly containing PCBs and discharged into the grassed "0-2 inch" ditch located approximately 500 ft southeast of the Old Transformer Repair Shop. Based on this disposal method, the "0-2 inch" ditch was designated Site 06 and investigated as part of the IR Program (EE, 1985).

1.2.2.2 Site 07: South Aviation Gasoline (AVGAS) Tank Sludge Disposal Area

Site 07 consists of the tanks at the South Field Fuel Farm (Figure 1-3). The tanks date back to 1943 when NAS Whiting Field first began operations. The South Field Fuel Farm was an AVGAS Aqua Type system using potable water to displace AVGAS and transfer fuel to tanks. The South Field Fuel Farm included six underground steel tanks and two aviation lube oil tanks. Flight operations at the South Field eventually changed from AVGAS-burning airplanes to JP-4 burning helicopters. Consequently, the tank farm was used solely for back up storage during the fuel shortage in 1973. From 1943 to 1968, the nine AVGAS tanks were cleaned out approximately every 4 years. The tank bottom sludge probably containing tetraethyl lead was buried at shallow depths in the area immediately adjacent to the surrounding tanks. Navy personnel estimated disposal of 1,000 to 2,000 gallons of sludge in this manner.



ACAD:0052CM01.dwg 02/22/05 MF PIT

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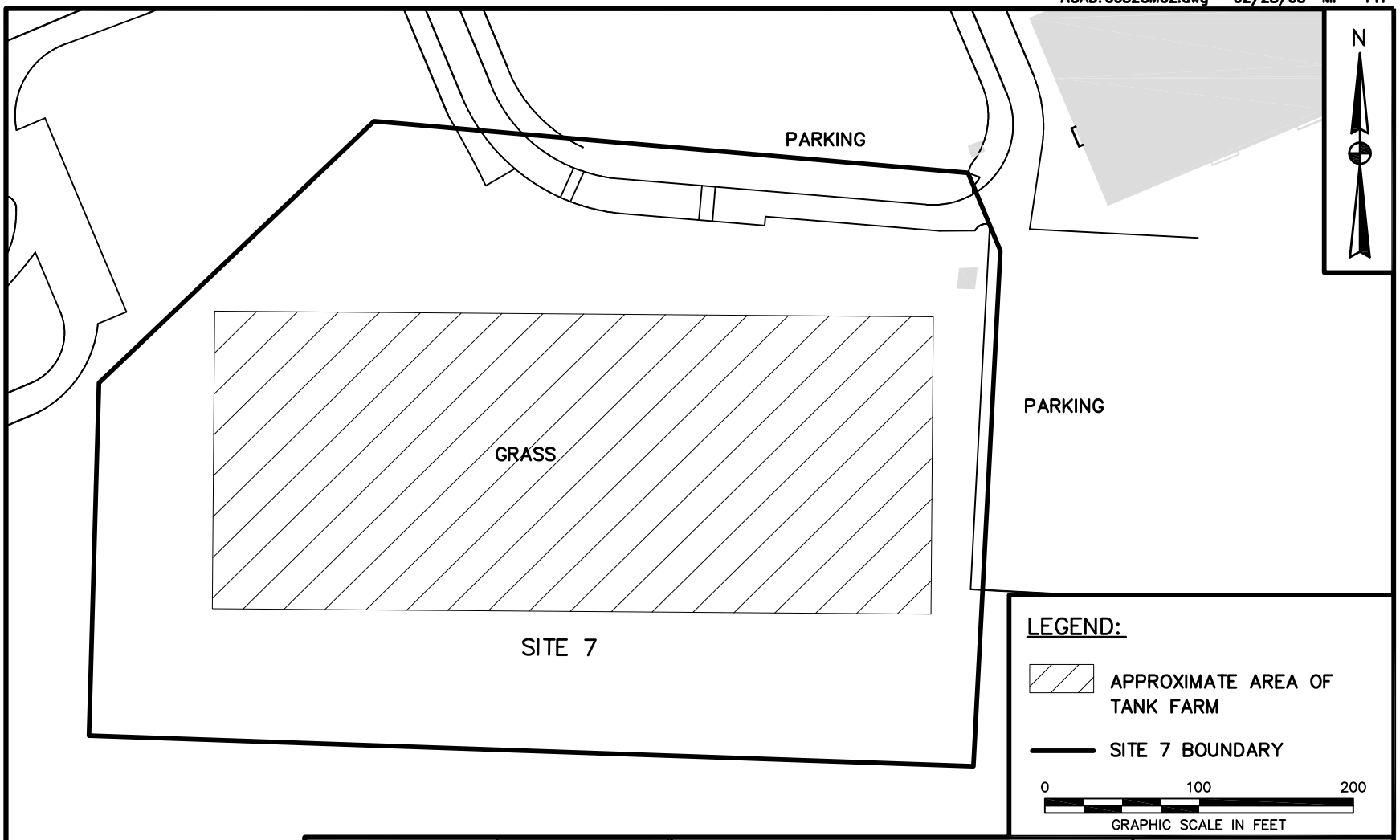
CHECKED BY	DATE		OWNER NO. 0000
REVISED BY	DATE		APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1-2 / REV. 0

FORM CADD NO. SDIV-AV.DWG – REV 1 – 9/10/98

ACAD: 0052CM02.dwg 02/28/05 MF PIT



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REVISED BY	DATE		APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1-3 / REV. 0

FORM CADD NO. SDIV-AH.DWG – REV 1 – 9/10/98

1.2.2.3 Site 29: Auto Hobby Shop

Site 29 is located in the area surrounding Buildings 1404 and 2975 (Figure 1-4). One metal underground storage tank (UST) was installed in the 1940's for storage of waste motor oil generated from vehicle maintenance operations conducted at the Auto Hobby Shop. The tank was located southeast of Building 1404 and west of Building 2975. The tank was initially abandoned in place in 1986 and later removed from the site in 1998 (Bechtel, 2000). Another UST, used for storage of heating oil specifically for Building 1404 and presumably installed in the mid 1940's, was located in the parking area between Buildings 1404 and 2975. This tank was also removed in 1998.

Building 1404 has been used since the 1940's for base personnel vehicle repairs, woodworking, and hobby activities. Building 2975 is used for vehicle and supply storage. The waste oil tank was used for disposal of waste motor oil and potentially solvents and paints from the 1940's until 1986. In 1986, the tank was abandoned in place by filling it with sand. This apparently occurred before the tank was included in the formal tank management program at the Facility. It is unknown if the tank was pumped of materials as part of the abandonment. Following abandonment, an above ground waste oil tank was placed at the location for continued disposal activities. The heating oil tank is believed to have been used for heating oil only and no records of other materials being placed in the tank exist.

1.2.2.4 Site 35: Building 1429, Auto Repair Booth

Site 35 consists of Building 1429, the Public Works Maintenance Facility (Figure 1-5). Building 1429 was built in 1943 and used for the maintenance of vehicles and equipment, generation of power and heat, storage of fire fighting equipment, woodworking and metals repair, and offices. A gasoline service station (formerly Building 2848) with a pump island and USTs was located at the northeast side of the building. The service station was equipped with three USTs (one diesel – tank Number 2851 and two gasoline – tank Numbers 1429 I and 1429 J) located west of the pump island and under the vehicle shed. All three tanks were abandoned in place in 1984. The tanks were abandoned by pumping out the remaining fuel, filling the tanks with sand and capping the fill ports with concrete. None of the tanks have been removed since abandonment.

1.2.2.5 Site 38: Building 2877, Former Golf Course Maintenance Building

Site 38 is located immediately west of the 7th hole fairway on the NAS Whiting Field Golf Course (Figure 1-6). The site includes the former site of Building 2877, located approximately 276 ft west of the patrol road and 860 ft north of the white lattice fence associated with the pistol firing range. Building 2877 was used as the golf course maintenance building. Review of historical aerial photographs indicates the building was present in June 1954 during the construction of the NAS Whiting Field Golf Course.

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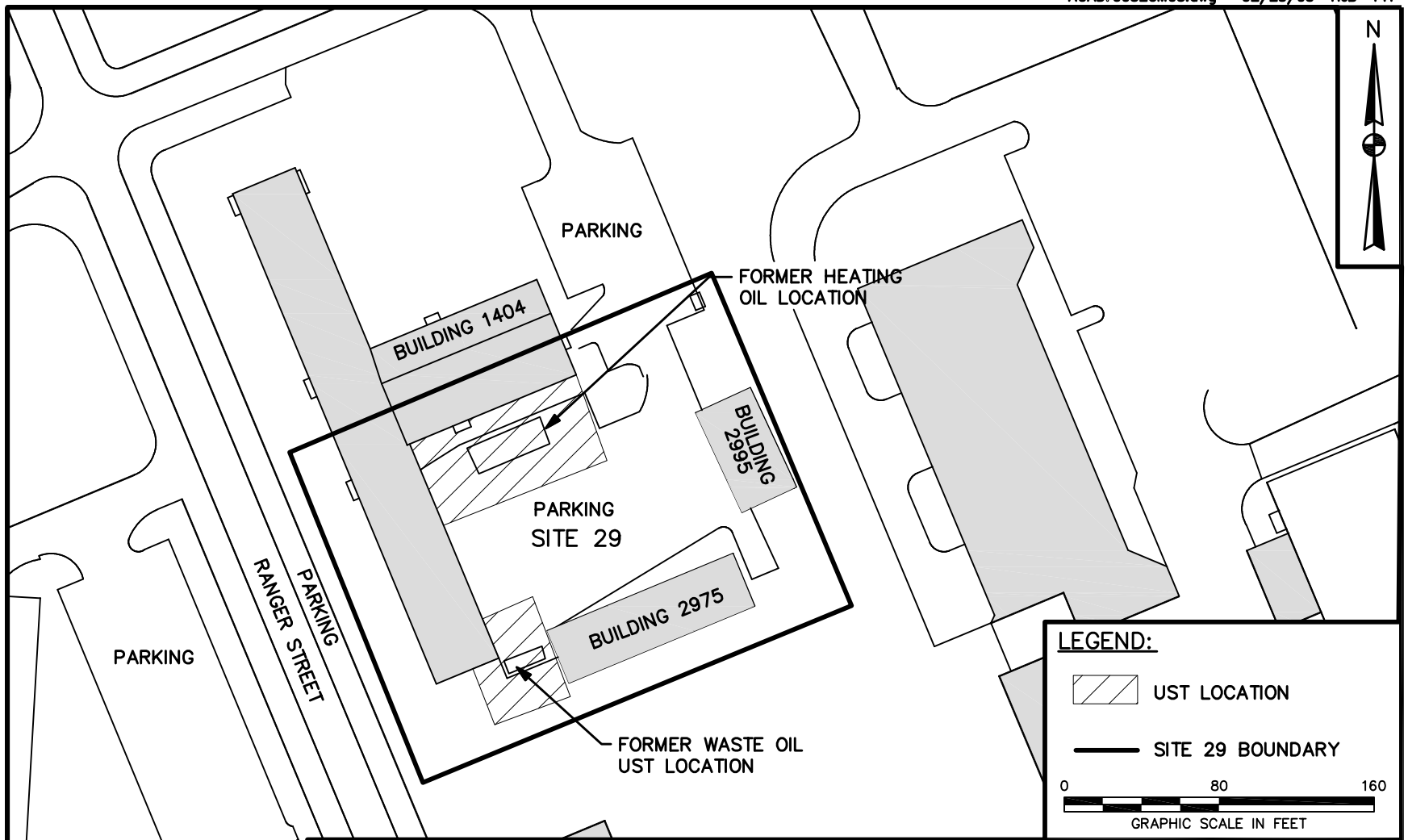

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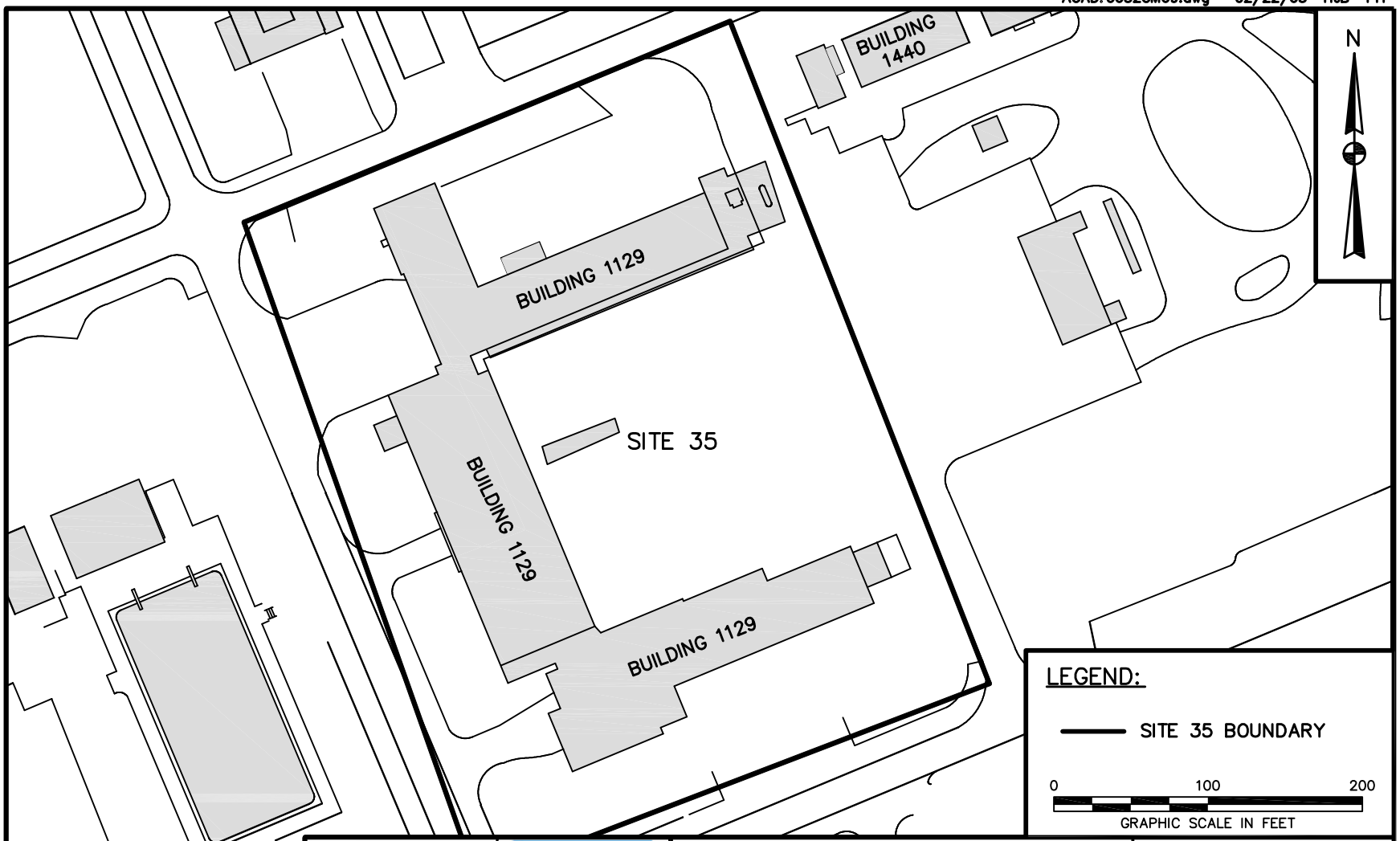

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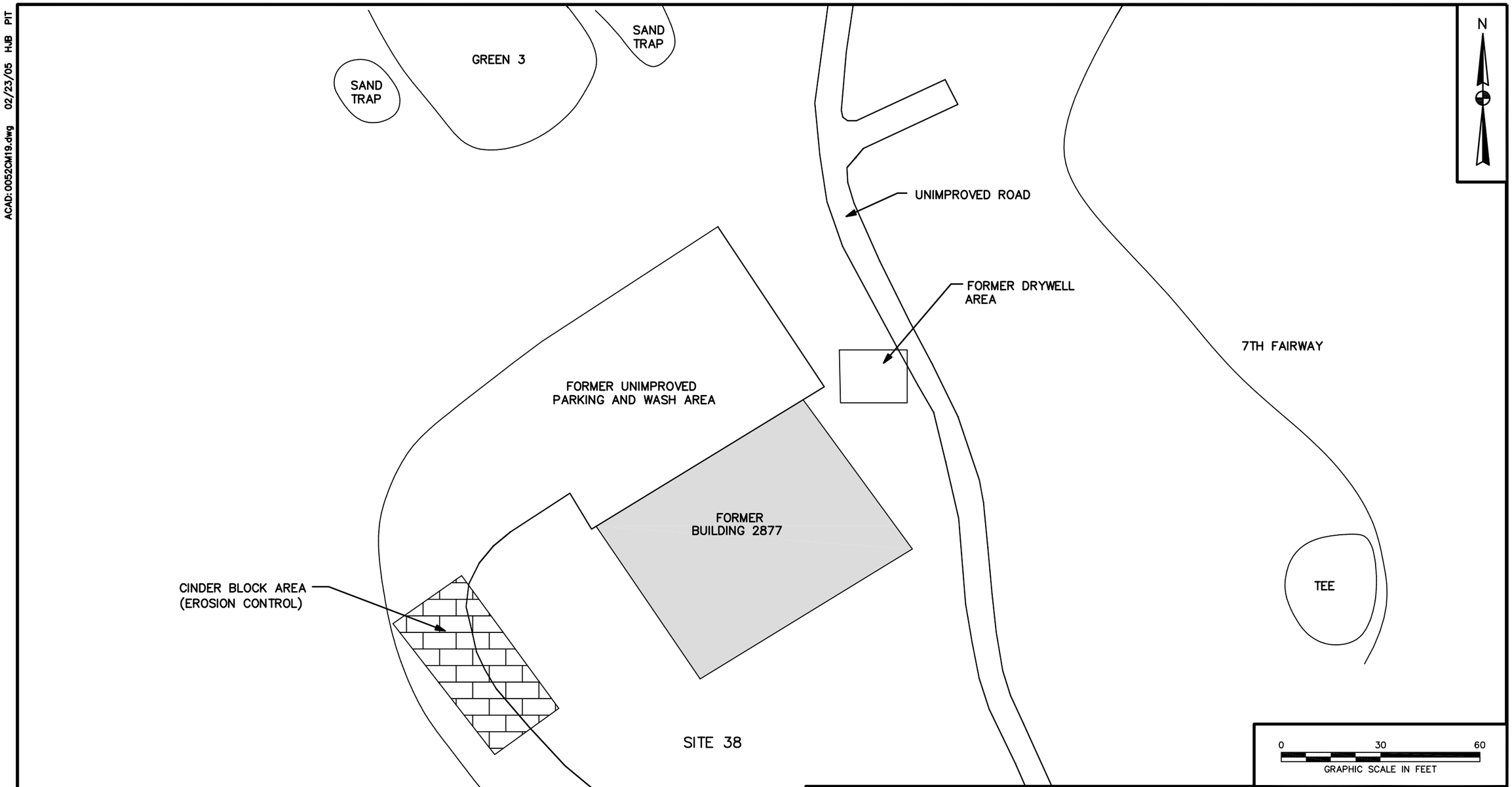
REVISED BY	DATE		APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1-5 / REV. 0

FORM CADD NO. SDIV-AH.DWG – REV 1 – 9/10/98

ACAD: 0052CM19.dwg 02/23/05 HJB PIT



DRAWN BY HJB	DATE 2/23/05	SITE 38 MAP REMEDIAL INVESTIGATION REPORT NAS WHITING FIELD, MILTON, FLORIDA	CONTRACT NO. 0052
CHECKED BY	DATE		OWNER NO. 0000
REVISED BY	DATE		APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1-6 / REV. 0

FORM CADD NO. SDIV-BH.DWG – REV 1 – 9/10/98

Reportedly, golf cart battery reconditioning was conducted at the building. The battery acid was drained into a sink inside the building. The sink subsequently drained into a tank consisting of an underground concrete culvert open at one end. The tank retained approximately 50 gallons of liquid before draining to the subsurface soil. The tank was filled with rock sometime between 1974 and 1979, resulting in the discontinuance of battery acid draining at Site 38.

Pesticides including organophosphates, herbicides, fungicides, chlordane, heptachlor epoxide, and some hydrocarbon pesticides were also stored and handled in Building 2877 during operations. Pesticide storage was discontinued in 1983 when a new pesticide facility was completed. A small parking area approximately 200-ft by 200-ft north of the building and across the access road was used to rinse trucks after they were used to spray pesticides. A 200-ft by 200-ft area located southwest of the building was used to fill pesticide containers. Possible wastes associated with the site include battery acid, fuels, solvents, and pesticides.

Building 2877 was demolished in 1993 as part of an upgrading and reconstruction project for the NAS Whiting Field Golf Course. Based on site investigations the concrete building foundation is believed to still be present; however, it is unknown if the former drainage tank is still present.

1.2.3 Previous Investigations

1.2.3.1 Site 05

On February 9, 1984, FDER (currently FDEP) conducted a hazardous waste compliance inspection at NAS Whiting Field. Shortly there after FDER issued a warning notice to the Navy stating the “battery electrolyte and/or wastes constituents and the disposal of hazardous waste constituted violations of Florida Administrative Code (F.A.C.) Chapters 17-4 and 17-30 and Chapter 403, Florida Statues.” [Geraghty & Miller, Inc. (G&M), 1985a].

Based on a meeting attended by the Navy, FDER and G&M, G&M prepared a document for the Navy entitled “Proposed Monitoring Program for the Battery Shop”. The final version of the document was completed June 1985. Site 5, the Battery Acid Seepage Pit, was included in the Initial Assessment Study (EE, 1985).

In June 1985, G&M began the field investigative work at the Battery Shop. Four soil borings were advanced and subsurface soil samples were collected at 5-ft intervals. One soil boring was advanced to a depth of 85 ft below land surface (bls), the remaining soil boring were advanced to 20 ft bls. Subsurface soil samples were analyzed for pH, arsenic, mercury, selenium, cadmium, lead and Extraction Procedure

Toxicity (EP Tox) tests for the previously mentioned metals (G&M, 1985b).

Four monitoring wells were installed at the soil boring locations and completed with maximum depths ranging from 142 ft to 147 ft bls. On August 10, 1985, groundwater samples were collected from the monitoring wells and analyzed for Primary Drinking Water Standard (PDWS) contaminants, Secondary Drinking Water Standard (SDWS) contaminants, USEPA priority pollutants, and aluminum. The monitoring wells were resampled on November 1, 1985 and analyzed for USEPA priority pollutants. The analytical results for the groundwater samples indicated benzene was the only compound detected at concentrations exceeding the PDWS (G&M, 1985b).

The conclusions of the detection and monitoring program were: the groundwater and soils in the vicinity of the battery shop had not been adversely impacted by metals or other contaminants associated with past discharges to the dry well. However, organic compounds, particularly benzene, detected at concentrations slightly above the PDWS in groundwater samples from two monitoring wells was of concern. The source of benzene in the groundwater was unknown. Trichloroethene (TCE) was detected at a concentration exceeding the PDWS in a groundwater sample from the facility supply well W-S2. Periodic groundwater sampling for a period of one year was recommended (G&M, 1985b). The sampling operation would be coordinated with the Navy's IR Program.

On April 15, 1987, FDER recommended, in a letter to the Navy, the Consent Order be closed. Subsequently, Site 05 was closed.

During an April 1999 meeting between the Navy, USEPA, and FDEP, discussions concerning the Site 06 RI led to the question as to whether the Detection and Monitoring Program at Site 05 had included sampling for PCBs, based on the previous use of Building 1478 as the Old Transformer Repair Building. Based on a document review, analysis for PCBs had not been conducted on the on-site soils. Therefore, Site 05 is being further investigated for potential PCB contamination.

1.2.3.2 Site 07

Twenty-eight surface soil samples were collected and mixed to produce one composite sample during the 1986 Verification Study by G&M. This sample was split into two parts and analyzed for total lead content and EP Tox test for lead. Laboratory analytical results of the surface soil samples showed total lead concentrations were 15 and 27 milligrams per kilogram (mg/kg). Lead was not detected in the EP Tox test above the method detection limit (MDL) of 0.01 milligrams per liter (mg/L).

Monitoring well WHF-7-1 was installed along the southern perimeter of the USTs during the 1986 G&M study. This well was installed in the intermediate zone of the upper sand-and-gravel aquifer (152 ft bls). After the 1986 study, Site 07 was transferred from the IR program to the UST program and renamed Site 1466. During the contamination assessment of Site 1466 in 1991 and 1992, shallow monitoring wells and intermediate monitoring wells were installed. Excessively contaminated soil [organic vapor concentrations greater than 50 parts per million (ppm) for gasoline products] was found from the land surface and immediately above the water table during contamination assessment activities at Site 07. In a July 1992 Task Order Managers' meeting, it was determined a decision regarding the transfer of Site 1466 from the UST program back to the IR program was needed. To support this decision, additional fieldwork was recommended to assess the site jurisdiction. The results of the groundwater sampling are provided in the *Jurisdiction Assessment Report, Underground Storage Tank Program Sites 1466 and 1467, Installation Restoration Program Sites 7 and 4, Naval Air Station Whiting Field* (ABB-ES 1994) and the *Remedial Investigation and Feasibility Study Technical Memorandum No. 5, Groundwater Assessment* (ABB-ES 1995b). Because solvents were detected in groundwater at Site 07, it was transferred back to the IR program.

Additional groundwater samples were taken in 1995 and 1996. Details of the analytical results are presented in the *Remedial Investigation, Industrial Area Groundwater Investigation, Interim Report, Naval Air Station Whiting Field* (ABB-ES 1996b) and *Industrial Area Groundwater Investigation, Interim Report Addendum, Naval Air Station Whiting Field* (ABB-ES 1998b), respectively.

1.2.3.3 Site 29

Site 29 was added to the RI/FS investigation at NAS Whiting Field between 1992 and 1993 because of the presence of a waste oil UST. The UST stored paint oil and solvents from the 1940's until 1990. The site was not investigated during the Initial Assessment Study, Verification Study, or Phase I of the RI/FS at the Facility.

Investigations conducted during Phase IIA and IIB of the RI/FS included a passive soil gas investigation, surface and subsurface soil sampling, and groundwater sampling. The results of the passive soil gas investigation and surface and subsurface soil sampling are summarized in Appendix C and Chapter 4, respectively, of the *Remedial Investigation and Feasibility Study, Technical memorandum No. 3, Soils Assessment,Naval Air Station Whiting Field* (ABB-ES 1995b). The groundwater analytical results are summarized in the RI/FS Phase IIA, Technical Memorandum No. 5 Groundwater Assessment (ABB-ES, 1995b).

In June 1998, Bechtel Environmental Inc. removed the waste oil tank from the site as part of the IRA at the Site. The abandoned UST was removed by manually excavating approximately 2 ft of soil overlying

the tank and hand excavating soil around the tank to mechanically lift the tank. Before removal, the UST was opened and reported to be approximately half full of sand with trace amounts of water. Once the tank was removed only a small amount of standing water was present and very little staining of the outside soil was observed. The standing water was removed and the stained soil was excavated (Conrad, 1998).

Following the UST removal, confirmation soil samples were collected for offsite laboratory analysis. A soil sample was collected from each of the four excavation sidewalls at approximately 4 ft bls and from the bottom of the excavation at approximately 7 ft bls. In addition, a single soil sample was collected from the area where an abandoned heating oil tank had previously been removed. This sample was collected from a depth of 10 ft bls. All of the soil samples were analyzed for Priority Pollutant VOCs, SVOCs, TRPH, arsenic, barium, cadmium, lead, selenium, silver, and mercury (Conrad, 1998).

The analytical results for the soil samples indicated three samples contained analyte concentrations exceeding Florida regulatory limits. The soil sample from the north sidewall sample contained: benzene (0.28 mg/kg), ethylbenzene (1.00 mg/kg), toluene (0.86 mg/kg), xylenes (4.40 mg/kg), and naphthalene (2.60 mg/kg) at concentrations exceeding Florida SCTLs (SCTL; F.A.C. Chapter 62-777). The soil sample from the east sidewall sample contained: benzene (0.16 mg/kg), toluene (0.62 mg/kg), xylenes (2.6 mg/kg), and naphthalene (2.50 mg/kg) at concentrations exceeding Florida SCTLs (F.A.C. Chapter 62-777). All of the soil samples collected from the waste oil UST contained concentrations of TRPH exceeding regulatory limits. All of the samples from the excavation contained concentrations of chromium exceeding the Toxicity Characteristic Leaching Procedure (TCLP) regulatory limit and four of the five samples (excluding the south wall sample) contained lead at concentrations exceeding the TCLP criteria (Conrad, 1998).

The soil sample from the abandoned heating-oil tank contained concentrations of benzene and toluene at concentrations exceeding Florida SCTLs and detected concentrations of chromium and lead exceeded the TCLP regulatory limits (Conrad, 1998). The IRA was summarized in a letter from the Remedial Action Contractor to the Santa Rosa County Petroleum Program in August 24, 1998. A copy of the letter is included in Appendix G of the Work Plan for RI and FS for Sites 07, 29, 35, 38, 39, 40, and PSC 1485C (TtNUS, 1999a).

1.2.3.4 Site 35

Based on a record search and interviews with facility personnel, Building 1429 was identified as a potential site in July 1993 and designated as Site 35. The site was added to the IR program in 1995 and a Site Screening Investigation (SSI) was initiated in December 1996. The purpose of the SSI was to complete an initial screening assessment to determine if contaminants were present and if additional

investigations were warranted.

The SSI included the advancement of soil borings, subsurface soil sampling, monitoring well installation, and groundwater sampling. Four soil borings were advanced to a depth of 30 ft bls at Site 35. One additional soil boring (35B001) was advanced to a depth of 54 ft bls. The deeper soil boring was located to investigate the fuel pump island and UST area. All of the soil borings were continuously split spoon sampled to the total depth of the boring. The split spoon samples were screened in the field for dense nonaqueous phase liquids (DNAPLs) using an ultraviolet light and centrifuge red dye test, total organic vapor analyzer (OVA) headspace measurements, and field gas chromatograph (GC) screening. The field GC analysis was conducted using a HNUTM 311 portable GC. The soil samples were analyzed for VOCs benzene, toluene, ethylbenzene and xylenes (BTEX), dichloroethene (DCE), tetrachloroethene (PCE), and TCE. In addition, confirmation soil samples were also collected for a fixed-base laboratory analysis. Three subsurface soil samples from each soil boring were analyzed for Target Compound List (TCL) VOCs (as described in the Contract Laboratory Program (CLP) Statement of Work (SOW), OLM04.0).

Six monitoring wells were installed at the site at two nested well locations. Following the installation and development of the monitoring wells, a groundwater sample was collected from each well and analyzed for TCL VOCs, TCL SVOCs, TCL Pesticides/PCBs, and Target Analyte List (TAL) inorganics (as provided in the CLP SOW, ILM04.2).

The analytical results from the SSI are summarized in the draft final Report on the Investigation at Sites 35, 36, and 37, NAS Whiting Field, Milton, Florida completed on February 3, 1999 by Harding Lawson Associates (HLA, 1999). The summary and recommendations of the report indicated no VOCs were detected at concentrations exceeding regulatory criteria in the subsurface soil samples collected from Sites 36 and 37. However, the analytical results for soil boring 35B001 (associated with the Site 35 fuel pump island) indicated contaminated soil at levels exceeding the soil gas headspace criteria of 50 ppm for excessively contaminated soils as defined by the State of Florida (Chapter 62-770, F.A.C.). Laboratory analysis of the subsurface soil samples also indicated VOC concentrations typically associated with petroleum contamination exceeding the Florida SCTLs for leaching soils (HLA, 1999). In addition, the shallow and deep groundwater samples collected from Site 36 contained TCE at concentrations exceeding Florida and Federal regulatory limits.

Additional soil sampling at the former gas pumps and UST area at Site 35 was recommended to assess the extent of petroleum contamination by the HLA report (HLA, 1999). It was also determined soil at Site 35 had not been analyzed for SVOCs.

1.2.3.5 Site 38

In March 1996, Brown & Root Environmental Services, Inc. (BR&E) collected a single surface soil sample (0 to 1 ft sample depth) at the site. The sample was collected to support the Navy's relative risk ranking for the site. The soil sample was analyzed for TCL VOCs, TCL SVOCs, TCL Pesticides/PCBs, and TAL inorganics. No organic compounds or inorganic analytes were detected above regulatory limits in the soil sample. There has been no formal investigation conducted at this site.

1.3 FIELD INVESTIGATION METHODS

The work performed for the site-specific investigations (Sites 7, 29, and 35) focuses primarily on confirming and defining the lateral and vertical extents of soil contamination. Analysis of the previous investigation data suggested additional data was needed to more accurately define the concentrations of contaminants in the soil. Previous investigations did not fully delineate concentrations of contaminants in the soil with regards to regulatory-defined or risk-based SCTLs. The additional data will also improve the certainty of data interpretation when used in the FS engineering analysis and design.

The Scope of Work was based on a review of the existing data, regulatory guidance (e.g., FDEP Soil Cleanup Guidance, USEPA RAGS and addenda), and in consultation with USEPA, FDEP, and Navy personnel.

1.3.1 Field Investigation Activities

The scope of work for the field investigation included the following general categories of field investigation activities:

- Collection of surface soil samples
- Advancement of soil borings and collection of subsurface soil samples using DPT
- Field measurement of physical and chemical properties of soil samples

As described in Section 3.1.1 of the Work Plan, all field investigation activities were performed in accordance with the appropriate regulatory Standard Operating Procedures (SOPs).

1.3.2 Surface Soil Assessment

The surface soil assessment was accomplished by hand auger sampling. The surface soil samples were collected to determine lateral extent of contamination at potential source areas of concern, evaluate human health risk from direct contact exposure, and ecological risks. Analysis of the previous investigation data suggested additional data was needed to determine the concentrations of constituents

in soil to regulatory-defined or risk-based concentrations and to improve the certainty of data interpretation in support of the FS engineering analysis and design.

Surface soil samples were collected from the unpaved areas of the sites. The samples were recovered from a depth of 0 to 12 inches bls. Hand auguring was accomplished using a 4-inch diameter bucket auger with a 3 ft extension rod.

The surface soil samples, including the environmental and Quality Control (QC) samples, were collected and analyzed at on off-site, fixed-based laboratory using USEPA SW-846 methodology for analysis of TCL VOCs, TCL SVOCs, TAL inorganics, cyanide, and Synthetic Precipitation Leaching Procedure (SPLP). The following USEPA SW-846 methods were specifically used: 8260B (TCL VOCs), 8270C (TCL SVOCs), 8310 (PAHs; a subset of the TCL SVOCs), 8081A (TCL Pesticides; a subset of the TCL SVOCs), 8082 (PCBs; a subset of the TCL SVOCs), 6010B (TAL inorganics), 9010 (cyanide), and 1312 (SPLP). The surface soil samples were also analyzed using FDEP Florida Petroleum Range Organics (FL-PRO) methodology for analysis of TRPH.

1.3.3 Subsurface Soil Assessment

The subsurface soil assessment was accomplished by DPT and hand auger sampling. The subsurface samples were collected to determine the vertical and lateral extent of contamination around former USTs or at potential source areas of concern. Analysis of the previous investigation data suggested additional data was needed to define the concentrations of constituents in soil to regulatory-defined or risk-based concentrations and to improve the certainty of data interpretation in support of the FS engineering analysis and design.

Hand auguring was accomplished using a 4-inch stainless steel bucket auger with a 3-ft. extension rod. Subsurface soils were obtained by hand augering to 6 ft. bls, or by DPT. The actual sample was obtained with DPT.

Soil vapor headspace analyses were performed according to the method prescribed in FDEP Rule 62-770.200 (2) of the F.A.C.. Subsurface soil samples were analyzed for total organic vapors using an OVA equipped with a Flame Ionization Detector (FID). Charcoal filters were used to differentiate between methane (a naturally occurring gas) and total organic vapors.

In general, all DPT soil borings were advanced to a minimum depth of 30 ft bls. If at 30 ft bls the total FID readings were greater than 50 ppm, then the boring was continued to 10 ft below the depth when FID readings decrease to < 50 ppm or to the water table. The first occurrence of either halted the advance. Subsurface soil samples were selected for laboratory analysis based on high FID readings, changes in

lithology, or at the discretion of the site geologist based on other field observations and the bottom of the borehole.

1.4 DATA EVALUATION

The purpose of this task is to validate the data, determine the quality of the data, and to perform a HHRA and SERA.

1.4.1 Data Validation

The Quality Assurance/Quality Control (QA/QC) efforts for laboratory analyses include collection and submittal of QC samples and the assessment and validation of data from the subcontracted laboratory. Analytical data is subjected to independent data validation in accordance with the following guidelines:

- *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (OLM04.0, USEPA 1999a).
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (ILM04.2, USEPA 1999b).
- *Navy Installation Restoration Laboratory Chemical Data Quality Manual* (NFESC 1999).

Analytical data was validated based on, but not limited to the following parameters:

- Initial and continuing calibration results
- Holding time compliance
- Laboratory blank analyses
- Laboratory Control Sample (LCS), Matrix Spike (MS), and Matrix Spike Duplicate (MSD) analyses
- Duplicate field sample analyses
- Data Completeness
- Detection Limits
- Comparison of laboratory and field blanks to sample results
- Comparison of laboratory and field duplicate results

1.4.2 Risk Assessment

Risk assessment (RA) screening is performed to estimate the potential risk to human health and to the surrounding ecology. Management decisions can be made for a site based on the RAs (i.e., will the site be recommended for an RI/FS or NFA).

1.4.2.1 Human Health Risk Screening Methodology

The purpose of the human health risk screening is to conservatively estimate the potential risk to human health so management decisions can be made for Sites 05, 07, 29, 35, and 38 (i.e., should the site be recommended for an FS or NFA.).

The risk screening consists of the same steps employed in baseline HHRAs. These include:

- Selection of contaminents of potential concern (COPCs)
- Exposure assessment
- Toxicity assessment
- Risk characterization
- Uncertainty analysis

The risk screening for human health uses the Florida Residential and Industrial SCTLs from Technical Report: Development of SCTLs for Chapter 62-777, F.A.C. (FDEP, 1999) and USEPA Region IX Superfund PRG Residential values to conservatively assess exposure and toxicity. The five steps for performing the risk screening are described in detail in the following sections.

1.4.2.1.1 Selection of COPCs

The following factors are considered in the selection of COPCs for human receptors:

- Occurrence and distribution of chemicals in the environmental media.
- Individual chemical toxicity.
- Adjustment for multiple chemical exposures.
- Comparisons of site-specific concentrations with corresponding background concentrations.

1.4.2.1.1.1 Occurrence and Distribution

Candidate COPCs for a site include any chemical detected at least once in environmental samples collected from a site. Tentatively identified compounds (TICs) are not included as COPCs for any site because there were few potentially site-related TICs present relative to the actual target analytes (i.e., analytes specified by the analytical method and laboratory contract).

1.4.2.1.1.2 Individual Chemical Toxicity

The initial list of COPCs consists of those chemicals where the maximum concentration detected in an environmental medium exceeds the lower of the Florida Residential SCTLs or USEPA Region IX Residential PRGs for the chemical. The most recent available tables were used for this purpose.

The Region IX PRGs are screening levels corresponding to fixed levels of risk, either a cancer risk of one in a million (1×10^{-6}) or a noncancer hazard quotient (HQ) of 1. The Region IX PRGs consider the most sensitive receptor, a residential child, for chemicals associated with noncancer toxicity. For carcinogenic chemicals, exposure is based upon the assumption of cumulative exposure for a residential child and a residential adult.

The Florida residential SCTLs are risk based screening levels based on either cancer risk or noncancer toxicity. The lower value, protective against cancer risks of 1×10^{-6} or a noncancer HQ of 1, is used. Like the Region IX PRGs, the Florida SCTLs account for exposure to chemicals in soil via incidental ingestion, dermal contact, inhalation of volatiles, and inhalation of particulate dusts.

1.4.2.1.1.3 Multiple Chemical Exposures

To account for possible additivity of carcinogenic effects, the screening levels based on Florida Residential SCTLs and USEPA Region IX Residential PRGs for carcinogenic chemicals were divided by the number of carcinogenic chemicals in the list of detected chemicals, with carcinogenic polynuclear aromatic hydrocarbon (cPAHs) counted as one compound. To account for possible additivity of noncarcinogenic effects, screening levels for non-carcinogenic chemicals were divided by ten.

As stated in USEPA Region IV guidance, when one cPAH is selected as a COPC, they all are selected. The cPAHs are benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene.

Chemicals detected in soils were retained as COPCs if the maximum detected concentrations exceeded the adjusted screening levels.

1.4.2.1.1.4 Comparison to Background

The initial list of risk-based COPCs for inorganics in soil was refined based on a comparison of maximum site concentrations to facility-wide background concentrations. If the maximum detected concentration of a chemical exceeded the risk-based screening level (Section 1.4.3.1.2) and exceeded twice the mean of the background concentration, the chemical was retained as a COPC for risk evaluation. Inorganic chemicals not above background levels were eliminated from further consideration as COPCs. The development of the background concentrations for NAS Whiting Field, Florida is presented in the GIR, NAS Whiting Field (ABB, 1998a). The comparisons of maximum site concentrations to the background concentrations are presented in the site-specific RAs located in Sections 2 through 6.

Additionally, elevated concentrations of several inorganics (aluminum, arsenic, iron, manganese, and vanadium) in the soil at NAS Whiting Field have been attributed to natural occurrences, unless previous

site activities indicate a possible source for the elevated concentration of these specific inorganics. Refer to Appendix B of this report for the position papers addressing the elevated concentrations of these specific inorganics submitted by TtNUS, and for the concurrence letters from FDEP. As a result, if elevated concentrations of these specific inorganics are present at a site, but previous site activities do not indicate a source, then the inorganic was eliminated from further consideration as a COPC.

1.4.2.1.2 Exposure Assessment

The exposure assessment evaluates the potential for human exposure to COPCs identified in environmental media at a site under investigation. This section presents a characterization of the exposure setting, characterizes the exposed populations, identifies actual or potential exposure routes, and summarizes the methods used to generate exposure estimates.

Land use at NAS Whiting Field is currently limited to Navy activities involving site occupational workers, military personnel, construction workers, and site trespassers. No change in land use patterns is anticipated for the near future. Given the current and anticipated future use at the sites of concern at NAS Whiting Field, trespassers (older children and adults), site occupational workers (military personnel), and construction workers are the most likely individuals to be exposed to COPCs. Future residential use of the sites is not anticipated for military or non-military housing; however, the residential pathway was retained for completeness and comparison purposes. In most cases, exposures to environmental media predicted for the expected individuals are likely to be less intense than those anticipated for a home resident. Consequently, the use of the PRGs and SCTLs discussed in Section 1.4.3.1.2 to select COPCs and evaluate risk is a conservative approach towards exposure assessment because the PRGs and SCTLs were developed assuming exposure occurred under a residential land-use scenario. This conservative approach assures sites will not be inappropriately dismissed as "NFA" sites during the COPC selection process.

The PRGs and SCTLs consider the following exposure pathways:

- Soil Ingestion (residential and industrial)
- Dermal Contact (residential and industrial)
- Inhalation of particulates and volatiles in air (residential and industrial)

For purpose of the site RA process, the exposure assessment component of this RA employs the exposure assumptions used to derive the PRGs and SCTLs. The equations and exposure factors used by Region IX to calculate the PRGs are provided in Background Information at www.epa.gov/region09/waste/sfund/prg/files/background.pdf and those used by the State of Florida to

calculate the SCTLs are provided in the Technical Report: Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777 F.A.C., Draft Report, dated January 27, 2003 (Appendix E) (FDEP, 2003).

1.4.2.1.3 Toxicity Assessment

The toxicity assessment defines the relationship between the dose of a constituent and the potential for adverse health effects resulting from exposure to the dose. The carcinogenic potency of a chemical is often expressed in terms of a cancer slope factor (CSF). CSFs are applicable for estimating the lifetime probability (assumed 70-year lifespan) of human receptors developing cancer as a result of exposure to known or potential carcinogens. This factor is generally reported in units of 1 mg/kg per day (mg/kg/day) and is derived through an assumed low-dosage linear relationship of extrapolation from high to low dose responses determined from animal studies. The value used in reporting the CSF is the upper 95 percent confidence limit.

The potential of a chemical to produce noncarcinogenic effects if often expressed in terms of a reference dose (RfD). Chronic RfDs are specifically developed to be protective for long-term exposure to a compound (as a Superfund program guideline, long term). The RfD is usually expressed as a dose (mg) per unit body weight (kg) per unit time (day). It is generally derived by dividing a No-Observed-(Adverse)-Effect-Level (NOAEL or NOEL) or a Lowest-Observed-Adverse-Effect-Level (LOAEL) by an appropriate uncertainty factor.

In this HHRA, the toxicity assessment incorporates screening levels (PRGs and SCTLs). Screening levels are utilized to estimate risks in an indirect manner mathematically equivalent to using CSFs and RfDs. The published PRGs and SCTLs for each chemical were derived from CSFs and RfDs obtained from several references, including, in order of preference:

1) USEPA's Integrated Risk Information System (IRIS)
2) USEPA's Health Effects Assessment Summary Tables (HEAST)
3) USEPA's HEAST Alternative Methods
4) USEPA's Environmental Criteria and Assessment Office (ECAO) in Cincinnati
5) Withdrawn values from IRIS
6) Withdrawn values from HEAST
7) Other applicable USEPA documents

The most recent Region IX PRG tables (USEPA, November 2000) list the toxicity criteria used to develop the PRGs presented in the Region IX table. These criteria are listed in Section 2.2 of the Background Information document referenced in Section 1.4.3.2 of this report. The tabulation of Florida SCTLs

(FDEP, 1999) also contains toxicity criteria used to develop the SCTLs and is presented in the Technical Report also referenced in Section 1.4.3.2 of this report.

For those chemicals with both carcinogenic effects and non-carcinogenic effects, Region IX has developed PRGs using both a CSF and RfD. Consequently, noncarcinogenic risks for these chemicals are evaluated using PRGs as well as carcinogenic risks.

The maximum concentration of each chemical was used as the exposure point concentration (EPC) for the risk screening. However, USEPA Region IV guidance (USEPA, 1995) was followed to determine a benzo(a)pyrene equivalent concentration representative of total cPAHs in each sample. The USEPA Region IV guidance suggests the following Toxicity Equivalency Factors (TEF) for each cPAH to calculate the benzo(a)pyrene equivalent concentration (referred to as benzo(a)pyrene (equiv.) in this HHRA.) The following TEFs were used to convert each PAH concentration to a benzo(a)pyrene (equiv.) concentration:

- Benzo(a)pyrene, TEF = 1.0;
- Benzo(a)anthracene, TEF = 0.1;
- Benzo(b)fluoranthene, TEF = 0.1;
- Dibenzo(a,h)anthracene, TEF = 1.0;
- Benzo(k)fluoranthene, TEF = 0.01;
- Chrysene, TEF = 0.001; and
- Indeno(1,2,3-cd)pyrene, TEF = 0.1.

If any cPAHs were detected at a sample location, the benzo(a)pyrene (equiv) concentration was calculated for the location by multiplying the concentration of each cPAH by the appropriate TEF and summing these values. If any of the cPAHs were not detected in a sample, then half the detection limit of the PAH was used as a surrogate concentration. If no cPAHs were detected at a sample location, then the benzo(a)pyrene (equiv.) concentration was calculated by multiplying half the detection limit for each cPAH by the appropriate TEF and summing these values. As with other analytes, the maximum benzo(a)pyrene (equiv.) concentration in an environmental media was used to estimate potential risks.

1.4.2.1.4 Risk Characterization

Risk characterization evaluates the potential for adverse effects from exposure to COPC concentrations in environmental media by integrating information developed during the exposure and toxicity assessments. As noted previously, the exposure and toxicity assessments for this HHRA are largely addressed during the development of the PRGs and SCTLs. The SCTLs are primarily the basis for the risk characterization conducted here. Region IX PRGs are used for noncarcinogenic risk characterization

where only carcinogenic SCTLs are available and both a noncarcinogenic and carcinogenic effect are expected from the chemical.

Risk characterization for the risk-screening of Sites 05, 07, 29, 35, and 38 consists of calculating a ratio between the maximum detected concentration of a chemical in an environmental medium and the SCTL (or PRG, as stated in the previous paragraph.) Carcinogenic and noncarcinogenic effects were evaluated separately. The algorithms to perform these calculations are presented in the following sections. Ratios were calculated for both the residential land-use scenario and the industrial land-use scenario. The human health risk estimates produced for the residential scenario are not reflective of actual current or anticipated future conditions at the sites under investigation because the current and anticipated land use at the sites is military industrial. However, the risk characterization based on exposure assumptions reflecting a residential land-use scenario is conservative and is helpful for information and comparison purposes.

1.4.2.1.4.1 Human Health Effects – Carcinogens

The following equation is used to evaluate chemicals having potential or known carcinogenic effects.

$$\text{ILCR} = \sum (C_{MAX} / SCTL) x 10^{-6}$$

where:

ILCR	=	Incremental Lifetime Cancer Risk
C_{MAX}	=	Maximum detected concentration (mg/kg)
SCTL	=	Florida SCTL
10^{-6}	=	Cancer risk at the screening level concentration

Multiplying the C_{MAX}/SCTL ratio by 1 x 10^{-6}, the USEPA's point of departure cancer risk level, produces a risk estimate for the detected chemical. The ILCR values for all COPCs are summed to account for potential carcinogenic effects associated with multiple chemical exposures. Because additivity of cancer risks is calculated directly in this manner, the individual screening levels used in the above equation represent the actual SCTLs as published and do not require any further adjustment for multiple chemical exposures as was done earlier for the COPC selection step.

The total ILCR is compared to the USEPA's cancer risk benchmarks to determine whether remediation may be necessary. USEPA has defined the range of 1 x 10^{-4} to 1 x 10^{-6} as the incremental cancer risk (ICR) "target range" for most hazardous waste facilities evaluated. Cumulative ICRs greater than 1 x 10^{-4} generally indicate the USEPA will require some degree of remediation, and ICRs below 1 x 10^{-6} normally will not require the USEPA initiate remedial efforts. A 10^{-4} ILCR estimate corresponds to one potential

additional cancer in an exposed population of ten thousand individuals; a 10^{-6} ILCR estimate corresponds to one potential additional cancer in an exposed population of one million individuals.

1.4.2.1.4.2 Human Health Effects – Noncarcinogens

The potential for adverse noncarcinogenic health effects was evaluated using the following equation. The resultant hazard quotient (HQs) and HIs reflect the potential for adverse noncarcinogenic health effects.

$$HQ = C_{MAX} / SCTL$$
$$HI = \sum HQ$$

where:

HQ	=	Hazard Quotient
C_{MAX}	=	Maximum detected concentration (mg/kg)
SCTL	=	Florida SCTL.
HI	=	Hazard Index

Additivity of noncarcinogenic effects is measured by summing the HQs associated with each affected target organ. For a given target organ, if the value of the HI exceeds unity (1.0), the potential for noncarcinogenic health risks associated with exposure to the particular chemical mixture cannot be ruled out. In the above equation, the individual screening levels used for each chemical represent the actual SCTLs as published and do not require any further adjustment for multiple chemical exposures as was done earlier for the COPC selection step.

1.4.2.1.5 Uncertainty Analysis

The general uncertainties associated with the HHRA are presented in this section. Uncertainties for each site-specific RA, including a discussion of how they may affect the estimated risks, are provided in Sections 2.0 through 6.0.

Uncertainty in the selection of COPCs is related to the current status of the predictive databases, the grouping of samples, and the procedures used to include or exclude constituents as COPCs. Uncertainty associated with the exposure assessment includes the values used as input variables for a given intake route/scenario, the assumptions made to determine EPCs, and the predictions regarding future land-use and population characteristics. Uncertainty in the toxicity assessment includes the quality of the existing toxicity data needed to support dose-response relationships and the weight-of-evidence used for determining the carcinogenicity of COPCs. Uncertainty in the risk characterization includes association with exposure to multiple chemicals and the cumulative uncertainty from combining conservative assumptions made in earlier steps of the RA process.

Whereas there are various sources of uncertainty as described earlier, the direction of uncertainty can be influenced by the assumptions made throughout the RA, including selection of COPCs and selection of values for dose-response relationships. In general, assumptions considering safety factors, are made so the final calculated risks are overestimated.

Generally, RAs carry two types of uncertainty: measurement and informational uncertainty. Measurement uncertainty refers to the usual variance accompanying scientific measurements. For example, this type of uncertainty is associated with analytical data collected for each site. Typical baseline RAs reflect the accumulated variances of the individual values used.

Informational uncertainty stems from inadequate availability of information needed to complete the toxicity and exposure assessments. Often, this gap is significant, such as the absence of information on the effects of human exposure to low doses of a chemical, on the biological mechanism of action of a chemical, or the behavior of a chemical in soil.

Once the RA is complete, the results must be reviewed and evaluated to identify the type and magnitude of uncertainty involved. Reliance on results from a RA without consideration of uncertainties, limitations, and assumptions inherent in the process can be misleading. For example, to account for uncertainties in the development of exposure assumptions, conservative estimates must be made to ensure the particular assumptions made are protective of sensitive subpopulations or the maximum exposure individuals. If a number of conservative assumptions are combined in an exposure model, the resulting calculations can propagate the uncertainties associated with those assumptions, thereby producing a much larger uncertainty for the final result. This uncertainty is biased toward over predicting both carcinogenic and noncarcinogenic risks. Thus, both the results of the RA and the uncertainties associated with those results must be considered when making risk management decisions.

This interpretation is especially relevant when the risks exceed the point-of-departure for defining "acceptable" risk. For example, when risks calculated using a high degree of uncertainty are less than an acceptable risk level (i.e., 10^{-6}), the interpretation of no significant risk is typically straightforward. However, when risk calculated using a high degree of uncertainty exceed an "acceptable" risk level, a conclusion can be difficult unless uncertainty is considered, especially when the exceedance of acceptable risk is relatively "marginal".

1.4.2.1.5.1 Uncertainty in Selection of COPCs

The following issues may contribute to uncertainty in COPC selection for the NAS Whiting Field sites: the existing database, the inclusion of chemicals potentially attributable to background, the screening levels

used, and the absence of screening levels for a few chemicals detected in the site media. A brief discussion of each of these issues is provided in the remainder of this section.

Existing Databases

All data used for this evaluation have been validated according to USEPA Region IV data validation guidelines. Therefore, uncertainties associated with the quality of the data are considered to be minimal. At most sites, few samples (less than 10) were collected from surface or subsurface soil. The use of small datasets may result in additional uncertainty both in the COPC selection and in the calculated risks.

Chemicals Potentially Attributable to Background

COPCs were selected using available background concentrations in soil. Twice the mean of the background values was selected as the representative background concentration and was used to conservatively screen detected concentrations of inorganics. A more rigorous background evaluation, such as statistical testing, would have eliminated some inorganics from inclusion as a COPC. Therefore, overall site-related risks from soil may be overestimated by the background screening process.

COPC Screening Levels

The use of risk-based screening values should ensure retention of significant contributors to risk from a site area. Screening values were based on conservative land-use scenarios (i.e., residential land use for soil) and protective levels of risk corresponding to an ILCR of 10^{-6} (divided by the number of carcinogenic initial COPCs) and an HI of 0.1.

Absence of COPC Screening Levels

Essential human nutrients (magnesium, potassium, calcium, and sodium) are considered toxic only at very high doses and do not have screening levels listed in any of the PRG/SCTL tables referenced in this report. These nutrients are not otherwise known to be associated with the site and were detected at low concentrations; therefore, they were eliminated from consideration as COPCs. Hence, exclusion of these chemicals as COPCs is not expected to add significant uncertainty to the risk.

A few chemicals detected at the sites under investigation do not have Region IX PRGs. Florida SCTLs are available for the chemicals and were used as the basis of COPC screening criteria. Because both the SCTLs and the PRGs are conservatively risk-based screening levels, it is unlikely the lack of PRG values would result in the underestimation of risk.

1.4.2.1.5.2 Uncertainty in the Exposure Assessment

Uncertainty in the exposure assessment arises because of the methods used to calculate EPCs, the determination of land-use conditions, the selection of receptors and scenarios, and the selection of exposure parameters.

Land-Use

The current land use patterns of NAS Whiting Field are well established, thereby reducing the uncertainty associated with land use assumptions. Land use is currently limited to site occupational workers, military personnel, construction workers, and site trespassers, and is expected to be limited to these in the foreseeable future. For this investigation, potential risks were evaluated for a future industrial scenario and for future potential residents and, are, therefore, not realistic in regard to current and expected future land use patterns and would be considered an overestimate of potential risks for typical expected receptors.

Exposure Point Concentration

The maximum concentration of each COPC was used to quantify potential risks. As a result of using the maximum concentration, the estimations of potential risk are likely to be overestimated because it is unlikely potential receptors would be exposed to the maximum concentration over the entire site for the assumed exposure period. The method used to calculate the benzo(a)pyrene (equivalent) concentration for cPAHs also overestimates the risk.

Exposure Routes and Receptor Identification

The Region IX PRGs and the Florida SCTLs were calculated based on a combination of ingestion, dermal exposure, and inhalation pathways. Therefore, there was no underestimation of risks by the omission of exposure routes.

Exposure Parameters

The exposure factors, e.g., exposure frequency and duration, used to calculate the PRGs and SCTLs are based on reasonable maximum exposure (RME) assumptions. Generally, exposure factors are based on surveys of physiological and lifestyle profiles across the United States. The attributes and activities studied in these surveys generally have a broad distribution. To avoid underestimation of potential risks, the USEPA and the State of Florida used RME exposure factors values in the development of the PRGs and SCTLs used in this risk evaluation. Therefore, the risk is not likely to be underestimated for maximum exposed individuals and is more likely to be overestimated for the general populations exposed to the chemicals in the environmental media at the sites.

1.4.2.1.5.3 Uncertainty in Toxicity Assessment

Uncertainties associated with the toxicity assessment include the derivation of the RfDs and CSFs, the PRGs and SCTLs calculated from the RfDs and CSFs, and limitations associated with the use of available criteria. These uncertainties are presented in this section.

Derivation of Toxicity Criteria

Uncertainty is associated with hazard assessment and dose-response evaluations. The hazard assessment deals with characterizing the nature and strength of the evidence of causation, or the likelihood a chemical inducing adverse effects in animals will also induce adverse effects in humans. Hazard assessment of carcinogenicity is evaluated as a weight-of-evidence determination, using the USEPA methods. Positive animal cancer test data suggest human tissue(s) may manifest a carcinogenic response; however, the animal data cannot necessarily be used to predict the target tissue in humans. In the hazard assessment of noncancer effects, the positive animal data often suggest the nature of the effects (i.e., the target tissues and type of effects) anticipated for humans.

Uncertainty in hazard assessment arises from the nature and quality of the animal and human data. Uncertainty is reduced when similar effects are observed across species, strain, sex, and exposure route; when the magnitude of the response is clearly dose-related; when pharmacokinetic data indicate a similar fate in humans and animals; when postulated mechanisms of toxicity are similar for humans and animals; and when the COPC is structurally similar to other chemicals with more completely characterized toxicity.

Uncertainty in the dose-response evaluation is associated with the determination of a CSF for the carcinogenic assessment and derivation of an RfD or reference concentration (RfC) for the noncarcinogenic assessment. Uncertainty introduced from interspecies (animal to human) extrapolation, in the absence of quantitative pharmacokinetic or mechanistic data, is usually based on consideration of interspecies differences in basal metabolic rate. Uncertainty also results from intraspecies variation. Most toxicity experiments are performed with animals very similar in age and genotype, to keep intragroup biological variation at a minimum. However, the human population of concern may reflect a great deal of heterogeneity including unusual sensitivity or tolerance to the COPC. Even toxicity data from human occupational exposure reflect a bias because only those individuals sufficiently healthy to attend work regularly (the healthy worker effect) and those not unusually sensitive to the chemical are likely to be occupationally exposed. Finally, uncertainty arises from the quality of the key study from the quantitative estimate is derived, and the database. For cancer effects, the uncertainty associated with dose-response factors is mitigated by assuming the 95 percent upper bound for the CSF. Another source of uncertainty in carcinogenic assessment is the method used to extrapolate data from high doses in animal to the dose range expected for environmentally exposed humans. The linearized multistage model, used in nearly all quantitative estimations of human risk from animal data, is based on a non-threshold assumption of carcinogenesis. However, evidence suggests epigenetic carcinogens, as well as many genotoxic carcinogens, have a threshold below noncarcinogenic values (Williams and Welsburger, 1991); therefore, the use of the linearized multistage model is conservative for chemicals exhibiting a threshold for carcinogenicity.

For noncancer effects, additional uncertainty factors may be applied in the derivation of the RfD or RfC to mitigate poor quality of the key study group or gaps in the database. Additional uncertainty for non-cancer effects is associated with predicting a no-adverse effects threshold or level. Therefore, an uncertainty factor is usually applied to the estimate of a no-effects level. Additional uncertainty arises in estimation of an RfD or RfC for chronic exposure from sub-chronic data. Unless empirical data indicates the effects do not worsen with increasing duration of exposure, an additional uncertainty factor is applied to the no-effect level in the sub-chronic study. Uncertainty in the derivation of RfDs is mitigated by the use of uncertainty and modifying factors normally ranging between 3 and 10. The resulting combination of uncertainty and modifying factors are used to proportionally adjust the RfD downwards and thereby intentionally introduce a conservative bias in the RfD by a factor of 1000 or more. The derivation of dermal RfDs and CSFs from oral values may cause uncertainty. This is particularly the case when no gastrointestinal absorption rates are available in the literature or when only qualitative statements regarding absorption are available.

Use of Chromium Toxicity Criteria

Some uncertainty is associated with the evaluation of chromium in its hexavalent state. Because hexavalent chromium is considered to be more toxic than trivalent chromium, while the latter is more commonly found in the environment, risks for this chemical are most likely overestimated.

Use of Aluminum and Iron Toxicity Criteria

Potential risks from exposure to aluminum and iron were evaluated although the National Center for Environmental Assessment (NCEA) provisional RfDs for these chemicals are based on typical allowable intakes rather than adverse effect levels. Therefore, noncarcinogenic risks are overestimated for aluminum and iron.

Use of Vanadium Toxicity Criteria

Contaminant concentrations limits are assumed to be protective for acute as well as chronic exposure, but there may be circumstances where acute exposure is significantly larger than time-averaged chronic exposure. This larger exposure could result in acute toxicity. Safe doses intended specifically for acute exposures are not provided by the USEPA; therefore, because vanadium can present an acute toxicity problem a RfD acute value must be developed for it. As presented in the Technical Report: Development of SCTLs for Chapter 62-777, F.A.C. (FDEP, 2003), and in accordance with the published studies, 67 mg/kg was determined to be protective of acute toxicity. This newly FDEP-proposed SCTL is higher than the current FDEP SCTL of 15 mg/kg. The substantial difference between the two SCTLs is attributable to more recent studies and better risk models, including more recent body mass data, chemical interaction data, etc. Therefore, the risks associated with vanadium are overestimated when using the current FDEP SCTL.

1.4.2.1.5.4 Uncertainty in the Risk Characterization

Uncertainty in risk characterization results primarily from assumptions made regarding additivity of effects from exposure to multiple COPCs from various exposure routes. High uncertainty exists when summing cancer risks for several substances across different exposure pathways. This assumes each substance has a similar effect and/or mode of action. Often compounds affect different organs, have different mechanisms of action, and differ in the fate in the body, therefore, additivity may not be an appropriate assumption; however, the assumption of additivity is made to provide a conservative estimate of risk.

Finally, the risk characterization does not consider antagonistic or synergistic effects. Little or no information is available to determine the potential for antagonism or synergism for the COPCs. Therefore, this uncertainty cannot be discussed for its impact on the RA, as it may either over- or underestimate potential human health risk.

1.4.2.2 Ecological Risk Assessment

This section presents the methodologies used to conduct the SERA. These methodologies evaluate the impacts of site contamination on ecological receptors and their habitats at Sites 05, 07, and 29. This assessment generally followed a two-step process:

Step 1: Preliminary Problem Formulation (Section 1.4.3.2.1) and Preliminary Ecological Effects Evaluation (Section 1.4.3.2.2).

- Preliminary Problem Formulation - This is the first phase of an Ecological Risk Assessment (ERA). It discusses the goals, breadth, and focus of the assessment. It includes general descriptions of the site to be investigated with emphasis on the habitats and ecological receptors present. This phase also involves characterization of chemical sources and migration pathways, evaluation of routes of chemical exposure, and selection of analytes to be assessed. Preliminary assessment and measurement endpoints are also selected in this phase. Finally, a preliminary conceptual model is developed to describe how chemicals associated with the site may come into contact with ecological receptors.

- Preliminary Ecological Effects Evaluation - In this phase, medium-specific ecological screening guidelines for each analyte (i.e., concentrations of each chemical above which adverse effects to ecological receptors may occur) are identified. This step is conducted concurrently with the exposure assessment described in the next step.

Step 2: Preliminary Exposure Estimate (Section 1.4.3.2.3) and Risk Calculation (Section 1.4.3.2.4).

- Preliminary Exposure Estimate - This portion of the ERA includes the identification of data sources containing concentrations of chemicals ecological receptors may be exposed to in various media. It also includes the selection of exposure point chemical concentrations from those data.

- Preliminary Risk Calculation - In this step, EPCs are compared to guidelines in order to characterize potential risk to ecological receptors. Analytes found to pose potential risk after these comparisons are selected as ecological COPCs.

This process, described further in the following detail, represents the general ERA approach recommended in the most recent USEPA guidance for performing ERAs (USEPA, 1998; 1997). USEPA Region IV has developed region-specific guidance (USEPA, 2000) and has requested this guidance be followed for all ERAs performed in USEPA Region IV. USEPA Region IV guidance is consistent with national USEPA guidance (USEPA, 1998; 1997). Hence, this ERA follows USEPA Region IV guidance while containing relevant elements of the federal USEPA guidance. Additional guidance used for this ERA includes the Department of the Navy (DON) ERA policy (DON, 1999). This guidance refers to this “screening-level assessment” as a “Tier 1” study in the Navy’s three-tiered ERA approach.

Because of the potential complexity of ERAs, they are often conducted using a tiered approach and punctuated with Scientific/Management Decision Points (SMDPs). SMDPs are meetings involving the risk assessors, risk managers, and client to control costs, prevent unnecessary analyses, and ensure the ERA is proceeding in an efficient, timely manner. Information analyzed in one tier is evaluated to determine whether the objectives of the study have been met, and then it may be used to identify the data required for the next tier, if necessary. Again, this ERA can be considered a "screening-level" assessment because it is based only on comparing chemical concentrations against conservative screening values.

A baseline ecological risk assessment (BERA) may be conducted if the results of the SERA indicate additional study is warranted. The BERA includes more focused studies incorporating the initial screening, but it may also encompass detailed laboratory and field studies or extensive modeling (USEPA, 1997). The BERA represents steps 3 through 7 of the 8-step ERA process. The beginning of the BERA presents a more balanced evaluation of the conservativeness inherent in the first two steps in the process (DON, 1999). These two steps are described in detail in Section 1.4.3.2.5. Step 8 is risk management.

1.4.2.2.1 Preliminary Problem Formulation

Habitat Types and Ecological Receptors

Site background and history are detailed in Section 1.2. Sites 05, 07, and 29 are highly developed areas, consisting mainly of buildings and concrete parking lots. Wildlife habitat at these sites is limited to small turf grass-covered areas. At each site, various species of deciduous and evergreen trees are located within 100 yards of the site, but are not within the bounds of the sites themselves.

Major Chemical Sources and Migration Pathways

Section 1.2 of this report describes in detail the PSC and previous investigations conducted at Sites 05, 07, and 29. The contaminants at these sites were primarily disposed of directly on the media (e.g., dumping on the soil), or buried in USTs. The contaminants may have migrated to other media (e.g., groundwater and subsurface soil).

No surface water bodies are located near Sites 05, 07, and 29. As a result, surface water, sediment, and groundwater were not evaluated as part of the SERA. Chemicals released to surface soils could infiltrate subsurface soils; however, it is unlikely there would be significant contact between ecological receptors and contaminants in the subsurface soil (greater than 2 ft bls). Thus, subsurface soils were not quantitatively evaluated in the SERA.

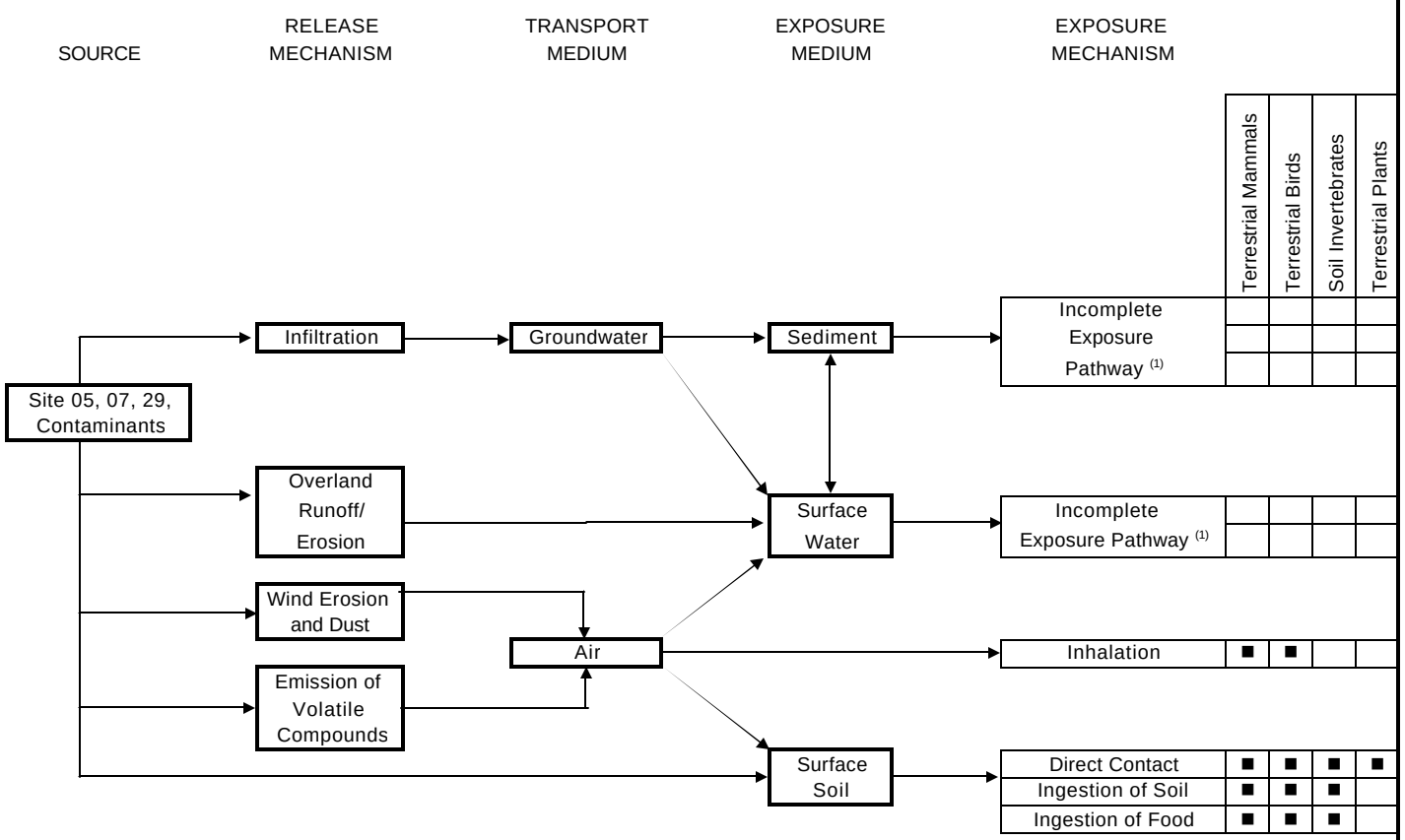
Exposure Routes

A conceptual model is designed to diagrammatically identify potentially exposed receptor populations and applicable exposure pathways, based on the physical nature of the site and the potential chemical source areas. Actual or potential exposures to chemicals for ecological receptors associated with Sites 05, 07, and 29 were determined by identifying the most likely pathways of chemical release and transport. A complete exposure pathway has three components: a source of chemicals capable of being released to the environment; a route of chemical transport through an environmental medium; and an exposure route or contact point for an ecological receptor. A preliminary ecological conceptual site model for Sites 05, 07, and 29 is presented in Figure 1-7.

The chemical exposure routes for these sites are primarily terrestrial. Terrestrial vegetation may be exposed to contaminants via direct aerial deposition and root translocation. However, aerial deposition was not investigated primarily because the sites are largely covered by concrete/asphalt or grass. This reduces the amount of bare soil and fugitive dust. Soil invertebrates may be exposed to contaminants in the soil via direct dermal contact as they move on or though the soil, and through ingestion of soil while feeding. Terrestrial mammals and birds in the area may be exposed to soil contaminants through ingestion of contaminated food items. In addition, they may incidentally ingest soil while grooming fur, preening feathers, digging, grazing close to the soil, or feeding on items covered with soil (such as roots and tubers). Exposure to contaminants in the soil via dermal contact may occur, but is unlikely to

FIGURE 1-7

PRELIMINARY ECOLOGICAL CONCEPTUAL SITE MODEL
NAS WHITING FIELD
MILTON, FLORIDA



Notes:

■ = COMPLETE EXPOSURE PATHWAY

1 = There is no surface water or sediment present at Sites 05A, 07, 29, and PSC 1485C.

represent a major exposure pathway because fur, feathers, and chitinous exoskeletons probably minimize transfer of contaminants across dermal tissue. In addition, little information is available (e.g., absorption factors) to evaluate dermal exposures to wildlife. More importantly, a large portion of the potentially impacted surface area is concrete, minimizing soil exposures of all types.

Volatile constituents could be present in some site soils and soil-bound contaminant re-suspension may occur; however, the potentially impacted surface areas were primarily located in paved areas. Although the chemicals from the sites could potentially be transported in surface or groundwater, there is no surface water or sediment at Sites 05, 07, and 29. Therefore, these exposure pathways are incomplete. Inhalation does not represent a significant exposure pathway because air contaminant concentrations are assumed quite low, even for burrowing wildlife. The inhalation exposure route is generally only relevant after a spill of a volatile chemical. In addition, inhalation ecotoxicity data for chronic exposure are lacking. Hence, the air pathway was not considered for ecological receptors.

Selection of Analytes to be Investigated

Analytes included in the SERA for quantitative analysis were all VOCs, SVOCs, pesticides, PCBs, and/or inorganic chemicals detected in the surface soil samples collected at Sites 05, 07, 29, and 38.

Calcium, magnesium, potassium, and sodium were excluded as analytes to be evaluated because they are essential nutrients. They are toxic only in extremely high concentrations. Due to the scarcity of data for these essential nutrients, it would not be possible to develop ranges of toxicity for them, even at high concentrations. The limited toxicity data available indicate high dietary intake of these nutrients is well-tolerated.

Assessment and Measurement Endpoints

As discussed in USEPA ERA Guidance (USEPA, 1997) one of the major tasks in preliminary problem formulation is the selection of preliminary assessment and measurement endpoints. An assessment endpoint is defined as "an explicit expression of actual environmental values that are to be protected". Measurement endpoints are "measurable ecological characteristics that are related to the valued characteristic chosen as the assessment endpoint". USEPA Region IV has specified assessment endpoints for the screening-level assessment be broad and generic. For this SERA, the assessment endpoint was the protection of terrestrial biota growth, survival, and reproduction from the adverse effects of chemicals.

As indicated above, measurement endpoints (also referred to as “measures of effects”) are related to assessment endpoints, but these endpoints are more easily quantified or observed. In essence,

measurement endpoints serve as surrogates for assessment endpoints. While declines in populations and shifts in community structure can be quantified, studies of this nature are generally time-consuming

and difficult to interpret. However, measurement endpoints indicative of observed adverse effects on individuals are relatively easy to measure in toxicity studies and can be related to the assessment endpoint.

For surface soil, the measurement endpoints were chemical concentrations in surface soil associated with adverse effects on growth, survival, and reproduction of soil invertebrates/plants (surface soil screening levels). The measurement endpoints incorporate, to the fullest extent possible, the assessment endpoints.

1.4.2.2.2 Preliminary Ecological Effects Evaluation

For this SERA, EPCs of detected analytes in surface soil were compared to ecologically-based guidelines to determine if they will be selected as COPCs. Surface soil screening levels for this assessment were USEPA Region IV ecological screening levels (USEPA, 2000). When screening levels were available for different species of the same metal, the screening level for the most toxic form was used, such as those for hexavalent chromium and methyl mercury.

1.4.2.2.3 Preliminary Exposure Estimate

Data used to obtain exposure point chemical concentrations in this SERA were obtained from analyses of surface soil samples collected at Sites 05, 07, and 29 as part of this investigation. All surface soil data used quantitatively in this SERA are presented in the soil assessment section for each site. For this screening assessment, the maximum concentrations of chemicals in surface soil were used as the EPCs.

1.4.2.2.4 Preliminary Risk Calculation

As identified by USEPA (1997), the preliminary risk calculation step in the SERA process compares the maximum concentrations of chemicals in each medium to USEPA Region IV screening levels. The ratio of the exposure point chemical concentration to the screening level is called the HQ, and is defined as follows:

$$HQ_i = EPC_i/ESG_i$$

where: HQ_i = Hazard Quotient for analyte "i" (unitless)
EPC_I = Exposure Point Concentration for analyte “I” (µg/kg or mg/kg)
ESG_i = Ecological Screening Guideline for analyte "i" (µg/kg or mg/kg)

When the ratio of the EPC to its respective guideline exceeded 1.0, adverse impacts were considered possible, and the chemical was selected as a COPC. The HQ value should not be construed as being probabilistic; rather, it is a numerical indicator of the extent an EPC exceeds, or is less than a guideline. When HQ values exceeded 1.0, it was an indication ecological receptors were potentially at risk. Additional evaluation or data may be necessary to confirm with greater certainty whether ecological receptors are actually at risk, especially since most screening-level guidelines are conservatively derived. The use of HQs is probably the most common method used for risk characterization in ERAs. Advantages of this method, according to Barnthouse et al. (1986), include the following:

- The HQ method is relatively easy to use, is generally accepted, and can be applied to any data.
- The method is useful when a large number of chemicals must be screened.

This method of risk characterization has some inherent limitations. One primary limitation is a "no/maybe" method for relating toxicity to exposure. In other words, it uses single values for exposure concentrations and guidelines. The HQ method does not account for the variability in either of these parameters, or for incremental or cumulative toxicity.

The comparisons described above are presented in screening tables for surface soil to select COPCs from comparison to screening levels. Screening tables include the frequency of detection for each analyte, the maximum EPC, the chemical-specific screening levels, and HQs.

1.4.2.2.5 Step 3A Overview

The use of conservative guidelines and maximum detected concentrations as a starting point for assessing risks in the screening-level assessment is necessary to ensure potential risks are not underestimated. However, the use of only a comparison of conservative guidelines to maximum detected concentrations has severe limitations as a tool for determining the need, the nature, and magnitude of, additional ecological work, and/or a complex BERA.

The undertaking of costly additional ecological analyses must be weighed against benefits, especially in such cases where remedial alternatives are limited or do not exist. Moreover, the environment may suffer as sites of lesser ecological significance are given the same priority as sites of clearly greater ecological concern. For these reasons, the consideration of other relevant factors was employed as part of this assessment. USEPA (USEPA, 1998) and the Navy (DON, 1999) consider the evaluation of these factors as part of Step 3 in the 8-step process, or “Step 3A, Refinement of Contaminants of Potential Concern.” The Navy has specified Step 3A be conducted following all SERAs at its Bases. USEPA Region IV USEPA (2000) has indicated Step 3A assessments can be submitted with the SERA. The factors were used as part of Step 3A in this SERA include the following, and are described in detail below:

- Frequency of detection and spatial analysis of detections
- Magnitude of HQ values
- Alternate benchmarks/toxicological information
- Background concentrations

Frequency of Detection and Spatial Analysis of Detections/Magnitude of HQ Values

The frequency of detection and spatial analysis of COPC detections were evaluated as part of the Step 3A Refinement. Evaluation of these items allows for determination of the area of potential risks. The magnitude of the HQs was also evaluated. Risks are possible if an HQ is greater than or equal to unity regardless of the magnitude of the HQ. However, the magnitude of effects to ecological receptors cannot be inferred based on the magnitude of the HQ. Rather, an HQ greater than 1.0 simply indicates the dose used to derive the toxicity reference value was exceeded.

Alternate Benchmarks/Toxicological Information

USEPA Region IV soil screening levels are designed to be conservative. Therefore, less conservative soil benchmarks were used in the Step 3A Refinement for COPCs from the soil screening. These alternate benchmarks include the Dutch Intervention Values and Target Values (MHSPE, 1994), the Canadian Soil Quality Guidelines (CCME, 1997), the Oak Ridge National Laboratory (ORNL) Toxicological Benchmarks for Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates (Efroymson et al., 1997a), and the ORNL Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants (Efroymson et al., 1997b). A detailed discussion of the alternate benchmarks is presented in Appendix A of this report.

Toxicity data and information from various sources in the literature were also used in Step 3A to evaluate potential risks for each COPC. These sources include the United States Fish and Wildlife Service (USFWS) Chemical Hazard Reviews, commonly referred to as the “Eisler” publications, and ecotoxicology journals.

Background Concentrations

Chemical concentrations detected at NAS Whiting Field were compared to two times the site-specific background concentrations for Troup loamy sand, as presented in the GIR, RI and FS (ABB-ES, 1998a and 1996b).

Additionally, elevated concentrations of several inorganics (aluminum, arsenic, iron, manganese, and vanadium) in the soil at NAS Whiting Field have been attributed to natural occurrences, unless previous site activities indicate a possible source for the elevated concentration of these specific inorganics. Refer

to Appendix B of this report for the position papers addressing the elevated concentrations of these specific inorganics submitted by TtNUS, and for the concurrence letters from FDEP. As a result, if elevated concentrations of these specific inorganics are present at a site, but previous site activities do not indicate a source, then the inorganic was eliminated from further consideration as a COPC.

Step 3A Overview Summary/Weight of Evidence Approach

Although analytes were automatically selected as COPCs if their maximum concentration HQ exceeded 1.0 after the screening in Steps 1 and 2, a "weight-of-evidence" approach was used as part of Step 3A to determine the extent of potential risks (USEPA, 1997). Screening-level and Step 3A uncertainties are presented in the following section. Conclusions regarding the potential risks associated with Sites 05, 07, and 29, and recommendations for additional ecological study or remedial considerations after Step 3A are presented in the summary and conclusions section for each site.

1.4.2.2.6 Screening-level and Step 3A Uncertainty Analysis

Uncertainty is associated with all aspects of the SERA process. This section provides a summary of the general uncertainties involved in each step of the SERA process, with a discussion of how they may affect the final risk values and conclusions. Several of the sources of uncertainty discussed below overlap with the Step 3A considerations described earlier. Site-specific uncertainties are discussed in the following paragraphs.

Uncertainty in the Preliminary Problem Formulation

Measures of effects (i.e., measurement endpoints) are used to evaluate the assessment endpoints selected for the SERA. For the most part, the measures of effects are not the same as the assessment endpoints. Therefore, the measures are used to predict effects to the assessment endpoints by selecting surrogate species for evaluation. For example, mortality of an earthworm may be used to assess mortality of the soil invertebrate population. However, predicting mortality to an earthworm may either under- or overprotect the soil invertebrate population, resulting from differences in toxicity, food preferences, etc. between different species.

Uncertainty in the Ecological Effects Characterization

Risks to reptiles and amphibians were not evaluated because exposure factors and toxicity data, as well as the habitat at the sites, are very limited. Little data for investigating dietary exposures and related risks to reptiles and amphibians are available. USEPA presents input parameters for a small number of reptiles and amphibians, including a few species of turtles and snakes, a newt, and two species of frogs (USEPA, 1993). Nevertheless, the absence of toxicity data for these species precludes modeling of potential risks to them. Therefore, direct conclusions about the potential risks to reptiles and amphibians cannot be made, and only qualitative inferences can be drawn. Because of the relatively low

concentrations of metals and organic compounds detected at Sites 05, 07, 29, and PSC 1485C, widespread risks to reptiles and amphibians are unlikely. Moreover, due to the lack of surface water at the sites, the occurrence of amphibians is expected to be infrequent. Reptiles, not as dependent on water as amphibians, may be present at the site throughout the year, but the lack of diverse habitat is unlikely to support a large reptile population.

Uncertainty in the Exposure Assessment

Uncertainty in the exposure assessment arises mainly in the methods used to obtain EPCs. The maximum detected chemical concentrations were generally used to represent the highest chemical concentration exposure for ecological receptors. If the samples evaluated in this SERA are representative of chemical concentrations associated with the sites, then this approach is conservative and will overestimate potential risks to ecological receptors. The maximum concentration of a chemical in a given medium may have been collected in a "hot spot" of contamination, and may be much higher than the remaining values in the data set. Although use of maximum values is appropriate for screening in a SERA, they may grossly over-estimate potential risks.

The detection limits for site media can also carry uncertainties. In other words, it is possible high detection limits could result in “false negatives,” where concentrations are actually present and could result in potential risks. In these cases, the detection limits are normally higher than the screening levels used, but the detections are treated as non-detects.

Uncertainty in the Risk Calculation

Uncertainty in risk calculation stems, in part, from combining different components of the ERA in this step. Each of those components already contains uncertainty. Thus, uncertainties may be propagated when these components are combined. Uncertainty is associated with the potential for additive, antagonistic, synergistic, or ameliorative effects of chemicals detected in surface soil at Site 05. In most cases, little or no data or methodologies exist for quantifying these types of effects and, thus, they cannot be fully assessed. Even in cases where guidelines for classes of chemicals exist, such as those for total PAHs or total phthalates, uncertainties still remain as to the toxicological interactions of these compounds. Also, in this SERA, receptors were representative of certain guilds and communities. However, these are nonetheless assessments of risks to individual species extrapolated into population and community effects and carries attendant uncertainties.

To try to reduce the overall uncertainty in the RA, the weight-of-evidence approach is used to make risk decisions. This approach uses the results of all aspects of the assessment, including the uncertainties, to make determinations of potential risk.

1.5 REGULATORY SETTING

The Navy IR program was designed to identify and abate or control contaminant migration resulting from past operations at Naval installations, with the goal of expediting and improving environmental response actions while protecting human health and the environment. The IR program is conducted in accordance with Section 120 of the CERCLA of 1980 as amended by the SARA of 1986 and Executive Order 12580. CERCLA requires federal facilities to comply with the act, both procedurally and substantively. SOUTHNAVFACENGCOM is the agency responsible for the Navy IR program in the southeastern United States. Therefore, SOUTHNAVFACENGCOM has the responsibility of processing NAS Whiting Field through the PA, SI, RI/FS, and remedial response selection in compliance with the guidelines of the National Oil and Hazardous Substances Contingency Plan (NCP) [40 Code of Federal Regulations (CFR) 300]. Section 105(a)(8)(A) of SARA required the USEPA to develop criteria to set priorities for remedial action based on relative risk to public health and the environment. To meet this requirement, USEPA has established the Hazard Ranking System (HRS) as Appendix A to the NCP. First promulgated in 1982, the HRS was amended in December 1990, effective March 14, 1991 [55 Federal Register (FR) Number 241:51532-51667], to comply with requirements of Section 105(c)(1) of SARA to increase the accuracy of the assessment of relative risk.

The HRS score for NAS Whiting Field was generated in 1993. The score was sufficient to place NAS Whiting Field on the National Priorities List (NPL). Therefore, in January 1994, USEPA placed NAS Whiting Field on a list of sites proposed for inclusion on the NPL (40 CFR 300: FR 18 January 1994). On May 31, 1994, NAS Whiting Field was placed on the NPL effective June 30, 1994 (40 CFR300; FR 21 May 1994). Consequently, the RI/FS for NAS Whiting Field must follow the requirements of the NCP, as amended by SARA, and guidance for conducting an RI/FS under CERCLA (USEPA, 1998).

Per CERCLA Section 121(d), the Navy will follow all applicable or relevant and appropriate requirements (ARARs) of the State of Florida for all IR program activities at NAS Whiting Field.

1.6 REPORT ORGANIZATION

This RI report is organized into six chapters (Chapters 1.0 to 6.0) plus a final section listing references used in preparing this report. Chapter 1.0 presents the purpose, site description, previous investigations, field investigative methods, data quality, and regulatory setting for the RI at NAS Whiting Field. Chapters 2.0 – 6.0 present site geologic settings, the investigative methodologies used to conduct soil assessments, the nature of contaminants, the data quality, the RAs (human health and ecological), conclusions, and recommendations for Sites 05, 07, 29, 35, and 38, respectively. The Reference section includes the references used in preparing this report. Supporting data are provided in the Appendices.

2.0 SITE 05: THE BATTERY ACID SEEPAGE PIT

Investigations at Site 05 were conducted to determine if pesticide/PCB contamination was present at the Site, and if so, to determine the lateral and horizontal extent of the contamination. This section describes the geologic setting, soil assessments, analytical data evaluations, IRA, conclusion, and recommendation for Site 05A, The Battery Acid Seepage Pit.

2.1 GEOLOGIC SETTING

The soil sampled at Site 05 was characterized to 20 ft bls and is comprised of two layers. The first layer (0 to 6 ft bls) is a sandy-clay. The second layer (6 to 20 ft bls and 5 to 20 ft bls) is a clayey-sand. The soil was previously characterized as Troupe loamy sand [United States Department of Agriculture (USDA), 1980].

2.2 SOIL ASSESSMENT

The soil assessment was conducted on the East side of Building 1478, the area where transformer fluid was most likely emptied. This area was identified based on the location of a doorway and covered porch on the East side of Building 1478. Four surface soil borings were advanced to 2 ft bls (05SS01, 05SS02, 05SS03, and 05SS04) using hand augers, and four subsurface soil borings were advanced (05SB01, 05SB02, 05SB03, and 05SB04) using DPT at Site 05. Refer to Figure 2-1 for surface and subsurface soil boring locations.

2.2.1 Surface Soil Assessment

Surface soil samples (05DSB102, 05DSB202, 05DSB302, and 05DSB402) were collected from each of the surface soil borings at Site 05. These surface soil samples were analyzed for TCL pesticides, TCL PCBs, and TAL inorganics. Analytical results are summarized in Table 2-1. Table 2-2 presents the results of the soil sample leachate (SPLP) analysis. FDEP SCTLs from Chapter 62-777, F.A.C., USEPA PRG (USEPA Region IX, October 1, 1999) values; USEPA RAGS (USEPA Region IV, August 11, 1999) values; and the Background Screening Levels (BSLs) (BSLs; GIR, RI and FS, ABB, January 1998) are shown on Table 2-1. Exceedances of FDEP SCTLs in surface soil samples are displayed in Figures 2-2 and 2-3.

Pesticides/PCBs

Table 2-1 lists three pesticides [Dieldrin, 4,4'-dichlorodiphenyldichoroethylene (DDE), and 4,4'-dichlorodiphenyltrichloroethane (DDT)] and one PCB (Aroclor-1260) detected in two of four surface soil samples collected at Site 05. Aroclor-1260, 4,4-DDE, and 4,4'-DDT were detected above the USEPA

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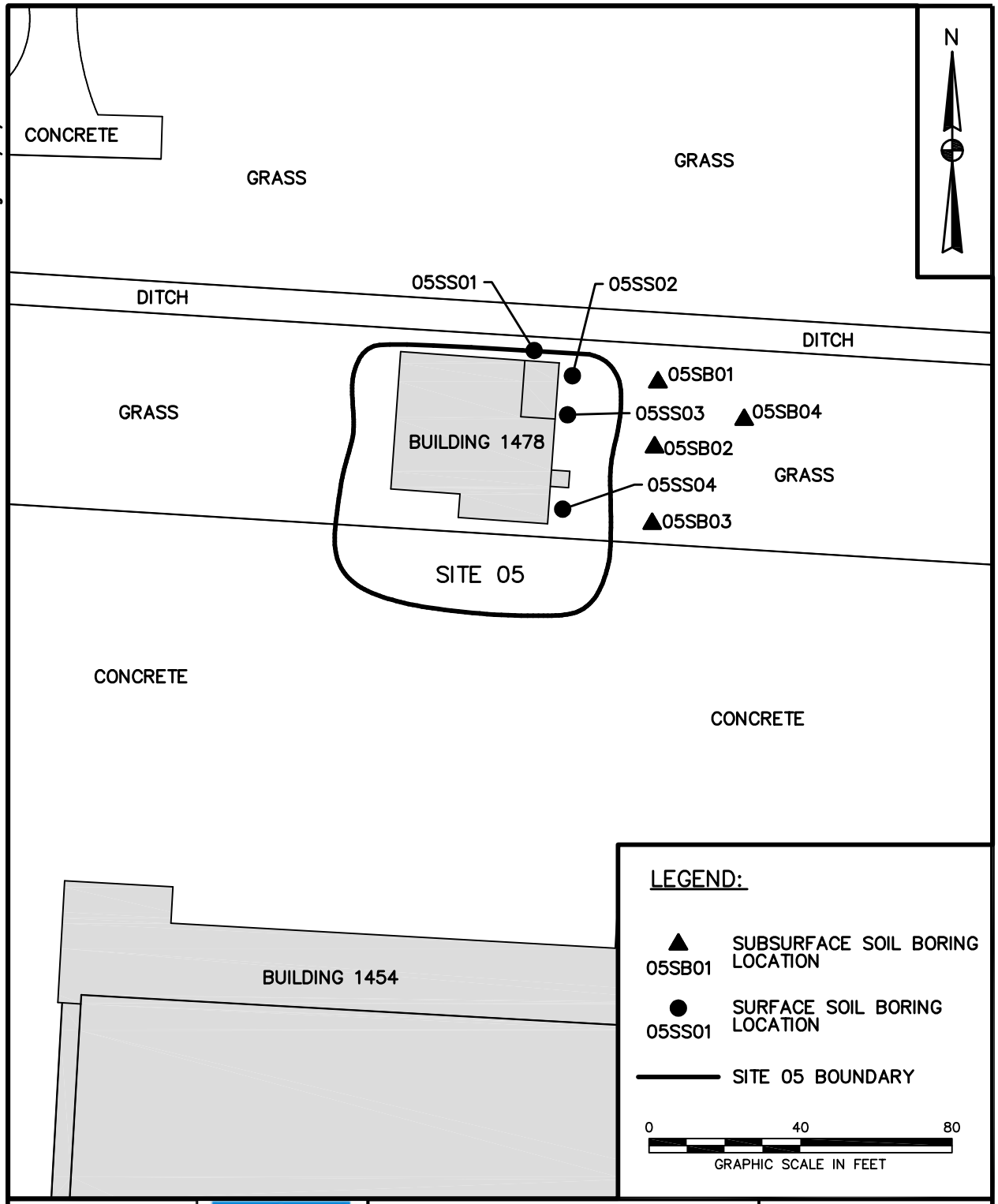

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Table 2-1
ANALYTICAL SUMMARY OF PESTICIDES/PCBs AND INORGANIC ANALYTES DETECTED IN SURFACE SOIL SAMPLES - SITE 05
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA

Sample No.		05DSB102	05DSB202	05DSB302	05DSB402
Sample Location		05SS01	05SS02	05SS03	05SS04
Collect Date		4/14/2000	4/14/2000	4/14/2000	4/14/2000
Sample Depth (bls)		0-2'	0-2'	0-2'	0-2'
	DE1[1]/DE2[2]/LE[3]/BSL[4]/PRGR[5]/PRGI[6]/RAG[7] (mg/kg)				
Pesticides/PCBs[8] (mg/kg)					
Arochlor-1260	0.5/2.1/17/NA/22/1/**0.02**	**0.0238[J]**	**0.0799**	--	--
Dieldrin	0.07/0.3/**0.004**/NA/300/15/**0.0005**	**0.0179**	**0.0026**	--	--
4,4'-DDE	3.3/13/18/NA/1.7/12/**0.0025**	0.00074[J]	**0.018**	--	--
4,4'-DDT	3.3/13/11/NA/1.7/12/**0.0025**	**0.0031[J]**	**0.0078[J]**	--	--
TAL Metals[9] (mg/kg)					
Aluminum	72000/*/***/**15848**/76000/100000/**50**	6740	10300	**22300**	**31600**
Arsenic****	**0.8**/**3.7**/29/**3.2**/**0.39**/**2.7**/10	--	--	**3.1**	**4.2**
Barium	110**/87000/1600/**23.2**/5400/100000/165	23	**33.1**	20	18.2
Calcium	NA/NA/NA/**396**/NA/NANA	315	166	130	**719**
Chromium	210/420/38/**11**/30/64/**0.4**	--	--	**20.5**	**21.5**
Cobalt	4700/110000/***/3/4700/100000/20	0.57	1.4	1	1.5
Copper	110**/76000/***/**9.4**/2900/76000/40	**11.8**	**10.7**	**27.1**	**10.2**
Iron	23000/480000/***/**8832**/23000/100000/**200**	**7130**	**5670**	**12600**	**17400**
Lead	400/920/***/**11.4**/400/1000/**50**	**133**	**122**	**23.6**	**14.4**
Magnesium	NA/NA/NA/**268**/NA/NA/NA	174	179	241	**294**
Manganese	1600/22000/***/392/1800/32000/**100**	16	**184**	75.7	**123**
Mercury	3.4/26/2.1/**0.12**/23/610/**0.1**	**0.14**	--	--	--
Nickel	110**/28000/130/7.2/1600/41000/30	2.6	3.3	5.2[J]	6[J]
Potassium	NA/NA/NA/177/NA/NA/NA	--	--	--	--
Selenium	390/10000/5/**0.46**/690/10000/**0.81**	--	--	**2.1[J]**	**2.5[J]**
Silver	390/9100/17/0.7/390/10000/2.0	0.15	--	--	--
Sodium	NA/NA/NA/406/NA/NA/NA	206	74.5	126[J]	114[J]
Vanadium	**15****/7400/980/**21.8**/550/14000/**2.0**	**16.4**	**15.4**	**32.5**	**44.9**
Zinc	3400/53000/**19**/**15.4**/23000/100000/50	**27.7**	**19.1**	**15.9**	**16.3**

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4] Background screening value from Table 3-9, General Information Report,Remedial Investigation and Feasability Study, ABB, January 1998.
[5/6] USEPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[7] USEPA Region 4 Risk Assessment Guidance Ecological Screening Values.
[8] SW-846 8081A and 8082, [9] SW-846 6010B and 7470A/7471
* Contaminant is not a health concern for this default exposure scenario. ** Direct exposure value based on acute toxicity considerations.
*** Leachability values may be derived using the SPLP Test to calculate site-specific SCTLs or may be determined using TCLP in the event oily wastes are present.
**** Arsenic exceeds DE1 and/or DE2 criteria; however, FDEP has agreed that arsenic is naturally ocuring at this site (Appendix B).
Bold indicates the exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
[J] Indicates the presence of a compound or analyte at an estimated concentration. -- = not detected NA = not applicable

TABLE 2-2
SUMMARY OF PESTICIDES/PCBS AND INORGAINC ANALYTES DETECTED IN LEACHATE SAMPLES-SITE 05
NAVAL AIR STATION WHITING FIELD

Sample No.		05SS0202	05SS0402
Sample Location		05SS02	05SS04
Collect Date		8/14/2001	8/14/2001
	Groundwater Criteria[1]/ Primary[2]/ Secondary[3]		
Pesticides[4] (ug/L)			
Dieldrin	0.005/NA/NA	--	0.00080
Metals[5] (ug/L)			
Aluminum	**200**/NA/**50-200**	**1400**	**1600**
Cobalt	420/NA/NA	**--**	--
Copper	1000/NA/1000	--	--
Iron	**300**/NA/**300**	**950**	**980**
Lead	**15**/NA/NA	--	**16**
Manganese	50/NA/50	9.8[J]	39[J]
Zinc	5000/NA/5000	--	--

[1] Groundwater criteria from Chapter 62-777, F.A.C.
[2]EPA 40 CFR Primary Drinking Water Standard
[3]EPA 40 CFR Secondary Drinking Water Standard
[4] SW-846 8081A, [5] SW-846 6010B
Bold indicates an exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

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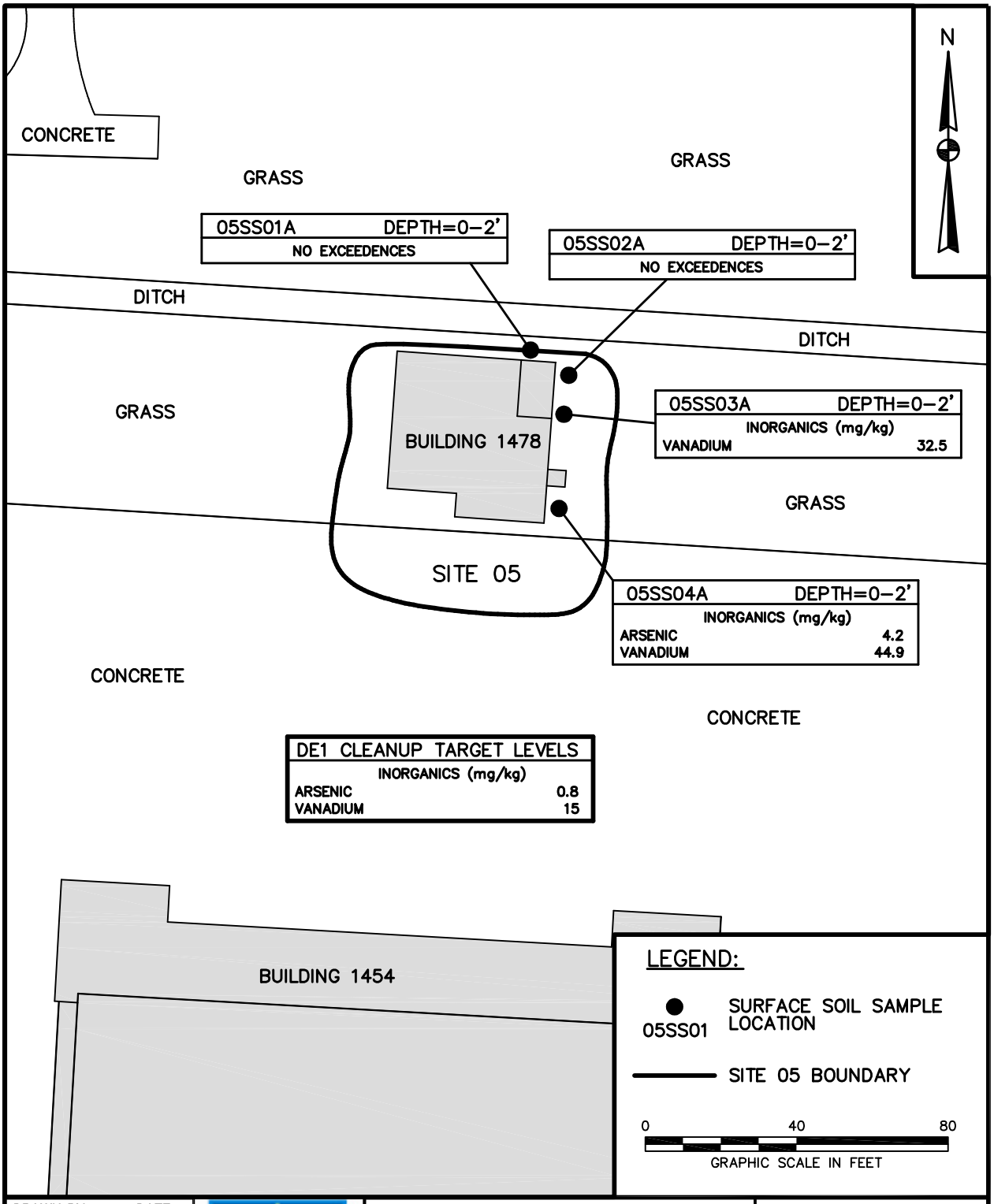

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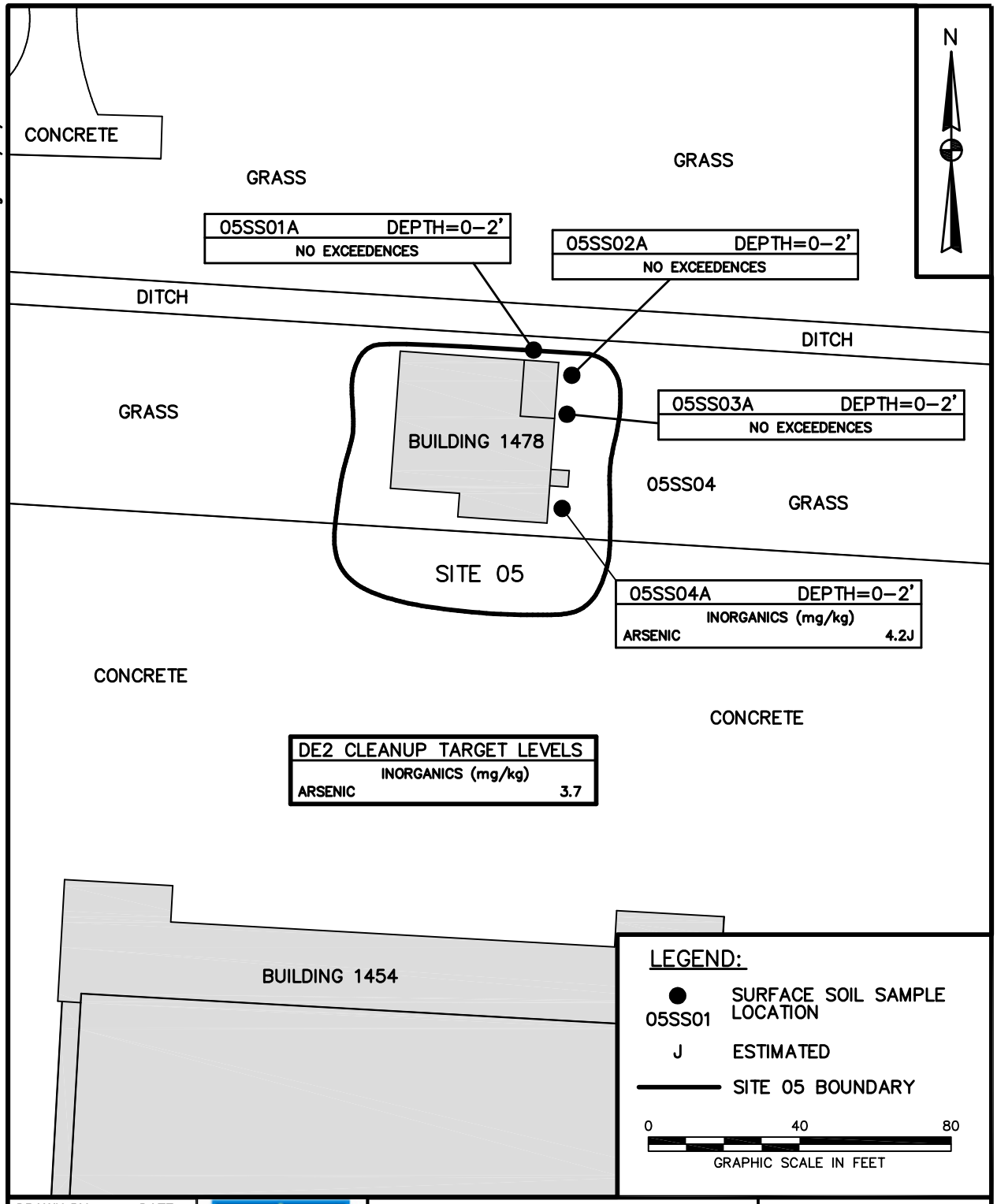

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RAGS. Dieldrin was detected above the USEPA RAGS and FDEP Leachability (LE) SCTL (0.004 mg/kg) in sample 05DSB102 (0.0179 mg/kg). SPLP analysis was conducted on two surface soil samples (05SS0202 and 05SS0402) to determine the leaching properties of the soil at the Site. Although dieldrin was detected in sample 05DSB202 above the FDEP LE SCTL, it was not detected in the sample 05SS0202 leachate analysis (Table 2-2). Dieldrin detected at these low level concentrations will not likely leach from surface soil.

2.2.2 Inorganics

Table 2-1 lists 19 analytes detected in the surface soil. Thirteen analytes (aluminum, barium, calcium, cobalt, copper, iron, lead, magnesium, manganese, nickel, sodium, vanadium, and zinc) were detected in all surface soil samples. Three analytes (arsenic, chromium, and selenium) were detected in two surface soil samples (05DSB302 and 05DSB402), and two analytes (mercury and silver) were detected in one surface soil sample (05DSB102).

Thirteen analytes (aluminum, arsenic, barium, calcium, chromium, copper, iron, lead, magnesium, mercury, selenium, vanadium, and zinc) were detected above the BSLs. Aluminum, chromium, iron, lead, mercury, selenium and vanadium were also detected above the USEPA RAGS. Additionally, vanadium was detected above the FDEP DE1 SCTL (15 mg/kg) in two samples [05DSB302 (32.5 mg/kg) and 05DSB402 (44.9 mg/kg)]. Zinc was detected above the FDEP LE SCTL (19 mg/kg) in two samples [05DSB102 (27.7 mg/kg) and 05DSB202 (19.1 mg/kg)]. Zinc was not detected in the sample leachate analysis (SPLP) of two surface soil samples (05SS0202 and 05SS0402; Table 2-2). Zinc detected at these low level concentrations will not likely leach from surface soil.

Several analytes (aluminum, cobalt, copper, lead, and manganese) detected in the surface soil do not have specific FDEP LE SCTLs for comparison. LE SCTLs for these analytes are determined on a site-specific basis by SPLP analysis. SPLP analysis was conducted on two surface soil samples (05SS0202 and 05SS0402) to determine if any of these analytes may leach from the surface soil to the groundwater. Aluminum and lead were detected in the SPLP leachate above the FDEP Groundwater Cleanup Target Levels (GCTLs) (Table 2-2). Elevated SPLP leachate aluminum concentrations are attributable to the naturally occurring concentrations of aluminum in the soil; however, a possible adverse impact on the groundwater from lead exists. The impact of subsurface soil leaching to the groundwater will be addressed in the Site 40 RI Report.

2.2.3 Subsurface Soil Assessment

Four subsurface soil borings (05SB01, 05SB02, 05SB03, and 05SB04) were advanced at Site 05. Surface soil samples for pesticide/PCB analysis were collected from 0-1 ft bls and the results reviewed to

determine if impact on the subsurface soil was likely. The surface soil contained no pesticides/PCBs above FDEP DE1 or DE2 SCTLs. The leachate analysis on the surface soil samples verified the levels of pesticides/PCBs detected in the surface soil would not leach to the subsurface soil. This is further supported by the inherent characteristic of PCBs to be insoluble in water. Additionally, pesticides/PCBs were detected at a geologically similar site, Site 6; however, pesticides/PCBs were not detected in the subsurface soil. Pesticides/PCBs again would not, therefore, be expected in the subsurface soil at Site 05. Because of these determinations, the subsurface soil below the 0-1 ft bls interval was not sampled.

2.2.4 Soil Assessment Summary

Three pesticides, 1 PCB, and 19 inorganic analytes were detected in the surface soil on the northeast side of Building 1478. Aroclor-1260, 4,4'-DDT, 4,4'-DDE, and dieldrin were detected above the associated USEPA Region IV RAGS. Aluminum, iron, vanadium, lead, selenium, chromium, and mercury were detected above the associated BSLs and USEPA Region IV RAGS. Dieldrin and zinc were detected above the FDEP LE SCTLs. Arsenic and iron were detected above FDEP DE1 and DE2 SCTLs and USEPA Region IX Residential and Industrial PRG SCTLs.

2.3 DATA EVALUATION

2.3.1 Data Validation

Refer to Appendix D (CD-ROM) of this report for the complete data validation report. This section summarizes the data validation remarks for Site 05 analytical data.

Pesticides/PCBs

4,4'-DDT was qualified as estimated (J) in samples 05DSB102 and 05DSB202 due to calibration noncompliance. The recovery in the calibration for 4,4'-DDT was low. The detected concentration in the samples may be biased low. Even though the result may be biased low, the difference in the result (0.0031 mg/kg) and the regulatory limits, the lowest being 1.7 mg/kg, is large. Therefore, a non-biased low result will not exceed the regulatory limits.

Aroclor-1260 was qualified as estimated (J) in sample 05DSB102 because the detected concentration was below the reporting limit (RL), but above the MDL.

Inorganics

In samples 05DSB302 and 05DSB402 interfering analytes aluminum and/or iron were present at significant concentrations. Due to these two analytes, reported concentrations for nickel, selenium, and sodium were qualified estimated (J). Nondetects were qualified estimated (UJ). The interference affect of aluminum and iron may have a biased low affect on the detected concentrations of nickel, selenium, and sodium.

Several analytes in all the samples were qualified as nondetects (U) due to laboratory blank contamination. Inorganic contamination in laboratory blanks is common. The concentration of inorganic contamination in the blank is well below the regulatory limits. Therefore, analytes in a sample qualified for blank contamination are well below the regulatory limits and in no way affect the quality of the data. The qualification filters out false-positive results.

2.3.2 Risk Assessment

2.3.2.1 Human Health Risk Assessment

A screening level HHRA has been conducted as part of the RI report for Site 05 at NAS Whiting Field. The purpose of the HHRA is to characterize the risks to humans associated with the potential exposures to chemicals in surface soil. This HHRA was conducted in accordance with procedures as outlined in Section 1.4.3.

2.3.2.1.1 Selection of COPCs for Site 05

Table 2-3 lists the candidate COPCs (those with at least one detection) and shows those selected (Bold) as initial surface soil COPCs for the risk evaluation. The initial COPCs included six carcinogenic chemicals; therefore, the carcinogenic screening levels were divided by six. The following chemicals were identified as COPCs for surface soil at Site 05: aroclor-1260, dieldrin, and chromium.

2.3.2.1.2 Exposure Assessment

This exposure assessment was conducted to identify the human pathways of potential exposure, the magnitude of potential exposure, and the frequency and duration of exposure.

Exposure Setting Characterization

Section 1.2 describes the regional and site-specific environmental setting of Site 05. The site is non-residential and is expected to remain non-residential for the near future.

Identification of Potential Receptors and Exposure Pathways

The receptors to be evaluated were selected based on the current and realistic future use of the sites and surrounding areas.

TABLE 2-3
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
SITE 05A - SURFACE SOIL
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: Site 5A

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Region 9 PRG [3]	Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Pesticides (mg/kg)																
72-55-9	4,4'-DDE	PEST	0.00074	J	0.018		05SS202	2/4	0.0037-0.0038	0.018	Not Avail	0.28 - C	0.55	FL Residential	no	BSL
50-29-3	4,4'-DDT	PEST	0.0031	J	0.0078	J	05SS202	2/4	0.0037-0.0038	0.0078	Not Avail	0.28 - C	0.55	FL Residential	no	BSL
11096-82-5	**Aroclor-1260**	PEST	0.0238	J	0.0799		05SS202	2/4	0.037-0.038	0.0799	Not Avail	0.037 - C	0.083	FL Residential	yes	ASL
60-57-1	**Dieldrin**	PEST	0.0026		0.0179		05SS102	2/4	0.0018-0.0019	0.0179	Not Avail	0.005 - C	0.012	FL Residential	yes	ASL
Metals (mg/kg)																
7429-90-5	Aluminum	M	6740		31600		05SS402	4/4	--	31600	15848	7600 - N	7200	FL Residential	no	AS
7440-38-2	Arsenic	M	3.1		4.2		05SS402	2/4	1.4-2.1	4.2	3.2	0.065 - C	0.13	FL Residential	no	AS
7440-39-3	Barium	M	18.2		33.1		05SS202	4/4	--	33.1	23.2	540 - N	110(s)	FL Residential	no	BSL
7440-70-2	Calcium	M	130		719		05SS402	4/4	--	719	396	NA	NA	--	no	NUT
7440-47-3	**Chromium**	M	20.5		21.5		05SS402	2/4	9.2-10.9	21.5	11	5 - C	35	FL Residential	yes	ASL
7440-48-4	Cobalt	M	0.57		1.5		05SS402	4/4	--	1.5	3	470 - N	470	FL Residential	no	BSL
7440-50-8	Copper	M	10.2		27.1		05SS302	4/4	--	27.1	9.4	290 - N	110(s)	FL Residential	no	BSL
7439-89-6	Iron	M	5670		17400		05SS402	4/4	--	17400	8832	2300 - N	2300	FL Residential	no	AS
7439-92-1	Lead	M	14.4		133		05SS102	4/4	--	133	11.4	400	400	FL Residential	no	BSL
7439-95-4	Magnesium	M	174		294		05SS402	4/4	--	294	268	NA	NA	--	no	NUT
7439-96-5	Manganese	M	16		123		05SS402	4/4	--	123	392	180 - N	160	FL Residential	no	BSL
7439-97-6	Mercury	M	0.14		0.14		05SS102	1/4	0.02-0.05	0.14	0.12	2.3 - N	0.34	FL Residential	no	BSL
7440-02-0	Nickel	M	2.6		6	J	05SS402	4/4	--	6	7.2	160 - N	110(s)	FL Residential	no	BSL
7782-49-2	Selenium	M	2.1	J	2.5	J	05SS402	2/4	0.88-1.5	2.5	0.46	39 - N	39	FL Residential	no	BSL
7440-22-4	Silver	M	0.15		0.15		05SS102	1/4	0.1-0.11	0.15	0.7	39 - N	39	FL Residential	no	BSL
7440-23-5	Sodium	M	74.5		206		05SS102	4/4	--	206	406	NA	NA	--	no	NUT/BKG
7440-62-2	Vanadium	M	15.4		44.9		05SS402	4/4	--	44.9	21.8	55 - N	15(s)	FL Residential	no	AS
7440-66-6	Zinc	M	15.9		27.7		05SS102	4/4	--	27.7	15.4	2300 - N	2300	FL Residential	no	BSL

[1] Maximum concentration used as screening value
[2] The background screening value is twice the average of background concentrations for inorganic analytes.
[3] Based on Superfund Preliminary Remediation Goals, USEPA Region IX, Residential land use (Cancer benchmark value = 1E-06, Hazard Quotient = 0.1) (May 2000)
[4] FL Residential from Technical Report: Development of Soil Cleanup Target Levels for Chapter 62-777, F.A.C. (May 1999)(Cancer benchmark value = 1E-06, Hazard Quotient = 0.1)
[5] Rationale Codes
Selection Reason: Above Screening Levels (ASL)
If one cPAH is selected as a COPC, all are selected (PAH)
Deletion Reason: Maximum detected concentration is below background screening level (BKG)
Essential Nutrient (NUT)
Below Screening Levels (BSL)
Aluminum, arsenic, iron, manganese, and vanadium are determined to be un-related to site activities (AS)
Chemical names in bold indicate that chemical was selected as a COPC

Definitions: NA = Not Applicable
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
COPC = Chemical of Potential Concern
s = direct exposure based on acute toxicity
N = noncarcinogen
C = carcinogen

For both current and future periods for the HHRA, three potential receptors were evaluated for NAS Whiting Field Site 05. These receptors are:

- A site occupational worker. The site occupational worker was assumed to be on site in a commercial/industrial scenario.
- A trespasser or visitor. These individuals may occasionally enter the site with or without proper authorization. Both an adult and an older child were considered.
- An on-site resident. The on-site resident is considered highly unlikely; however, this pathway was considered for purposes of completeness and conservatism.

As described in Section 1.4.3.2, exposure assessment parameters used in this RA are those used to derive the Florida SCTLs and represent only the on-site resident and the site occupational worker.

2.3.2.1.3 Toxicity Assessment

As described in section 1.4.2.1.3, toxicity parameters used in this RA are those used to derive the Florida SCTLs.

Toxicological profiles for each of the COPCs are presented in Appendix F of the Technical Report: Development of SCTLs for Chapter 62-777, F.A.C. (FDEP, 1999). These profiles present a summary of the available literature on carcinogenic and noncarcinogenic effects associated with human exposure to the chemical.

2.3.2.1.4 Risk Characterization

This section contains a summary of the human health risk estimates for Site 05. The methodology used to calculate the risk estimates is provided in Section 1.4.3.4. A media-specific discussion of the estimated non-carcinogenic and carcinogenic risks is provided in the remainder of this section.

2.3.2.1.4.1 Surface Soil – Carcinogenic Risks

Cancer risk estimates and HI calculated for the COPCs are presented in Table 2-4.

The ILCR calculated for the hypothetical future resident and the typical occupational worker (based on Florida SCTLs) are 5.2E-07 and 1.5E-07, respectively. These risk estimates are below the USEPA target risk range and the State of Florida benchmark of 1E-06. The ILCRs for aroclor-1260, dieldrin, and chromium do not exceed 1E-06 for either receptor. There is no primary risk driver. Given the ILCR is at the lower end of the target risk range and considering the FDEP benchmark of 1E-06 is not exceeded, NFA is recommended based on the presence of aroclor-1260, dieldrin, or chromium.

TABLE 2-4
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - SURFACE SOIL
SITE 05A

Chemical of Potential Concern	Concentration (maximum) (mg/kg)	Incremental Lifetime Carcinogenic Risk (ILCR)				Estimated Non-Carcinogenic Hazard Quotient (HQ)				
		FL SCTL[1]	Estimated Residential ILCR	FL SCTL [2]	Estimated Industrial ILCR	Primary Target Organs[3]	FL SCTL or PRG[1][4]	Estimated Residential HQ	FL SCTL or PRG[2][4]	Estimated Industrial HQ
Aroclor-1260	0.0799	0.5	1.6E-07	2.1	3.8E-08	Immunological	NA[5]	NA	NA	NA
Dieldrin	0.0179	0.07	2.6E-07	0.3	6.0E-08	Liver	3.1	0.01	44	4.1E-04
Chromium	21.5	210	1.0E-07	420	5.1E-08	Respiratory	230	0.09	6100	3.5E-03
Total Carcinogenic Risk			5.2E-07		1.5E-07		Total HI	0.10		3.9314E-03

Target Organ Hits - Residential

Total Liver HI = 0.01 Total Respiratory HI = 0.09

Target Organ Hits - Industrial

Total Liver HI = 4.1E-04 Total Respiratory HI = 3.5E-03

1 FL **Residential** SCTL from Technical Report: Development of Soil Clean-up Target Levels for Chapter 62-777, F.A.C. (May 1999)
2 FL **Industrial** SCTL from Technical Report: Development of Soil Clean-up TargetLevels for Chapter 62-777, F.A.C. (May 1999)
3 Target organs from Technical Report: Development of Soil Clean-up TargetLevels for Chapter 62-777, F.A.C. (May 1999)
4 If Florida SCTL is based on cancer risk, the USEPA Region IX PRG for noncarcinogenic health effects is given if available.
5 NA - Not applicable. The USEPA has either not established a cancer slope factor (CSF) or noncarcinogenic reference dose (RfD) for this chemical.
6 Vanadium residential SCTL of 15 mg/kg based on acute exposure. Consequently, a hazard quotient was not calculated. Risk estimates for acute and chronic exposure are discussed in text.
Bold indicates result exceeds 1E-06 for Carcinogenic Risk or 1.0 for Hazard Index
SCTL = Soil Cleanup Target Levels for Chapter 62-777, F.A.C. (May 1999)
PRG = Preliminary Remediation Goals, USEPA Region IX

2.3.2.1.4.2 Surface Soil – Noncarcinogenic Risks

The total HI does not exceed unity (HI = 0.10) when the typical future worker or hypothetical future resident is evaluated. HI calculated on a target organ specific basis for both receptors does not exceed 1 either.

2.3.2.1.5 Uncertainty

The general uncertainties associated with the HHRA are presented in section 1.4.2.1.5. Uncertainties associated with Site 05 specifically are provided in this section.

2.3.2.1.5.1 Uncertainty in COPC Selection

Detected concentrations of dieldrin ranged from 0.0026 mg/kg to 0.0179 mg/kg. This range is similar to detections of dieldrin in the overall NAS Whiting Field surface soil background samples (USDA, 1980) of 0.009 mg/kg to 0.029 mg/kg. These low levels are likely a result of applications of pesticides, mainly fire ant killer, rather than the result of any site activities.

2.3.2.1.5.2 Uncertainty in Exposure Assessment

The maximum detected concentration of each COPC was used to quantify potential risks. As a result of using the maximum concentration, the estimations of potential risk are likely to be overestimated because it is unlikely potential receptors would be exposed to the maximum concentration over the entire site for the assumed exposure period.

2.3.2.2 Ecological Risk Assessment

This section presents the results of the SERA for Site 05. The risk evaluation was performed using the general methodologies presented in Section 1.4.3.2.

2.3.2.2.1 Habitat Description

Section 1.2 of this report presents the site background, site layout, and a general site description. The area within Site 05 is highly industrial, and possesses low quality wildlife habitat. The four surface soil samples were collected in an area approximately 7.5 ft by 45 ft, along the concrete patio (northeastern corner) and eastern perimeter of Building 1487. The area is sparsely covered with turf grass.

2.3.2.2.2 Potential Ecological Receptors and Exposure Pathways

Based on the above description of the site and potential contaminant migration pathways, ecological receptors (e.g., plants and soil invertebrates) could be directly exposed to chemicals in the surface soil. Because of the limited size and habitat of the site, it is unlikely upper trophic level organisms, such as

small mammals and birds, would obtain a significant portion of their food at the site. Therefore, ecological receptors will not be exposed to chemicals in the surface soil indirectly via the food chain (i.e., through the ingestion of plants and invertebrates). Consequently, soil vegetation and invertebrates were selected as assessment endpoints for Site 05.

2.3.2.2.3 Screening Results

This section contains the ecological risk screening conducted for the chemicals detected in the surface soil at Site 05. Four surface soil samples (05DSB102, 05DSB202, 05DSB302, and 05DSB402) collected in May 2000 were evaluated as part of the SERA. The general methodologies used for the exposure assessment and risk characterization are discussed in Section 1.4.3.2 of this report.

Table 2-5 is the screening table for plants and invertebrates exposed to chemicals detected in the surface soil samples. In addition to the summary statistics (e.g., frequency of detection), the table also includes soil background/anthropogenic values, two times the average Base-specific soil background values (ABB-ES, 1996b). The background values were presented for informational purposes only; they were not used for selecting COPCs. In summary, 3 pesticides, 1 PCB, and 19 inorganic analytes were detected in the surface soil samples. The detected pesticides and PCB, as well as four inorganic analytes (total chromium, lead, mercury, and selenium), were selected as surface soil COPCs because the maximum concentrations exceeded BSLs and USEPA Region IV screening levels (Table 2-5).

2.3.2.2.4 Step 3A Discussion

Foodchain Modeling

USEPA Region IV suggests foodchain modeling should be done as part of COPC refinement for screening-level COPCs known to bioaccumulate or biomagnify (USEPA, 2000). However, terrestrial foodchain modeling appears to be inappropriate at Site 05 for several reasons. The surface soil evaluated as part of this sampling investigation covers a moderately vegetated area approximately 7.5 ft by 45 ft around the east-northeastern perimeter of Building 1487. This area is several times smaller than the home ranges of any small mammals likely to be present in the Building 1487 area. In addition, a portion of this area is covered by a concrete patio. Therefore, the limited size and habitat of the site will not support small mammals or birds, and does not warrant foodchain modeling. For these reasons, terrestrial foodchain modeling will add little to the decision-making process at Site 05, and will not be performed.

TABLE 2-5

ECOLOGICAL RISK SCREENING - SURFACE SOIL
SITE 05 - THE BATTERY ACID SEEPAGE PIT
NAS WHITING FIELD, MILTON, FLORIDA

Chemical	Frequency of Detections	Range of Detections	Location of Maximum Detection	Average of Positive Detections	Concentration Used for Screening (1)	Base-Specific Soil Background/ Anthropogenic Value (2)	Region IV Surface Soil Screening Value	Ecological Effects Quotient	COPC Flag	Rationale for Contaminant Deletion or Selection
PESTICIDES/PCBs (mg/kg)										
4,4'-DDE	2/4	0.00074 - 0.018	05SS202	0.0094	0.018	--	0.0025	7.2	Yes	ASL
4,4'-DDT	2/4	0.0031 - 0.0078	05SS202	0.0055	0.0078	--	0.0025	3.1	Yes	ASL
Dieldrin	2/4	0.0026 - 0.0179	05SS102	0.010	0.0179	--	0.0005	35.8	Yes	ASL
Aroclor-1260	2/4	0.0238 - 0.0799	05SS202	0.052	0.0799	--	0.02	4.0	Yes	ASL
INORGANICS (mg/kg)										
Aluminum	4/4	6740 - 31600	05SS402	17735	31600	15848	50	632	No	AS
Arsenic	2/4	3.1 - 4.2	05SS402	3.7	4.2	3.2	10	0.42	No	BSL
Barium	4/4	18.2 - 33.1	05SS202	23.6	33.1	23.2	165	0.20	No	BSL
Calcium	4/4	130 - 719	05SS402	333	719	392	NA	NA	No	NT
Chromium (total)	2/4	20.5 - 21.5	05SS402	21.0	21.5	11.0	0.4	53.8	Yes	ASL
Cobalt	4/4	0.57 - 1.5	05SS402	1.1	1.5	3.0	20	0.075	No	BSL
Copper	4/4	10.2 - 27.1	05SS302	15.0	27.1	9.4	40	0.68	No	BSL
Iron	4/4	5670 - 17400	05SS402	10700	17400	8832	200	87	No	AS
Lead	4/4	14.4 - 133	05SS102	73.3	133	11.4	50	2.7	Yes	ASL
Magnesium	4/4	174 - 294	05SS402	222	294	268	NA	NA	No	NT
Manganese	4/4	16 - 184	05SS202	100	184	392	100	1.84	No	AS
Mercury	1/4	0.14	05SS102	0.14	0.14	0.12	0.1	1.4	Yes	ASL
Nickel	4/4	2.6 - 6	05SS402	4.3	6.0	7.2	30	0.20	No	BSL
Selenium	2/4	2.1 - 2.5	05SS402	2.3	2.5	0.46	0.81	3.1	Yes	ASL
Silver	1/4	0.15	05SS102	0.15	0.15	--	2.0	0.075	No	BSL
Sodium	4/4	74.5 - 206	05SS102	130	206	406	NA	NA	No	NT
Vanadium	4/4	15.4 - 44.9	05SS402	27.3	44.9	21.8	2.0	22.45	No	AS
Zinc	4/4	15.9 - 27.7	05SS102	19.8	27.7	15.4	50	0.55	No	BSL

Footnotes:
1 The maximum detected concentration was used for screening purposes.
2 The value presented is 2X the average Base-specific background value for troup loamy soil [General Information Report (GIR), Remedial Investigation and Feasibility Study (ABB-ES, 1996)].

Note:
Shading indicates that the chemical was retained as a COPC, the background concentration was greater than the concentration used for screening, and/or the ecological effects quotient was greater than 1.0.

Definitions:
COPC = Chemical of Potential Concern
NA = Not Applicable / Not Available
PCBs = Polychlorinated Biphenyls
-- = Base-Specific Background Value Not Available

Rationale Codes:
For Selection as a COPC:
ASL = Above COPC Screening Level
NTX = No Toxicity Information Available

For Elimination as a COPC:
BSL = Below COPC Screening Level
NT = Nontoxic

AS = Aluminum, arsenic, iron, manganese, and vanadium are determined to be un-related to site activities.

Soil Plants and Invertebrates

4,4'-DDE and 4,4'-DDT

4,4'-DDE and 4,4'-DDT were retained as COPCs because the maximum detected concentrations (0.018 and 0.0078 mg/kg, respectively) exceeded the USEPA Region IV screening level of 0.0025 mg/kg for the total concentration of 4,4'-dichlorodiphenyldichoroethane (DDD), 4,4'-DDE and 4,4'-DDT. The screening level is the Dutch Target Value, indicative of the soil quality level ultimately desired (MHSPE, 1994); however, this screening level is very conservative. The concentrations of 4,4'-DDE and 4,4'-DDT detected at Site 05 are 56 and 128 times less, respectively, than the Dutch Intermediate Value of 1.0 mg/kg (for each individual pesticide) (see Appendix A). Based on a recent discussion of the Dutch Values in Swartjes (1999), a concentration greater than the Target Value, but less than the Intermediate Value, suggests the soil may be slightly contaminated, but requires no further investigation. Due to the low detected concentrations, these pesticides will not be retained as COPCs in Step 3A for Site 05.

Dieldrin

Dieldrin was retained as a COPC because the maximum detected concentration (0.0179 mg/kg) exceeded the USEPA Region IV screening level of 0.0005 mg/kg (Dutch Target Value). However, the maximum detected concentration was 112 times less than the Dutch Intermediate Value of 2.0 mg/kg for the total concentration of aldrin, endrin, and dieldrin (see Appendix A). According to the discussion in Swartjes (1999), a concentration greater than the Target Value, but less than the Intermediate Value suggests the soil may be slightly contaminated, but requires no further investigation. Due to the low detected concentrations, dieldrin will not be retained as a COPC in Step 3A for Site 05.

Aroclor-1260

Aroclor-1260 was retained as a COPC because the maximum detected concentration (0.0799 mg/kg) exceeded the conservative USEPA Region IV screening level of 0.02 mg/kg for total PCBs (the Dutch Target Value). However, the maximum detected concentration was 6 times less than the Dutch Intermediate Value for total PCBs of 0.51 mg/kg (see Appendix A). According to the discussion in Swartjes (1999), a concentration greater than the Target Value, but less than the Intermediate Value, suggests the soil may be slightly contaminated, but requires no further investigation. In addition, the maximum detected concentration is less than the soil phytotoxicity value of 40 mg/kg (Efroymson et al., 1997b), and the Canadian Soil Quality Guideline for residential/parkland areas of 1.3 mg/kg (CCME, 1999). Due to the low detected concentrations, Aroclor-1260 will not be retained as a COPC in Step 3A for Site 05.

Chromium (total)

Chromium (total) was retained as a COPC because the maximum detected concentration (21.5 mg/kg) exceeded the USEPA Region IV screening level of 0.4 mg/kg, based on an earthworm study where

potassium dichromate [Cr(IV)] was added to the soil as a solution (Efroymson et al., 1997a). However, chromium typically occurs in soil as Cr(III) (ATSDR, 1987), where it is stable in most soil types (CCME, 1997), and typically thought to be nontoxic (Eisler, 1986). It is likely most, if not all, of the chromium detected in the soil samples at the site was Cr(III). In addition, the concentrations of total chromium detected at Site 05 are less than all of the alternate benchmarks and toxicity data presented in Appendix A. For these reasons, chromium (total) will be dropped from further consideration as a Step 3A COPC at Site 05.

Lead

Lead was retained as a COPC because the maximum detected concentration (133 mg/kg) exceeded the USEPA Region IV screening level of 50 mg/kg (ORNL benchmark for plants). This screening level was based on studies where lead chloride was added to soil as a solution and is expected to be more bioavailable than lead in the soil at the sites. Based on the alternate benchmarks and toxicity data presented in Appendix A, the maximum detected concentration of lead is not expected to pose any risk to earthworms, but may reduce weight, yield, and root elongation in various plants (CCME, 1997). However, the high lead concentrations were detected in samples 05SS01 and 05SS02 located adjacent to the concrete patio on the northeastern corner of Building 1487. The area is small, and sparsely covered with grass. Because of the relatively low detected concentrations of lead and the limited potential impact to plants and invertebrates, lead will be dropped from further consideration as a Step 3A COPC at Site 05.

Mercury

Mercury was retained as a COPC because the only mercury detection (0.14 mg/kg) slightly exceeded the USEPA Region IV screening level of 0.1 mg/kg (ORNL benchmark for earthworms). This conservative screening level is based on an earthworm study where mercury was added to the soil as a solution and expected to be more bioavailable than mercury in the soil at the site (Efroymson et al., 1997a). In addition, the maximum detection of mercury in the soil at the site is less than all the alternate benchmarks and toxicity data presented in Appendix A. Because mercury was detected in only one sample at a concentration only slightly above the USEPA Region IV screening level, mercury will be dropped from further consideration as a Step 3A COPC at Site 05.

Selenium

Selenium was retained as a COPC because the maximum detected concentration (2.5 mg/kg) exceeded the USEPA Region IV screening level of 0.81 mg/kg (Dutch Maximum Permissible Concentration). However, the maximum detected concentration is less than the Dutch Intervention Value of 5 mg/kg (Swartjes, 1999), the ORNL benchmark for earthworms of 70 mg/kg, and the ORNL benchmark for soil microorganisms and microbial processes of 100 mg/kg (Efroymson et al., 1997a). Additionally, selenium

was detected in only two samples along the perimeter of Building 1487. Because of the limited area and relatively low concentration, selenium is not expected to pose unacceptable risks to ecological receptors, and will not be considered further as a Step 3A COPC.

2.3.2.2.5 Step 3A Summary and Conclusions

A SERA was performed for Site 05, The Battery Acid Seepage Pit. Several metals and organic chemicals were detected in surface soil at maximum concentrations exceeding conservative screening levels and, thus, they were selected as COPCs. These COPCs were assessed in a less conservative Step 3A evaluation.

The results of the Step 3A analysis indicate the chemicals detected in the surface soil at Site 05 do not pose unacceptable risks to ecological receptors, and will not be evaluated further.

2.4 CONCLUSION AND RECOMMENDATION

2.4.1 Conclusion

Surface soil samples were collected and analyzed for pesticides, PCBs, and inorganics. Three pesticides, 1 PCB, and 19 inorganic analytes were detected in the surface soil. An HHRA was conducted for Site 05 to determine if a human health risk existed. Aroclor-1260, dieldrin, and chromium were selected as COPCs because they exceeded the screening concentrations; however, the HHRA determined no health risk exists for aroclor-1260, dieldrin, or chromium. The calculated HI and cancer risk were below the regulatory limits of 1.0 for HI and 1×10^{-6} for cancer. Therefore, no COC was selected indicating human health risks from the detected contaminants are not present.

The pesticides/PCBs and several inorganics (aluminum, chromium, iron, lead, manganese, mercury, selenium, and vanadium) were detected above the USEPA Region IV RAGS. A SERA was conducted for Site 05 to determine if an ecological risk from the detected contaminants existed. 4,4'-DDT, dieldrin, and aroclor-1260 were selected as COPCs; however, the SERA determined no ecological risk exists for 4,4'-DDT, dieldrin, or aroclor-1260 because the detected concentrations did not exceed the Intermediate Values, though the concentrations did exceed the Target Values (refer to section 2.3.2.2.4 of this report). The regulatory limits for the detected inorganics were determined to be inapplicable to this site (refer to section 2.3.2.2.4 of this report). Therefore, no COC was selected indicating ecological risks from the detected contaminants are not present.

Additionally, no history of pesticide storage exists for Site 05, therefore the pesticides detected were compared to analytical data from several sites (3, 6, 30, and 33) to determine if the levels detected in the surface soil were similar to the levels detected in the surface soil at Site 05. The detected levels are

similar to the other sites [RI Report for Surface and Subsurface Soil Sites 3, 4, 6, 30, 32, and 33, TtNUS, September 1999 (TtNUS, 1999b)]. It is likely pesticides detected at Site 05 are from the general application, not from mishandling or spillage of pesticides.

Dieldrin and zinc were detected above the FDEP LE SCTL. However, dieldrin and zinc were not detected above the FDEP GCTLs in the surface soil leachate samples. Site-specific LE SCTLs are determined for several inorganics. Aluminum and lead were detected above the FDEP GCTLs in the surface soil leachate samples. This indicates a possible adverse impact on the groundwater. The impact of surface soil leaching to the groundwater will be addressed in the Site 40 RI Report.

2.4.2 Recommendation

Based on a comparison of the detected levels of surface soil contamination with the SCTLs listed in Chapter 62-777, F.A.C., the USEPA Region IX PRGs and Region IV RAGS, and the RAs performed, no risk associated with Site 05 is present. NFA at Site 05 is recommended.

3.0 SITE 07: SOUTH AVGAS TANK SLUDGE DISPOSAL AREA

Investigations at Site 07 were conducted to evaluate the status of any residual soil contamination at the former tank sludge disposal area and South Field Fuel Farm. This section describes the geologic setting, surface and subsurface soil assessments, analytical data evaluation, RAs, conclusions, and recommendation for Site 07, the South AVGAS Tank Sludge Disposal Area.

3.1 GEOLOGIC SETTING

The soil sampled at Site 07 was characterized to 30 ft bls and is comprised of two distinct layers. The first layer (0 to 10 ft bls) is a firm sandy-clay. The second layer (10 to 30 ft bls) is a medium to fine grain, loose sand. A general discussion of the geologic interpretation from the land surface to approximately 50 feet below mean sea level or 150 bls is presented in subsection 1.4.5 of the GIR (ABB-ES, 1998). The surface soil was previously characterized as Troupe loamy sand (USDA, 1980).

3.2 SOIL ASSESSMENT

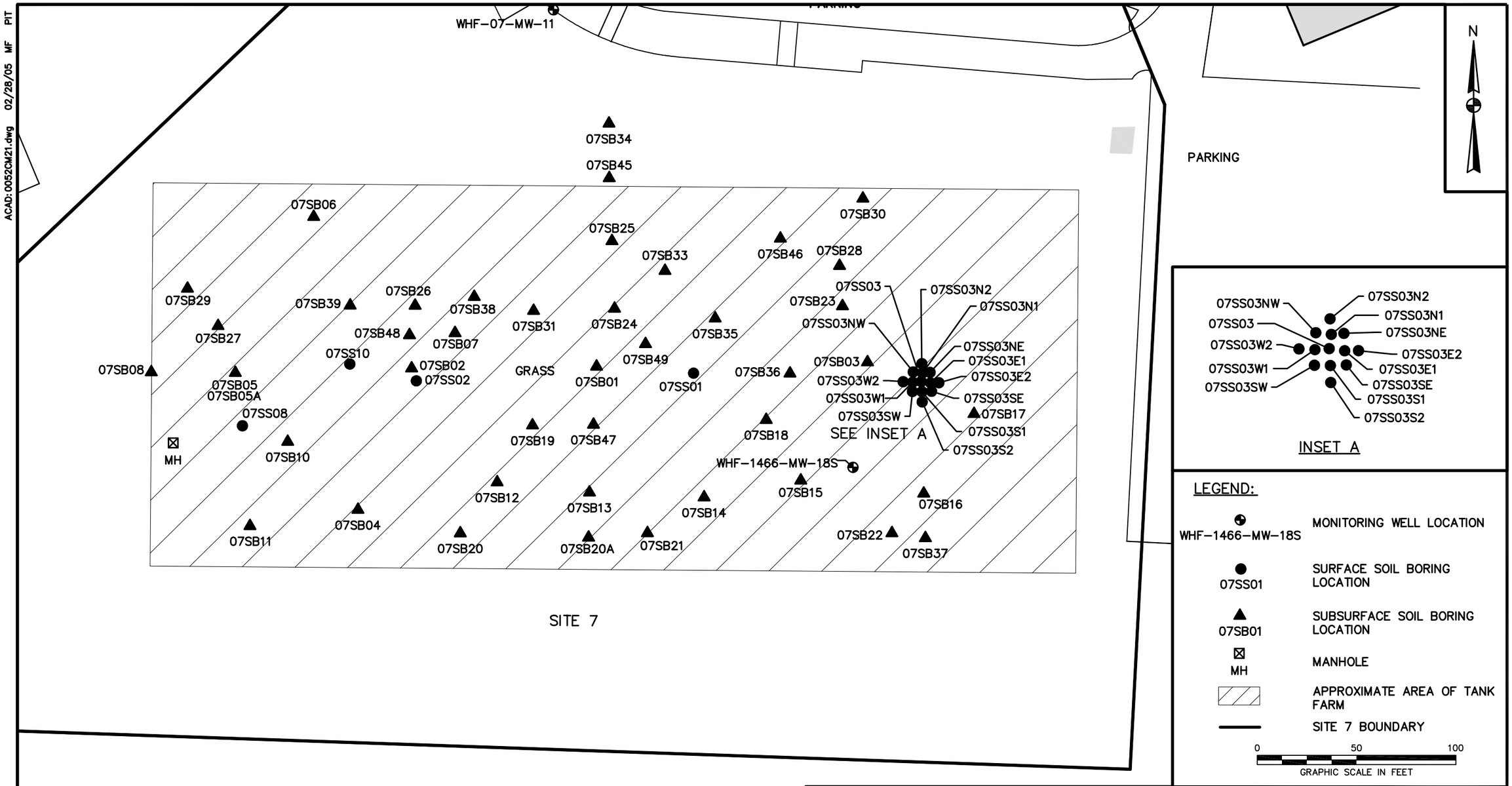
Sixteen surface soil borings using hand-augers, 36 subsurface soil borings using DPT, and seven subsurface soil borings using a hollow-stem auger drill rig were advanced at Site 07. The soil borings were advanced throughout the entire area of the former tank farm. Refer to Figure 3-1 for surface and subsurface soil boring locations.

3.2.1 Surface Soil Assessment

Surface soil samples were collected from 16 locations at Site 07. The samples were analyzed for TCL VOCs, TCL SVOCs, TAL inorganics, and TRPH. Analytical results are summarized in Tables 3-1 and 3-2 with SCTLs from Chapter 62-777, F.A.C., USEPA Residential and Industrial PRGs, USEPA RAGS, and the BSLs. Table 3-3 summarizes the SPLP analytical results. Surface soil boring locations with exceedences of FDEP SCTLs are displayed in Figures 3-2 and 3-3.

VOCs

One VOC (acetone) was detected in three surface soil samples [07D00201 (0.0265 mg/kg), 07D00801 (0.0239 mg/kg), and 07D00801D (0.0342 mg/kg); Table 3-1]. The low-level acetone contamination is likely laboratory contamination. Acetone is used in the semivolatile extraction process and may be in the laboratory's ambient air.



DRAWN BY MF	DATE 2/23/05	SITE 07 SURFACE AND SUBSURFACE SOIL BORING LOCATION MAP REMEDIAL INVESTIGATION REPORT NAS WHITING FIELD, MILTON, FLORIDA	CONTRACT NO. 0052
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SCALE AS NOTED			DRAWING NO. FIGURE 3-1 / REV. 0

FORM CADD NO. SDIV-BH.DWG – REV 1 – 9/10/98

TABLE 3-1

ANALYTICAL SUMMARY FOR ORGANIC COMPOUNDS DETECTED IN SURFACE SOIL SAMPLES - SITE 07
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
PAGE 1 OF 2

Sample No.		07D00201	07D00301	07D00801	07D00801D	07D01001	07SS03E1	07SS03E2	07SS03N1	07SS03N2	07SS03NE
Sample Location		07SS02	07SS03	07SS08	07SS08	07SS10	07SS03	07SS03	07SS03	07SS03	07SS03
Collect Date		5/24/2000	5/24/2000	5/24/2000	5/24/2000	5/24/2000	5/15/2001	5/15/2001	5/15/2001	5/15/2001	5/15/2001
Sample Depth (bls)		0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'
	DE1[1]/DE2[2]/LE[3]/PRGR[4]/PRGI[5]/RAG[6] (mg/kg)										
Volatile[7] (mg/kg)											
Acetone	780/5500/2.8/NA/NA/NA	0.0265[J]	-	0.0239[J]	0.0342[J]	--	NA	NA	NA	NA	NA
Semivolatile[8] (mg/kg)											
Benzo(a)anthracene	1.4/5/3.2/62/2.9/1.0	--	0.375	--	--	--	NA	NA	NA	NA	NA
Benzo(a)pyrene	**0.1**/0.5/8/620/29/**0.1**	--	**0.231[J]**	--	--	--	0.0495[J]	0.0916	0.0439[J]	--	--
Benzo(b)fluoranthene	1.4/4.8/10/62/2.9/1.0	--	0.243[J]	--	--	--	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	2300/41000/32000/NA/NA/1.0	--	0.128[J]	--	--	--	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	15/52/25/6.2/29/1.0	--	0.188[J]	--	--	--	NA	NA	NA	NA	NA
Chrysene	140/450/77/62/290/1.0	--	0.351	--	--	--	NA	NA	NA	NA	NA
Fluoranthene	2900/48000/1200/2300/30000/**0.1**	--	**0.756**	--	--	--	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1.5/5.3/28/62/2.9/1.0	--	0.146[J]	--	--	--	NA	NA	NA	NA	NA
Phenanthrene	2000/30000/250/NA/NA/**0.1**	--	**0.228[J]**	--	--	--	NA	NA	NA	NA	NA
Pyrene	2200/37000/880/2300/54000/**0.1**	--	**0.653**	--	--	--	NA	NA	NA	NA	NA
Pesticides/PCBs[9] (mg/kg)											
no detects											
Total Recoverable Petroleum Hydrocarbons[10] (mg/kg)	340/2500/340/NA/NA/NA	13	17.8	16.4	13.4	58.7	NA	NA	NA	NA	NA

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4/5] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[6] EPA Region 4 Risk Assessment Guidance Ecological Screening Values.
[7] SW-846 8260B, [8] SW-846 8270C, [9] SW-846 8081A/8082, [10] FDEP FL-PRO
Bold indicates the exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 3-1

ANALYTICAL SUMMARY FOR ORGANIC COMPOUNDS DETECTED IN SURFACE SOIL SAMPLES - SITE 07
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
PAGE 2 OF 2

Sample No.		07SS03NW	07SS03S1	07SS03S1D	07SS03S2	07SS03SE	07SS03SW	07SS03W1	07SS03W2
Sample Location		07SS03	07SS03	07SS03	07SS03	07SS03	07SS03	07SS03	07SS03
Collect Date		5/15/2001	5/15/2001	5/15/2001	5/15/2001	5/15/2001	5/15/2001	5/15/2001	5/15/2001
Sample Depth (bls)		0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'
	DE1[1]/DE2[2]/LE[3]/PRGR[4]/PRGI[5]/RAG[6] (mg/kg)								
Semivolatile[7] (mg/kg)									
Benzo(a)pyrene	**0.1/0.5/8**/620/29/**0.1**	--	**15.5[J]**	**1.64[J]**	--	0.0732	--	**1.84**	**0.712**

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4/5] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[6] EPA Region 4 Risk Assessment Guidance Ecological Screening Values.
[7] SW-846 8310
Bold indicates the exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 3-2

ANALYTICAL SUMMARY FOR INORGANIC ANALYTES DETECTED IN SURFACE SOIL SAMPLES - SITE 07
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA

Sample No.		07D00201	07D00301	07D00801	07D00801D	07D01001
Sample Location		07SS02	07SS03	07SS08	07SS08	07SS10
Collect Date		5/24/2000	5/24/2000	5/24/2000	5/24/2000	5/24/2000
Sample Depth (bls)		0-1'	0-1'	0-1'	0-1'	0-1'
	DE1[1]/DE2[2]/LE[3]/BSL[6]/PRGR[7]/ PRGI[8]/RAG[9] (mg/kg)					
TAL Metals[4] (mg/kg)						
Aluminum	72000/*/***/**15848**/76000/100000/**50**	**18800**	7220	**19700**	**19700**	**24500**
Arsenic****	**0.8**/**3.7**/29/**3.2**/**0.39**/**2.7**/**10**	**2.6**	--	**3.6**	**2.7**	**3.8[J]**
Barium	110**/87000/1600/23.2/5400/100000/165	18.6	9.5	18	18.4	20.3
Calcium	NA/NA/NA/396/NA/NA/NA	319	138	195	188	303
Chromium	210/420/38/**11**/30/64/**0.4**	**13.7**	7.3	**19.3**	**16.4**	**25**
Cobalt	4700/110000/***/3/4700/100000/20	1.5	--	1.4	1.4	1.4
Copper	110**/76000/***/9.4/2900/76000/40	7.6	3.2	7.4	7.5	8.7
Iron	23000/480000/***/**8832**/23000/100000/**200**	**9960**	4340	**13100**	**10400**	**15900**
Lead	400/920/***/**11.4**/400/1000/50	5.8	6.2	7.5[J]	7	**19.3**
Magnesium	NA/NA/NA/**268**/NA/NA/NA	**280**	98.4	249	**271**	**291**
Manganese	1600/22000/***/392/1800/32000/100	107	39.5	75.2	74.9	82.6
Mercury	3.4/26/2.1/0.12/23/610/0.1	0.03	0.01	0.04	0.04	0.03
Nickel	110**/28000/130/7.2/1600/41000/30	5.4	--	5.8	6.1	7[J]
Potassium	NA/NA/NA/**177**/NA/NA/NA	**343**	--	**262**	**285**	**351**
Sodium	NA/NA/NA/406/NA/NA/NA	390	356	334	344	357
Vanadium	**15****/7400/980/**21.8**/550/14000/**2.0**	**25.2**	11	**34.4**	**27**	**40.6**
Zinc	3400/53000/19/**15.4**/23000/100000/50	15	9	12.2	13.4	**16.5**
Cyanide[5] (mg/kg)	30**/39000/40/**0.28**/1200/18000/**0.9**	--	**0.6[J]**	**0.9[J]**	**0.91[J]**	**0.78[J]**

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4] SW-846 6010B and 7470A/7471A, [5] EPA 335.2
[6] Background screening value from Table 3-9, General Information Report,Remedial Investigation and Feasability Study, ABB, January 1998.
[7/8] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[9] EPA Region 4 Risk Assessment Guidance Ecological Screening Values.
[10] Arsenic has been determined by the FDEP to be unrelated to site activities.
* Contaminant is not a health concern for this default exposure scenario.
** Direct exposure value based on acute toxicity considerations.
*** Leachability values may be derived using the SPLP Test to calculate site-specific SCTLs or may be determined using TCLP in the event oily wastes are present.
**** Arsenic exceeds DE1 criteria; however, FDEP has agreed that arsenic is naturally occuring at this site (Appendix B).
Bold indicates the exceedance of BSL ,or BSL and regulatory limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

Table 3-3

**ANALYTICAL SUMMARY FOR ORGANIC COMPOUNDS AND INORGANIC ANALYTES
DETECTED IN SURFACE SOIL LEACHATES - SITE 07
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA**

Sample No.		07D00201	07D00301D	07D00801	07D00801D	07D1001
Sample Location		07SS02	07SS03	07SS08	07SS08	07SS10
Collect Date		5/24/2000	5/24/2000	5/24/2000	5/24/2000	5/24/2000
Sample Depth		0-1'	0-1'	0-1'	0-1'	0-1'
	Groundwater Criteria[1]/Primary[2]/ Secondary[3]					
Volatile[4] (ug/L)						
4-Methyl-2-pentanone	560/NA/NA	NA	NA	NA	NA	NA
Ethylbenzene	30/700/NA	NA	NA	NA	NA	NA
Toluene	40/1000/NA	NA	NA	NA	NA	NA
Xylenes	20/10000/NA	NA	NA	NA	NA	NA
Semivolatile[5] (ug/L)						
2-Methylnaphthalene	20/NA/NA	NA	--	NA	NA	NA
Fluoranthene	280/NA/NA	NA	--	NA	NA	NA
Naphthalene	20/NA/NA	NA	--	NA	NA	NA
Phenanthrene	210/NA/NA	NA	--	NA	NA	NA
Pyrene	210/NA/NA	NA	--	NA	NA	NA
Total Recoverable Petroleum Hydrocarbons[6] (ug/L)	5000/NA/NA	--	--	--	--	--
Metals[7] (ug/L)						
Aluminum	**200**/NA/**50-200**	**2900**	**45200**	--	--	--
Barium	2000/2000/NA	--	20	--	--	--
Calcium	NA/NA/NA	3000	820	780	820	1100
Chromium	100/100/NA	--	28	--	--	--
Copper	1000/NA/1000	--	9.6	--	--	--
Iron	**300**/NA/**300**	**1400**	**23600**	--	--	--
Lead	15/NA/NA	--	**20**	--	--	--
Magnesium	NA/NA/NA	500	600	320	340	--
Manganese	**50**/NA/**50**	**57**	**83**	**53**	**62**	22
Mercury	2/2/NA	--	--	--	0.72	--
Potassium	NA/NA/NA	4700[J]	7400[J]	1300[J]	1500[J]	1500[J]
Sodium	160000/NA/NA	420	5500	150	450	440
Vanadium	**49**/NA/NA	--	**62**	--	--	--
Zinc	5000/NA/5000	--	23[J]	--	--	--

[1] Groundwater Clean-up Criteria as provided in Chapter 62-777,F.A.C.
[2] EPA 40 CFR Primary Drinking Water Standards
[3] EPA 40 CFR Secondary Drinking Water Standards
[4] SW-846 8260B, [5] SW-846 8270C,6 FL-PRO, [7] SW-846 7470a/7471
Bold indicates an exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

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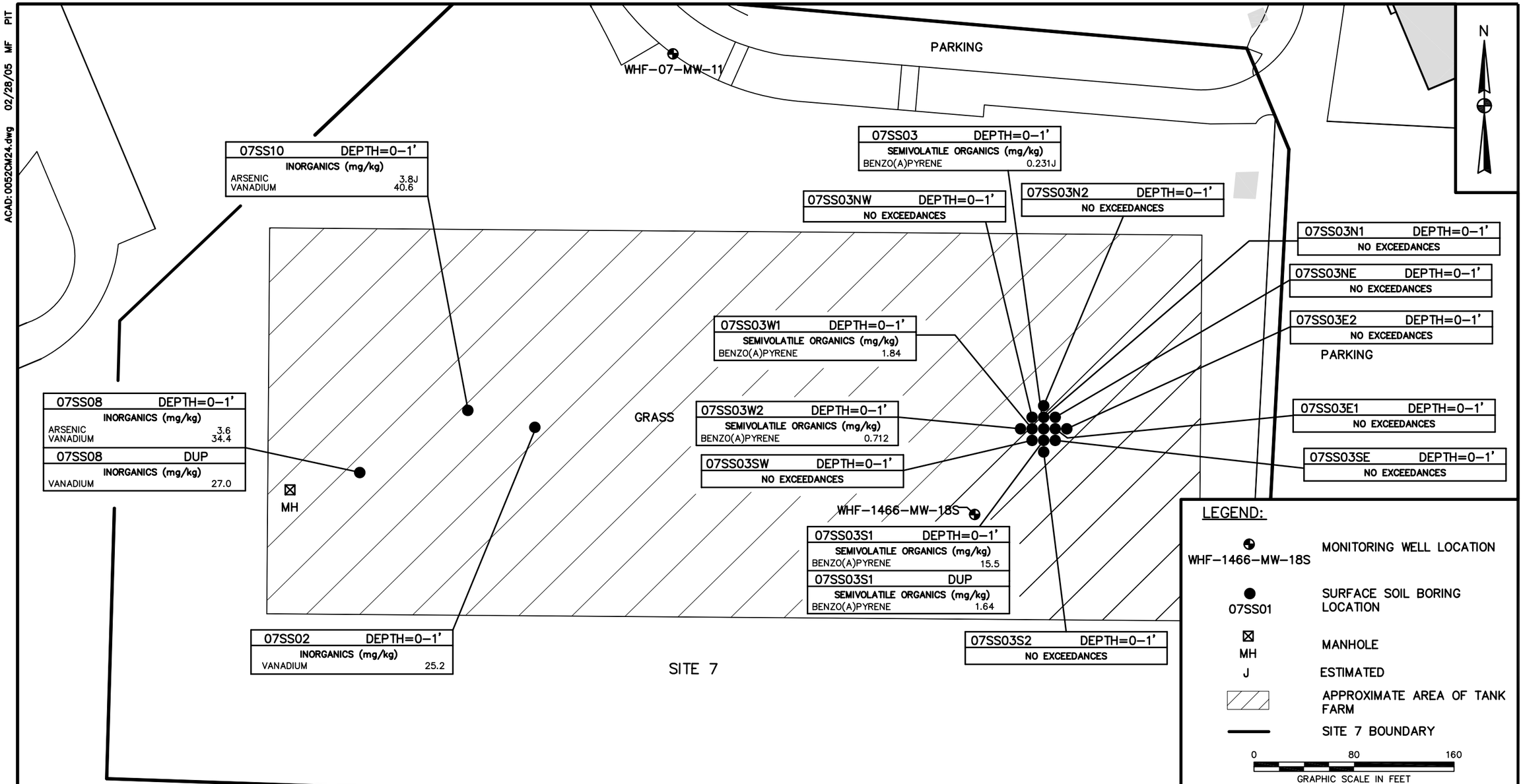

DE1 CLEANUP TARGET LEVELS	
INORGANICS (mg/kg)	
ARSENIC	0.8
VANADIUM	15
SEMIVOLATILE ORGANICS (mg/kg)	
BENZO(A)PYRENE	0.1

DRAWN BY MF	DATE 2/23/05
CHECKED BY	DATE
REVISED BY	DATE
SCALE AS NOTED	

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SITE 07
SURFACE SOIL DE1 EXCEEDANCES MAP
REMEDIAL INVESTIGATION REPORT
NAS WHITING FIELD, MILTON, FLORIDA

CONTRACT NO. 0052	
OWNER NO. 0000	
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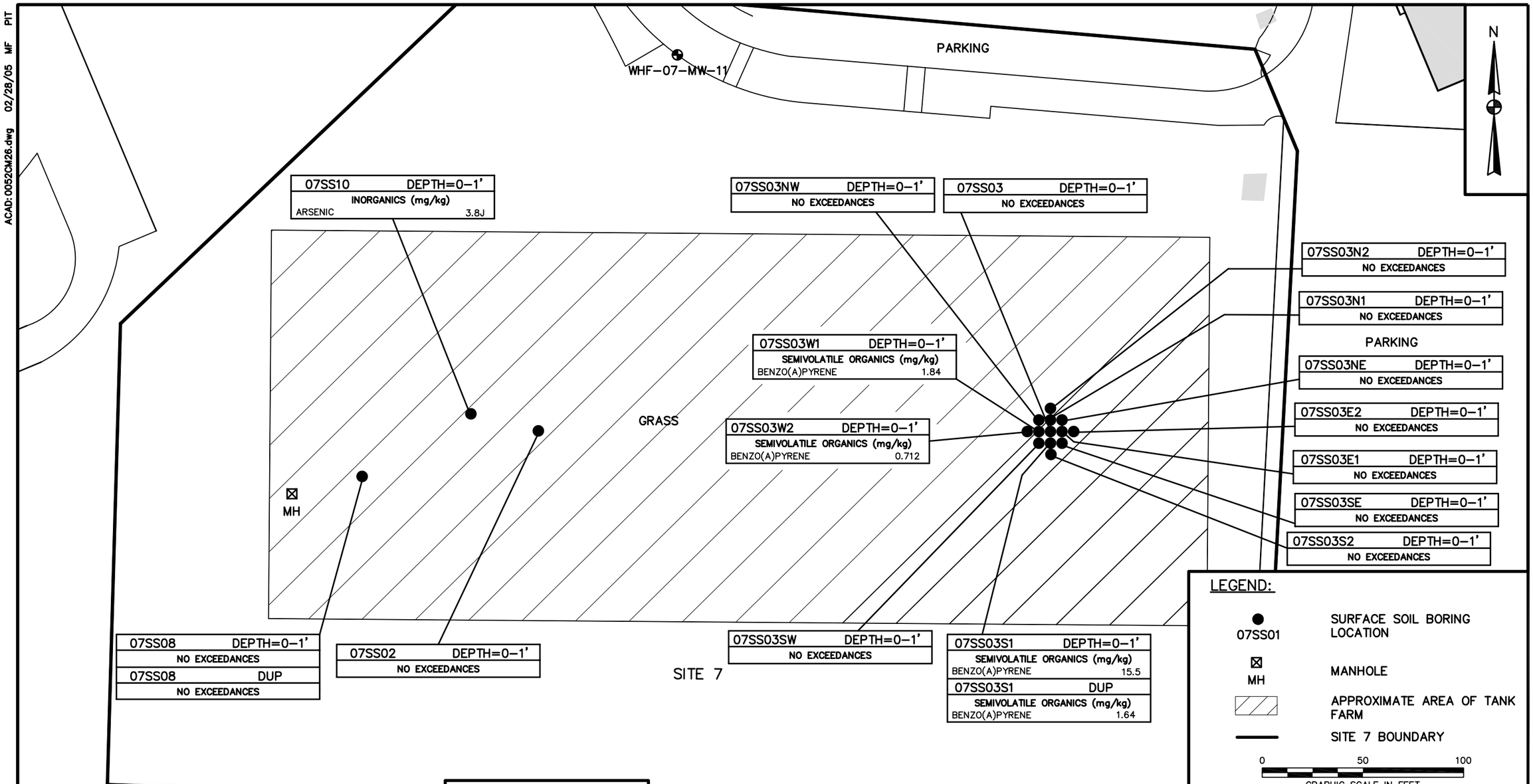

DE2 CLEANUP TARGET LEVELS	
INORGANICS (mg/kg)	
ARSENIC	3.7
BENZO(A)PYRENE	?

DRAWN BY MF	DATE 2/24/05	
CHECKED BY	DATE	
REVISED BY	DATE	
SCALE AS NOTED		

NAVFAC

SITE 07
SURFACE SOIL DE2 EXCEEDANCES MAP
REMEDIAL INVESTIGATION REPORT
NAS WHITING FIELD, MILTON, FLORIDA

CONTRACT NO. 0052	
OWNER NO. 0000	
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FORM CADD NO. SDIV-BH.DWG – REV 1 – 9/10/98

SVOCs

Ten SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene) were detected in the surface soil (Table 3-1). Four of these SVOCs (benbzo(a)pyrene, flouranthene, phenanthrene, and pyrene) were detected above the USEPA RAGS in sample 07D00301. Benzo(a)pyrene was also detected above the FDEP DE1 SCTL (0.1 mg/kg). In four additional samples (07SS03S1, 07SS03S1D, 07SS03W1, and 07SS03W2) benzo(a)pyrene was detected above FDEP DE1 (0.1 mg/kg), DE2 (0.5 mg/kg), and LE (8.0 mg/kg) SCTLs, and USEPA RAGS (0.1 mg/kg).

Pesticide/PCBs

No pesticides/PCBs were detected in the surface soil at Site 07.

TRPH

TRPH was detected in all the surface soil samples, but not above any regulatory limits.

Inorganics

Table 3-2 lists 18 analytes detected in the surface soil. Thirteen analytes (aluminum, barium, calcium, chromium, copper, iron, lead, magnesium, manganese, mercury, sodium, vanadium, and zinc) were detected in all of the samples. Four analytes (arsenic, cobalt, nickel, and potassium) were detected in four samples: 07D00201, 07D00801, 07D00801D, and 07D01001. Cyanide was detected in four samples: 07D00301, 07D00801, 0700801D, and 07D01001.

Nine analytes (aluminum, chromium, iron, lead, magnesium, potassium, vanadium, and zinc) including cyanide were detected above the BSLs.

Vanadium was detected above the FDEP DE1 SCTL (15 mg/kg) in four samples [07D00201 (25.2 mg/kg), 07D00801 (34.4 mg/kg), 07D00801D (27 mg/kg), and 07D01001 (40.6 mg/kg)].

Arsenic was detected above the BSL (3.2 mg/kg), FDEP DE1 (0.8 mg/kg) and DE2 (3.7 mg/kg) SCTLs, the USEPA Residential PRG (0.39 mg/kg) and Industrial PRG (2.7 mg/kg) limits, and USEPA RAGS (10 mg/kg).

An SPLP analysis was performed on samples 07D00201 and 07D00301 (Table 3-3). SPLP analysis results indicate zinc (23 µg/L) and vanadium (62 µg/L) may leach from surface soil to the subsurface soil and possibly infiltrate to the water table located approximately 100 ft bls. The zinc concentration in the leachate is below the GCTL (5000 µg/L); therefore, if the leachate did infiltrate to the water table, no adverse effect would occur. However, the leachate concentration for vanadium is above the GCTL (49

µg/L), and therefore may have an adverse effect on groundwater. The impact on groundwater will be addressed in the Site 40 RI Report.

Several analytes (aluminum, cobalt, copper, iron, lead, and manganese) detected in the surface soil do not have specific FDEP LE SCTLs for comparison. In these cases, LE SCTLs are determined on a site-specific basis. Surface soil leachate results for aluminum (2,900 and 45,200 µg/L), iron (1,400 and 23,600 µg/L), lead (20 µg/L), and manganese (57 and 83 µg/L) exceeded the GCTLs, indicating the analytes may leach from the surface soil at concentrations above the FDEP GCTLs and adversely affect the groundwater. The impact on groundwater will be addressed in the Site 40 RI Report.

3.2.2 Subsurface Soil Assessment

Eight subsurface soil samples were collected from six soil borings (07SB01, 07SB02, 07SB23, 07SB24, 07SB35, and 07SB36) at Site 07 based on high FID recordings. The samples were analyzed for TCL VOCs, TCL SVOCs, TAL inorganics, and TRPH. Subsurface soil analytical results are summarized in Tables 3-4 and 3-5 with the SCTLs from Chapter 62-777, F.A.C., USEPA PRGs, and BSLs. Tables 3-6 summarize the SPLP leachate results. Exceedances of FDEP SCTLs in subsurface soil are displayed in Figures 3-4 and 3-5.

VOCs

Five VOCs (acetone, benzene, ethylbenzene, toluene, and total xylenes) were detected in subsurface soil. Four VOCs were detected above the FDEP LE SCTLs (Table 3-4). Ethylbenzene (109 µg/L) and total xylenes (781 µg/L) were detected above the FDEP GCTLs (30 and 20 µg/L, respectively) in the SPLP leachate analysis (Table 3-6). The leaching of ethylbenzene and xylenes from subsurface soil may have an adverse affect on groundwater. The impact on groundwater will be presented in the Site 40 RI Report.

SVOCs

Nineteen SVOCs (2-methylnaphthalene, acenaphthene, anthracene, benzo(a)anthracene, benzo(b) pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, carbazole, chrysene, dibenzo(a,h)anthracene, dibenzofuran, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthracene, and pyrene) were detected in sample 07D02320.

TABLE 3-4

ANALYTICAL SUMMARY FOR ORGANIC COMPOUNDS DETECTED IN SUBSURFACE SOIL SAMPLES - SITE 07
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
Page 1 of 5

Sample No.		07SB00120	07SB00210	07D00350	07D00370	07D00390	07D003110	07D003130	07D02308
Sample Location		07SB01	07SB02	07SB03	07SB03	07SB03	07SB03	07SB03	07SB23
Collect Date		3/31/2000	3/31/2000	8/20/2003	8/20/2003	8/20/2003	8/20/2003	8/20/2003	6/1/2000
Sample Depth (bls)		18-20'	8-10'	-50	-70	-90	-110	-130	6-8'
	DE1[1]/DE2[2]/LE[3]/PRGR[4]/ PRGI[5] (mg/kg)								
Volatile[6] (mg/kg)									
Acetone	780/5500/2.8/NA/1600/6200	--	--	NA	NA	NA	NA	NA	--
Benzene	1.1/1.6/0.007/0.67/1.5	0.0542	--	--	--	--	--	--	--
Ethylbenzene	1100/8400/**0.6**/230/230	**0.438**	**17.3**	--	--	--	--	**4.7**	--
Toluene	380/2600/**0.5**/520/520	**2.94**	**0.554[J]**	--	--	--	--	**14**	--
Total Xylenes	5900/40000/**0.2**/210/210	**0.291[J]**	**37.2**	--	--	--	--	**10.2**	--
Semivolatile[7] (mg/kg)									
2-Methylnaphthalene	80/560/6.1/NA/NA	--	--	--	--	--	--	--	--
Acenaphthene	1900/18000/2.1/3700/38000	--	--	NA	NA	NA	NA	NA	--
Anthracene	18000/260000/2500/22000/390000	--	--	NA	NA	NA	NA	NA	--
Benzo(a)anthracene	1.4/5/3.2/62/2.9	--	--	NA	NA	NA	NA	NA	--
Benzo(a)pyrene	0.1/0.5/8620/29	--	--	NA	NA	NA	NA	NA	--
Benzo(b)fluoranthene	1.4/4.8/10/62/2.9	--	--	NA	NA	NA	NA	NA	--
Benzo(g,h,i)perylene	2300/41000/32000/NA/NA	--	--	NA	NA	NA	NA	NA	--
Benzo(k)fluoranthene	15/52/25/6.2/29	--	--	NA	NA	NA	NA	NA	--
Bis(2-ethylhexyl)phthalate	76/280/3600/35/180	--	--	NA	NA	NA	NA	NA	--
Carbazole	53/190/0.6/24/120	--	--	NA	NA	NA	NA	NA	--
Chrysene	140/450/77/62/290	--	--	NA	NA	NA	NA	NA	--
Dibenz(a,h)anthracene	0.1/0.5/30/620/29	--	--	NA	NA	NA	NA	NA	--
Dibenzofuran	280/5000/15/290/5100	--	--	NA	NA	NA	NA	NA	--
Fluoranthene	2900/48000/1200/2300/30000	--	--	NA	NA	NA	NA	NA	--
Fluorene	2200/28000/160/2600/33000	--	--	NA	NA	NA	NA	NA	--
Indeno(1,2,3-c,d)pyrene	1.5/5.3/28/62/2.9	--	--	NA	NA	NA	NA	NA	--
Naphthalene	40/270/1.7/56/190	--	--	--	--	--	--	--	--
Phenanthracene	2000/30000/250/NA/NA	--	--	NA	NA	NA	NA	NA	--
Pyrene	2200/37000/880/2300/54000	--	--	NA	NA	NA	NA	NA	--
Total Recoverable Petroleum Hydrocarbons[8] (mg/kg)	340/2500/340/NA/NA	12.8	50.3	NA	NA	NA	NA	NA	84.6

TABLE 3-4

ANALYTICAL SUMMARY FOR ORGANIC COMPOUNDS DETECTED IN SUBSURFACE SOIL SAMPLES - SITE 07
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
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Sample No.		07D02320	07D02460	07D02530	07D02550	07D03520	07D03540	07D03680	07D045110
Sample Location		07SB23	07SB24	07SB25	07SB25	07SB35	07SB35	07SB36	07SB45
Collect Date		6/1/2000	6/2/2000	8/18/2003	8/18/2003	6/15/2001	6/15/2001	6/15/2001	8/19/2003
Sample Depth (bls)		18-20'	58-60'	-30	-50	18-20'	38-40'	78-80'	-110
	DE1[1]/DE2[2]/LE[3]/PRGR[4]/ PRGI[5] (mg/kg)								
Volatile[6] (mg/kg)									
Acetone	780/5500/2.8/NA/1600/6200	--	--	NA	NA	0.18[J]	--	--	NA
Benzene	1.1/1.6/**0.007**/0.67/1.5	**0.28**	--	--	**0.81**	--	--	--	--
Ethylbenzene	1100/8400/**0.6**/230/230	**1.3**	**3.38**	--	0.036	--	0.466	--	0.033
Toluene	380/2600/**0.5**/520/520	**0.12[J]**	**5.48**	--	**0.96**	--	--	--	0.13
Total Xylenes	5900/40000/**0.2**/210/210	**7.64**	**4.23**	--	--	--	**0.582[J]**	--	0.53
Semivolatile[7] (mg/kg)									
2-Methylnaphthalene	80/560/6.1/NA/NA	1.73	--	--	--	--	--	--	--
Acenaphthene	1900/18000/2.1/3700/38000	0.418	--	NA	NA	--	--	--	NA
Anthracene	18000/260000/2500/22000/390000	0.929	--	NA	NA	--	--	--	NA
Benzo(a)anthracene	**1.4**/5/3.2/62/2.9	**2.44**	--	NA	NA	--	--	--	NA
Benzo(a)pyrene	**0.1**/**0.5**/8620/29	**1.3**	--	NA	NA	--	--	--	NA
Benzo(b)fluoranthene	**1.4**/4.8/10/62/2.9	**1.52**	--	NA	NA	--	--	--	NA
Benzo(g,h,i)perylene	2300/41000/32000/NA/NA	0.441	--	NA	NA	--	--	--	NA
Benzo(k)fluoranthene	15/52/25/6.2/29	1.35	--	NA	NA	--	--	--	NA
Bis(2-ethylhexyl)phthalate	76/280/3600/35/180	0.286[J]	--	NA	NA	--	--	--	NA
Carbazole	53/190/0.6/24/120	0.0668[J]	--	NA	NA	--	--	--	NA
Chrysene	140/450/77/62/290	1.75	--	NA	NA	--	--	--	NA
Dibenz(a,h)anthracene	**0.1**/0.5/30/620/29	**0.128[J]**	--	NA	NA	--	--	--	NA
Dibenzofuran	280/5000/15/290/5100	0.14[J]	--	NA	NA	--	--	--	NA
Fluoranthene	2900/48000/1200/2300/30000	6.56	--	NA	NA	0.169[J]	--	--	NA
Fluorene	2200/28000/160/2600/33000	0.426	--	NA	NA	--	--	--	NA
Indeno(1,2,3-c,d)pyrene	1.5/5.3/28/62/2.9	0.511	--	NA	NA	--	--	--	NA
Naphthalene	40/270/1.7/56/190	1.26	--	--	--	--	--	--	--
Phenanthracene	2000/30000/250/NA/NA	3.86	--	NA	NA	0.144[J]	--	--	NA
Pyrene	2200/37000/880/2300/54000	5.52	--	NA	NA	0.13[J]	--	--	NA
Total Recoverable Petroleum Hydrocarbons[8] (mg/kg)	340/2500/340/NA/NA	244	11.6	NA	NA	9.01	12.7	--	NA

TABLE 3-4

ANALYTICAL SUMMARY FOR ORGANIC COMPOUNDS DETECTED IN SUBSURFACE SOIL SAMPLES - SITE 07
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
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Sample No.		07D045120	07D045130	07D04640	07D04660	07D04680	07D046100	07D046125	07D04740
Sample Location		07SB45	07SB45	07SB46	07SB46	07SB46	07SB46	07SB46	07SB47
Collect Date		8/19/2003	8/19/2003	8/18/20038/19	8/19/2003	8/20/2003	8/20/2003	8/20/2003	8/21/2003
Sample Depth (bls)		-120	-130	-40	-60	-80	-100	-125	-40
	DE1[1]/DE2[2]/LE[3]/PRGR[4]/ PRGI[5] (mg/kg)								
Volatile[6] (mg/kg)									
Acetone	780/5500/2.8/NA/1600/6200	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	1.1/1.6/**0.007**/0.67/1.5	**--**	**0.098**	**--**	**--**	**--**	**--**	0.014	--
Ethylbenzene	1100/8400/**0.6**/230/230	**--**	0.024	**6.7**	**1.5**	0.54	**2**	**16**	--
Toluene	380/2600/**0.5**/520/520	**--**	0.16	**--**	0.27	0.24	**0.64**	0.12	--
Total Xylenes	5900/40000/**0.2**/210/210	**--**	0.041	**8.5**	**3.1**	**1.3**	**2.2**	0.025	--
Semivolatile[7] (mg/kg)									
2-Methylnaphthalene	80/560/6.1/NA/NA	--	--	--	--	--	--	--	--
Acenaphthene	1900/18000/2.1/3700/38000	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	18000/260000/2500/22000/390000	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	1.4/5/3.2/62/2.9	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	0.1/0.5/8620/29	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	1.4/4.8/10/62/2.9	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	2300/41000/32000/NA/NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	15/52/25/6.2/29	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	76/280/3600/35/180	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	53/190/0.6/24/120	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	140/450/77/62/290	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	0.1/0.5/30/620/29	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	280/5000/15/290/5100	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	2900/48000/1200/2300/30000	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	2200/28000/160/2600/33000	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-c,d)pyrene	1.5/5.3/28/62/2.9	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	40/270/1.7/56/190	--	--	--	--	--	--	--	--
Phenanthracene	2000/30000/250/NA/NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	2200/37000/880/2300/54000	NA	NA	NA	NA	NA	NA	NA	NA
Total Recoverable		NA	NA	NA	NA	NA	NA	NA	NA
Petroleum Hydrocarbons[8] (mg/kg)	340/2500/340/NA/NA								

TABLE 3-4

ANALYTICAL SUMMARY FOR ORGANIC COMPOUNDS DETECTED IN SUBSURFACE SOIL SAMPLES - SITE 07
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
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Sample No.		07D04760	07D04780	07D047100	07D047125	07D04840	07D04860	07D04880	07D048100
Sample Location		07SB47	07SB47	07SB47	07SB47	07SB48	07SB48	07SB48	07SB48
Collect Date		8/21/2003	8/21/2003	8/21/2003	8/21/2003	8/21/2003	8/21/2003	8/21/2003	8/21/2003
Sample Depth (bls)		-60	-80	-100	-125	-40	-60	-80	-100
	DE1[1]/DE2[2]/LE[3]/PRGR[4]/ PRGI[5] (mg/kg)								
Volatile[6] (mg/kg)									
Acetone	780/5500/2.8/NA/1600/6200	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	1.1/1.6/**0.007**/0.67/1.5	--	--	--	**0.091**	--	--	--	--
Ethylbenzene	1100/8400/**0.6**/230/230	--	--	**0.89**	**6.7**	--	--	--	--
Toluene	380/2600/**0.5**/520/520	--	--	0.29	**34**	--	--	--	--
Total Xylenes	5900/40000/**0.2**/210/210	--	--	**1.6**	**21.4**	--	--	--	--
Semivolatile[7] (mg/kg)									
2-Methylnaphthalene	80/560/6.1/NA/NA	--	--	--	--	--	--	--	--
Acenaphthene	1900/18000/2.1/3700/38000	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	18000/260000/2500/22000/390000	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	1.4/5/3.2/62/2.9	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	0.1/0.5/8620/29	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	1.4/4.8/10/62/2.9	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	2300/41000/32000/NA/NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	15/52/25/6.2/29	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	76/280/3600/35/180	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	53/190/0.6/24/120	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	140/450/77/62/290	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	0.1/0.5/30/620/29	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	280/5000/15/290/5100	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	2900/48000/1200/2300/30000	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	2200/28000/160/2600/33000	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-c,d)pyrene	1.5/5.3/28/62/2.9	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	40/270/1.7/56/190	--	--	--	--	--	--	--	--
Phenanthracene	2000/30000/250/NA/NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	2200/37000/880/2300/54000	NA	NA	NA	NA	NA	NA	NA	NA
Total Recoverable		NA	NA	NA	NA	NA	NA	NA	NA
Petroleum Hydrocarbons[8] (mg/kg)	340/2500/340/NA/NA								

TABLE 3-4

ANALYTICAL SUMMARY FOR ORGANIC COMPOUNDS DETECTED IN SUBSURFACE SOIL SAMPLES - SITE 07
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
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Sample No.		07D048120	07D04920	07D04940	07D04960	07D04980	07D049100	07D049120
Sample Location		07SB48	07SB49	07SB49	07SB49	07SB49	07SB49	07SB49
Collect Date		8/21/2003	8/22/2003	8/22/2003	8/22/2003	8/22/2003	8/22/2003	8/22/2003
Sample Depth (bls)		-120	-20	-40	-60	-80	-100	-120
	DE1[1]/DE2[2]/LE[3]/PRGR[4]/ PRGI[5] (mg/kg)							
Volatile[6] (mg/kg)								
Acetone	780/5500/2.8/NA/1600/6200	NA	NA	NA	NA	NA	NA	NA
Benzene	1.1/1.6/**0.007**/0.67/1.5	**--**	--	--	--	--	--	**0.82**
Ethylbenzene	1100/8400/**0.6**/230/230	**1**	0.1	**18**	0.025	0.25	**1.4**	0.2
Toluene	380/2600/**0.5**/520/520	**3.1**	--	--	0.034	0.31	**0.96**	**0.99**
Total Xylenes	5900/40000/**0.2**/210/210	**2.1**	--	0.15	0.026	**0.35**	**10**	**0.31**
Semivolatile[7] (mg/kg)								
2-Methylnaphthalene	80/560/6.1/NA/NA	--	--	--	--	--	--	--
Acenaphthene	1900/18000/2.1/3700/38000	NA	NA	NA	NA	NA	NA	NA
Anthracene	18000/260000/2500/22000/390000	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	1.4/5/3.2/62/2.9	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	0.1/0.5/8620/29	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	1.4/4.8/10/62/2.9	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	2300/41000/32000/NA/NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	15/52/25/6.2/29	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	76/280/3600/35/180	NA	NA	NA	NA	NA	NA	NA
Carbazole	53/190/0.6/24/120	NA	NA	NA	NA	NA	NA	NA
Chrysene	140/450/77/62/290	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	0.1/0.5/30/620/29	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	280/5000/15/290/5100	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	2900/48000/1200/2300/30000	NA	NA	NA	NA	NA	NA	NA
Fluorene	2200/28000/160/2600/33000	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-c,d)pyrene	1.5/5.3/28/62/2.9	NA	NA	NA	NA	NA	NA	NA
Naphthalene	40/270/1.7/56/190	--	--	--	--	--	--	--
Phenanthracene	2000/30000/250/NA/NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	2200/37000/880/2300/54000	NA	NA	NA	NA	NA	NA	NA
Total Recoverable Petroleum Hydrocarbons[8] (mg/kg)	340/2500/340/NA/NA	NA	NA	NA	NA	NA	NA	NA

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4/5] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[6] SW-846 8260B, [7] SW-846 8270C, [8] FDEP FL-PRO
Bold indicates the exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 3-5

ANALYTICAL SUMMARY FOR INORGANIC ANALYTES DETECTED IN SUBSURFACE SOIL SAMPLES - SITE 07
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA

Sample No.		07SB00120	07SB00210	07D02308	07D02320	07D02460	07SB03520	07SB03540	07SB03680
Sample Location		07SB01	07SB02	07SB23	07SB23	07SB24	07SB35	07SB35	07SB36
Collect Date		3/31/2000	3/31/2000	6/1/2000	6/1/2000	6/2/2000	6/15/2001	6/15/2001	6/15/2001
Sample Depth (bls)		18-20'	8-10'	6-8'	18-20'	58-60'	18-20'	38-40'	78-80'
	DE1[1]/DE2[2]/LE[3]/BSL[4]/PRGR[5]/ PRGI[6] (mg/kg)								
TAL Metals[7] (mg/kg)									
Aluminum	72000/*/***/27834/76000/100000	24000	22000	23100	18200	571	3080[J]	58.2[J]	246[J]
Antimony	26/240/5/4.4/31/820	--	1.8[J]	--	--	--			
Arsenic****	**0.8**/**3.7**/29/**3.2**/**0.39**/**2.7**	**5**	**5.7**	**3.6**	**3.2**	--			
Barium	110**/87000/1600/15.8/5400/100000	16.2	8	14.7	10.3	2			
Cadmium	75**/1300/8/0.92/37/810						0.080	--	--
Calcium	NA/NA/NA/444/NA/NA	196	167	229	137	--	128[J]		
Chromium	210/420/38/**22.8**/30/64	**28.2**	20.7	14.6	14.6	0.93	8.6		
Cobalt	4700/110000/***/1.48/4700/100000	1.6	2.6	1.3	0.89	--			
Copper	110**/76000/***/**8.8**/2900/76000	**11**	**12.1**	7.9	6.7	--			
Iron	**23000**/480000/***/**18110**/**23000**/100000	**26200**	**98500**	12600	14900	175	12800	172	97.2
Lead	400/920/***/**8.4**/400/1000	6.2	**13.5[J]**	5	6.2	--	**8.5**	1.1	
Magnesium	NA/NA/NA/272/NA/NA	200	122	219	151	--	19.9		
Manganese	1600/22000/***/**42.6**/1800/32000	**338[J]**	**85.7[J]**	**95.3**	36.4	1.9	16.9		
Mercury	3.4/26/2.1/NA/23/610	--	--	--	--	--	0.034[J]	--	0.038[J]
Nickel	110**/28000/130/**5.0**/1600/41000	**5[J]**	3.4[J]	3.6[J]	2.8[J]	--	--	--	--
Potassium	NA/NA/NA/**181**/NA/NA	--	--	**297**	--	--	--	--	--
Selenium	390/10000/**5**/**0.30**/390/10000	**5.3[J]**	**23.3[J]**	--	--	--	--	--	--
Sodium	NA/NA/NA/NA/NA/NA	134[J]	106[J]	--	--	--	--	--	--
Vanadium	**15****/7400/980/**45**/550/14000	**45.4**	**41.4**	**31.8**	**32.8**	0.52	10.1	0.16	0.34
Zinc	3400/53000/19/15.6/23000/100000	9.9	4	11.8	7.7	4.2	--	--	--
Cyanide[8] (mg/kg)	30**/39000/40/**0.28**/1200/18000	--	--	--	**1.5**	**1.7**	NA	NA	NA

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4] BSL= Background screening value from Table 3-18, General Information Report,Remedial Investigation and Feasability Study, ABB, January 1998.
[5/6] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[7] SW-846 6010B and 7470A/7471A, [8] EPA 335.2
* Contaminant is not a health concern for this default exposure scenario.
** Direct exposure value based on acute toxicity considerations.
*** Leachability values may be derived using the SPLP Test to calculate site-specific SCTLs or may be determined using TCLP in the event oily wastes are present.
**** Arsenic exceeds DE1 criteria; however, FDEP has agreed that arsenic is naturally occuring at this site (Appendix B).
Bold indicates the exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable - = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

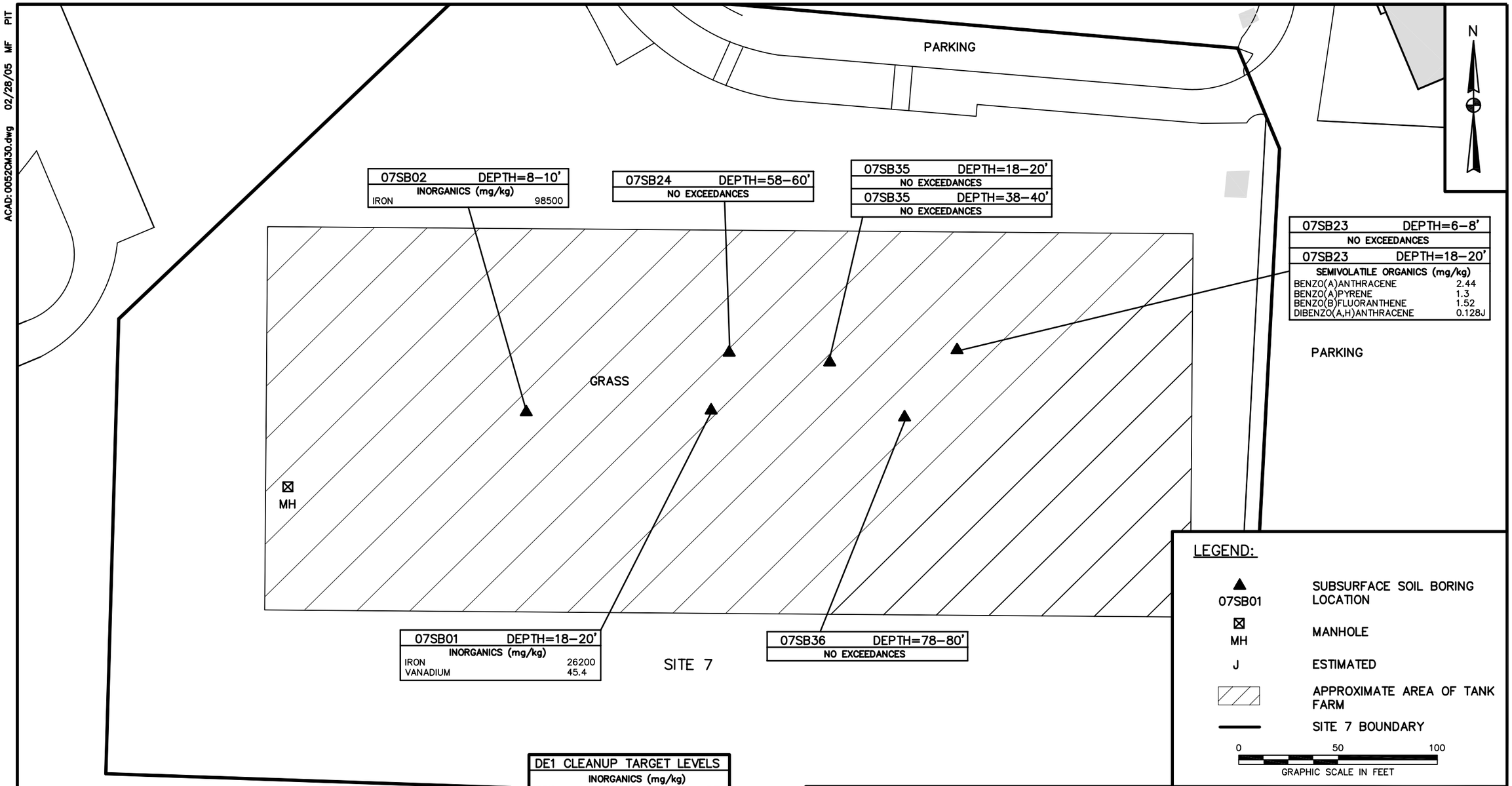
Table 3-6

ANALYTICAL SUMMARY FOR ORGANIC AND INORGANICS DETECTED IN SUBSURFACE SOIL LEACHATES - SITE 07
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA

Sample No.		07D02308	07D02320	07D02460	07SB03520	07SB03540	07SB03680
Sample Location		07SB23	07SB23	07SB24	07SB35	07SB35	07SB36
Collect Date		6/1/2000	6/1/2000	6/2/2000	6/15/2001	6/15/2001	6/15/2001
Sample Depth (bls)		6-8'	18-20'	58-60'	18-20'	38-40'	78-80'
	Groundwater Criteria[1]/Primary[2]/ Secondary[3]						
Volatile[4] (ug/L)							
Acetone	700/NA/NA	--	--	--	23.1[J]	5.2[J]	--
Methylene Chloride	**5**/**5**/NA	--	--	--	**91.2[J]**	**62.2[J]**	**87.5[J]**
4-Methyl-2-pentanone	560/NA/NA	NA	--	10.3	--	--	
Ethylbenzene	**30**/700/NA	NA	**109**	--	--	--	
Toluene	40/1000/NA	NA	12.7[J]	--	--	--	
Total Xylenes	**20**/10000/NA	NA	**781**	1.5[J]	--	--	
Semivolatile[5] (ug/L)							
Bis(2-ethylhexyl)phthalate	**6**/**6**/NA	--	--	--	**126**	**60.1**	**68.2**
2-Methylnaphthalene	**20**/NA/NA	--	**87.1**	--	--	--	
Fluoranthene	280/NA/NA	--	30.9[J]	--	--	--	
Naphthalene	**20**/NA/NA	--	**93.7**	--	--	--	
Phenanthrene	210/NA/NA	--	93	--	--	--	
Pyrene	210/NA/NA	--	23.2[J]	--	--	--	
Total Recoverable Petroleum Hydrocarbons[6] (ug/L)	**5000**/NA/NA	--	**5510**	--	--	--	
Metals[7] (ug/L)							
Aluminum	**200**/NA/**50-200**	--	--	--	--	--	--
Barium	2000/2000/NA	--	--	--	--	1.5	--
Calcium	NA/NA/NA	1100	--	--	320	470	370
Chromium	100/100/NA	--	--	--	--	--	--
Cobalt		--	--	--	--	3.8	--
Copper	1000/NA/1000	--	--	--	--	--	--
Iron	**300**/NA/**300**	--	--	--	--	--	--
Lead	**15**/NA/NA	--	--	--	--	--	--
Magnesium	NA/NA/NA	350	--	--	--	120	--
Manganese	**50**/NA/**50**	--	--	--	--	--	--
Mercury	2/2/NA	--	1.3	--	0.78	**2.6**	1.0
Potassium	NA/NA/NA	930	400	--	1.0	--	--
Sodium	160000/NA/NA	690	240	--	--	--	--
Vanadium	**49**/NA/NA	--	--	--	--	--	--
Zinc	5000/NA/5000	--	--	--	--	--	--

[1] Groundwater Clean-up Criteria as provided in Chapter 62-777,F.A.C.
[2] EPA 40 CFR Primary Drinking Water Standards
[3] EPA 40 CFR Secondary Drinking Water Standards
[4] SW-846 8260B, [5] SW-846 8270C, [6] FL-PRO, [7] SW-846 7470A/7471
Bold indicates an exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable
[J] Indicates the presence of a chemical at an estimated concentration.

ACAD: 0052CM30.dwg 02/28/05 MF PIT

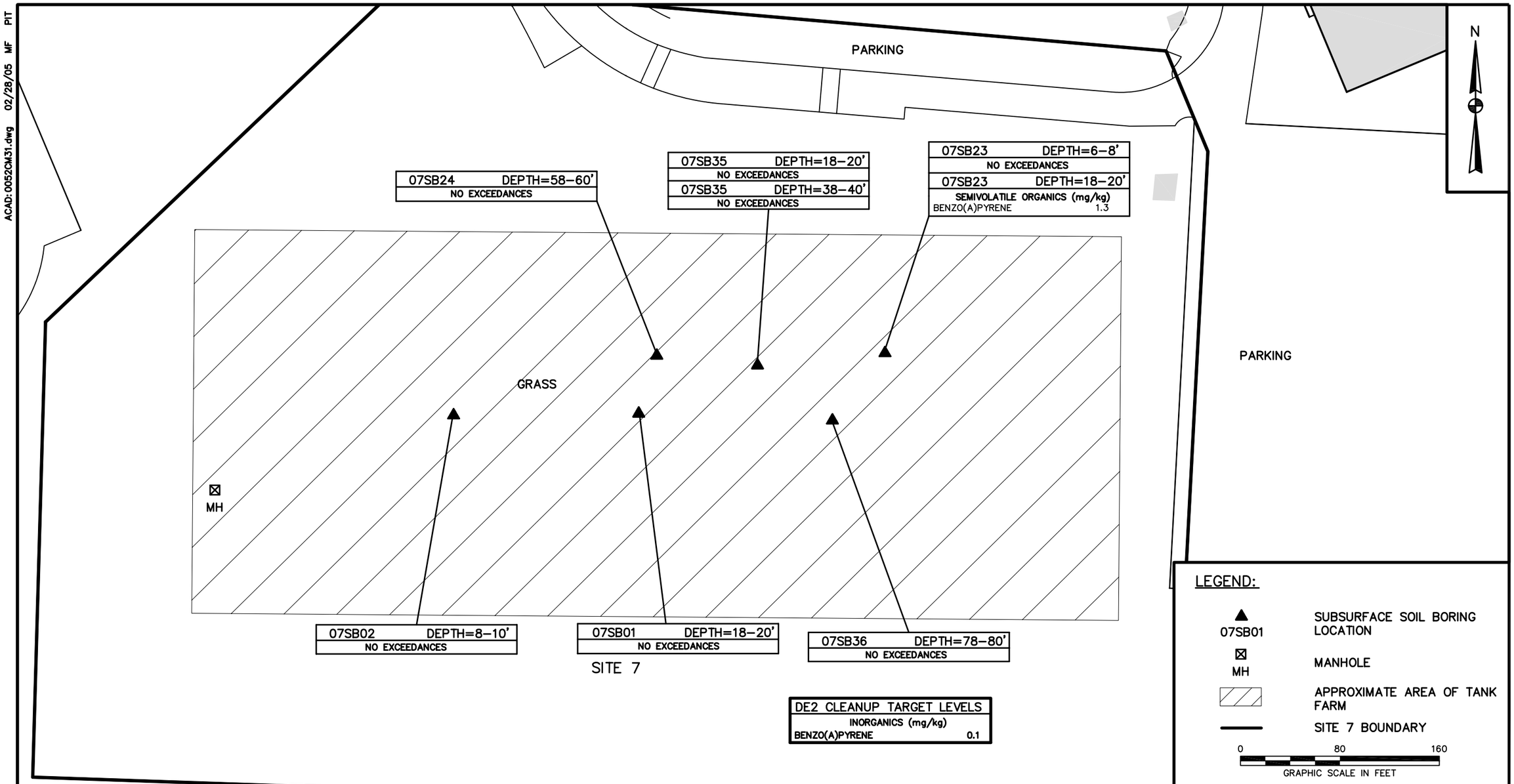


DE1 CLEANUP TARGET LEVELS	
INORGANICS (mg/kg)	
IRON	3.7
VANADIUM	16
SEMIVOLATILE ORGANICS (mg/kg)	
BENZO(A)ANTHRACENE	1.4
BENZO(A)PYRENE	0.1
BENZO(B)FLUORANTHENE	1.4
DIBENZO(A,H)ANTHRACENE	0.1

DRAWN BY HJB	DATE 2/24/05	SITE 07 SUBSURFACE SOIL DE1 EXCEEDANCES MAP REMEDIAL INVESTIGATION REPORT NAS WHITING FIELD, MILTON, FLORIDA	CONTRACT NO. 0052
CHECKED BY	DATE		OWNER NO. 0000
REVISED BY	DATE		APPROVED BY / DATE
SCALE AS NOTED		NAVFAC	DRAWING NO. FIGURE 3-4 / REV. 0

FORM CADD NO. SDIV-BH.DWG – REV 1 – 9/10/98

ACAD: 0052CM31.dwg 02/28/05 MF PIT



DRAWN BY	DATE
HJB	2/24/05
CHECKED BY	DATE
REVISED BY	DATE
SCALE AS NOTED	

NAVFAC

SITE 07
SUBSURFACE SOIL DE2 EXCEEDANCES MAP
REMEDIAL INVESTIGATION REPORT
NAS WHITING FIELD, MILTON, FLORIDA

CONTRACT NO. 0052	
OWNER NO. 0000	
APPROVED BY	DATE
DRAWING NO. FIGURE 3-5	REV. 0

FORM CADD NO. SDIV-BH.DWG – REV 1 – 9/10/98

1.4 mg/kg, respectively) (Table 3-4). 2-methylnaphthalene (87.1 µg/L) and naphthalene (93.7 µg/L) were detected in the SPLP leachate analysis on sample 07D02320 (Table 3-6). Both results were above the GCTLs (20 µg/L). The impact on groundwater will be presented in the Site 40 RI Report.

Three SVOCs (fluoranthene, phenanthracene, and pyrene) were detected in sample 07SB03520. None were detected above regulatory limits.

TRPH

TRPH was detected in seven subsurface soil samples, but none of the detections were above the regulatory limits (Table 3-4).

TRPH (5,510 µg/L) was detected in SPLP leachate of sample 07D02320 (Table 3-6). The result was above the GCTL (5,000 µg/L). The impact on groundwater will be presented in the Site 40 RI Report.

Inorganics

Table 3-5 lists 18 analytes and cyanide detected in the subsurface soil. Seven analytes (aluminum, barium, chromium, iron, manganese, vanadium, and zinc) were detected in all the subsurface soil samples. Seven analytes (arsenic, calcium, cobalt, copper, lead, magnesium, and nickel) were detected in four samples (07D02308, 07D02320, 07SB00120, 07SB00210). Four analytes (aluminum, iron, lead, and vanadium) were detected in sample 07SB03540. Four analytes (aluminum, iron, mercury, and vanadium) were detected in sample 07SB03680. Two analytes (selenium and sodium) were detected in two samples (07SB00120 and 07SB00210, respectively). Potassium was detected in sample 07D02308, antimony was detected in sample 07SB00210, and cyanide was detected in samples, 07D02320 and 07D02460. Ten analytes (aluminum, cadmium, calcium, chromium, iron, lead, magnesium, manganese, mercury, and vanadium) were detected in sample 07SB03520.

Nine analytes (aluminum, chromium, copper, iron, lead, potassium, selenium, and vanadium) including cyanide were detected above the BSLs. Iron was detected above the FDEP DE1 SCTL (23,000 mg/kg) in two samples [07SB00120 (26,200 mg/kg) and 07SB00210 (98,500 mg/kg)]. Vanadium was detected above the FDEP DE1 SCTL (15 mg/kg) in four samples [07D02308 (31.8 mg/kg), 07D02320 (32.8 mg/kg), 07SB00120 (45.4 mg/kg), and 07SB00210 (41.4 mg/kg)]. Selenium was detected in two samples [(07SB00120 (5.3J mg/kg) and 07SB00210 (23.3J mg/kg)] above the FDEP LE SCTL (5 mg/kg). Selenium leaching from the subsurface soil may adversely affect the groundwater. The impact on groundwater will be presented in the Site 40 RI Report.

Several analytes (aluminum, cobalt, copper, iron, lead, and manganese) detected in the subsurface soil do not have specific FDEP LE SCTLs for comparison. LE SCTLs are determined on a site-specific basis.

SPLP leachate analysis was performed on samples 07D02308, 07D02320, and 07D00460. At the concentrations detected in the subsurface soil, none of the metals would leach from the subsurface soil (Table 3-6).

3.2.3 Subsurface Soil Interim Removal Action (IRA) Delineation Samples

In support of an IRA at Site 07, additional subsurface soil samples were collected in August 2003 to better delineate the areas of contamination. A total of thirty-two subsurface soil samples were collected from seven soil borings (07SB03, 07SB25, 07SB45, 07SB46, 07SB47, 07SB48, and 07SB49) at Site 07 to support IRA. These samples were analyzed for BTEXM, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. The analytical results from these samples are included in Table 3-4. BTEX were detected in the samples; however, MTBE, naphthalene, 1- and 2-methylnaphthalene were not detected in any sample. None of the BTEX levels detected in the samples exceeded the FDEP DE1 or DE2 SCTLs, although twelve samples contained BTEX at levels exceeding the FDEP LE SCTLs. Since the BTEX levels detected in the additional subsurface soil samples did not exceed the FDEP DE1 and DE2 SCTLs, the risk assessments (human and ecological) were not reconfigured to include this additional data.

3.2.4 Soil Assessment Summary

Surface Soil

One VOC, 10 SVOCs, TRPH, and 18 inorganic analytes were detected in the surface soil. Benzo(a)pyrene was detected above FDEP DE1, DE2, and LE SCTLs. Vanadium was detected above the FDEP DE1 SCTL. Benzo(a)pyrene, fluoranthene, phenanthrene, pyrene, aluminum, arsenic, chromium, iron, manganese, vanadium, and cyanide were detected above the USEPA Region IV RAGS. Aluminum, iron, lead, manganese, and vanadium were detected in the SPLP leachates above the FDEP GCTLs.

Subsurface Soil

Five VOCs, 19 SVOCs, TRPH, and 19 inorganic analytes were detected in the subsurface soil. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, iron, and vanadium were detected above the FDEP DE1 SCTL. Benzo(a)pyrene was also detected above the FDEP DE2 SCTL. Iron was detected above the USEPA Region IX PRGs. Arsenic was detected above FDEP DE1 and DE2, and USEPA Residential and Industrial PRGs. Ethylbenzene, total xylenes, 2-methylnaphthalene, naphthalene, and TRPH were detected in the SPLP leachate above the FDEP GCTLs.

3.3 DATA EVALUATION

3.3.1 Data Validation

Refer to Appendix D (CD-ROM) of this report for the complete data validation report. This section summarizes the data validation remarks for Site 07 analytical data.

VOCs

The continuing calibration percent difference for bromomethane was outside the method control limit. All of the surface soil samples were qualified estimated (UJ) because the results may be biased low. The detection limit for bromomethane is much lower than the regulatory limits. Therefore, if bromomethane were present at a level near the regulatory limit it would have been detected.

Methylene chloride was qualified as estimated (UJ) in subsurface soil sample 07D02460. Methylene chloride was qualified because the percent difference in the continuing calibration and the percent relative standard deviation in the initial calibration were outside the method control limits. The results may be biased low. The detection limit for methylene chloride is much lower than the regulatory limits. Therefore, if methylene chloride were present at a level near the regulatory limit it would have been detected.

SVOCs

All SVOC data associated with the surface soil and subsurface soil samples are acceptable.

Pesticides/PCBs

The continuing calibration percent difference for 4,4'-DDT and methoxychlor was outside the method control limit. All of the surface soil samples were qualified estimated (UJ) because the results may be biased low. The detection limit for 4,4'-DDT and methoxychlor is much lower than the regulatory limits. Therefore, if 4,4'-DDT and methoxychlor were present at a level near the regulatory limit they would have been detected.

TRPH

All TRPH data associated with the surface soil and subsurface soil samples are acceptable.

Inorganics

In sample 07DD00801 a known interfering analyte, iron was present at significant concentrations. Due to this analyte, nondetects for cadmium were qualified estimated (UJ) and detections for nickel were qualified as estimated (J). Cadmium and nickel concentrations may be biased low due to the interference affect of iron.

In samples 07D01001 a known interfering analyte, iron was present at significant concentrations. Due to this analyte, nondetects for cadmium were qualified estimated (UJ) and detections for arsenic and nickel were qualified estimated (J). Arsenic and nickel concentrations may be biased low due to the interference affect of iron.

In samples 07SB00120 a known interfering analyte, iron was present at significant concentrations. Due to this analyte, nondetects for cadmium were qualified estimated (UJ) and detections for nickel, sodium, and selenium were qualified estimated (J). Nickel, sodium, and selenium concentrations may be biased low due to the interference affect of iron.

In samples 07SB00210 a known interfering analyte, iron was present at significant concentrations. Due to this analyte, nondetects for cadmium were qualified estimated (UJ) and detections for antimony, cadmium, lead, nickel, selenium, and sodium were qualified estimated (J). Antimony, cadmium, lead, nickel, selenium, and sodium concentrations may be biased low due to the interference affect of iron.

In samples 07D02328 and 07D02320 a known interfering analyte, iron was present at significant concentrations. Due to this analyte, nondetects for cadmium and thallium were qualified estimated (UJ) and detections for nickel were qualified estimated (J). Cadmium and nickel concentrations may be biased low due to the interference affect of iron.

Several analytes in all the samples were qualified as nondetects (U) due to laboratory blank contamination. Inorganics contamination in laboratory blanks is common and therefore, analytes qualified for blank contamination in no way affects the quality of the data. The qualification simply filters out false-positive results.

3.3.2 Risk Assessment

3.3.2.1 Human Health Risk Assessment

A screening level HHRA has been conducted as part of the RI report for Site 07 at NAS Whiting Field. The purpose of the HHRA is to characterize the risks to humans associated with the potential exposures to chemicals in surface and subsurface soil. This HHRA was conducted in accordance with procedures as outlined in Section 1.4.3.

3.3.2.1.1 Selection of COPCs for Site 07

The COPC selection method is described in Section 1.4.3.1 of this report.

Surface Soil

Table 3-7 lists the candidate COPCs (those with at least one detection) and shows those selected as surface soil COPCs for the risk evaluation. The initial COPCs included one carcinogenic chemicals in addition to the cPAHs; therefore, the carcinogenic screening levels were divided by two. The following chemicals were identified as COPCs for surface soil at Site 07: benzo(a)pyrene (equiv.) and chromium.

Additional surface soil samples were collected at Site 07 on May 15, 2001 to delineate the horizontal extent of benzo(a)pyrene around sample location 07SS03. These samples were not considered in the Site 07 surface soil screening level HHRA because of the following:

- The delineation samples were not analyzed for cPAHs other than benzo(a)pyrene and could not be converted into a benzo(a)pyrene (equivalent) concentration as were the previous samples from the Site 07 investigation. Therefore, significant uncertainty would be added to the risk estimate by the combining of these two data sets.
- These samples were for delineation only and were clustered in a small area of approximately a 15 ft by 15 ft area around sample location 07SS03. Because sample locations were heavily biased and are not representative of the exposure unit as a whole.

Although the delineation sample data were not combined with the site-wide data set, the risk for the area of delineation was evaluated for purposes of completeness. Benzo(a)pyrene is the only COPC for the delineation area. Additionally, the area is small [approximately 15 ft by 15 ft or 225 square feet (ft^2)] compared to Site 07 (approximately 91,000 ft^2), or 0.2 percent of the total Site 07 area. This smaller area is accounted for in the risk evaluation by adjustment of the “fraction from contaminated source” or FC term in the development of the FDEP SCTL. I.e., the total risk for a receptor is the sum of his/her risk to the larger part of Site 07 plus the risk to the smaller delineation area adjusting the FC accordingly.

Subsurface Soil

Table 3-8 lists the candidate COPCs (those with at least one detection) and shows those selected as subsurface soil COPCs for the risk evaluation. The initial COPCs included five carcinogenic chemicals in addition to the cPAHs; therefore, the carcinogenic screening levels were divided by six. The following chemicals were identified as COPCs for subsurface soil at Site 07: benzene, benzo(a)pyrene (equiv.), and chromium.

3.3.2.1.2 Exposure Assessment

This exposure assessment was conducted to identify the human pathways of potential exposure, the magnitude of potential exposure, and the frequency and duration of exposure.

TABLE 3-7
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
SITE 07 SURFACE SOIL
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/ Air
Exposure Point: Site 07

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Region 9 PRG [3]	Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Organic Volatiles (mg/kg)																
67-64-1	Acetone	OV	0.0239	J	0.0342	J	07D00801	3/5	0.049-0.052	0.0342	Not Avail	NA - N	78	FL Residential	no	BSL
Organic Semivolatiles (mg/kg)																
56-55-3	**Benzo(a)anthracene**	OS	0.375		0.375		07D00301	1/5	0.34-0.36	0.375	Not Avail	0.21 - C	0.47	FL Residential	yes	PAH
50-32-8	**Benzo(a)pyrene**	OS	0.0439	J	15.5	J	07SS03S1	8/18	0.34-0.36	15.5	Not Avail	0.021 - C	0.03	FL Residential	yes	ASL
205-99-2	**Benzo(b)fluoranthene**	OS	0.243	J	0.243	J	07D00301	1/5	0.34-0.36	0.243	Not Avail	0.21 - C	0.47	FL Residential	yes	PAH
191-24-2	Benzo(g,h,I)perylene	OS	0.128	J	0.128	J	07D00301	1/5	0.34-0.36	0.128	Not Avail	NA - N	230	FL Residential	no	BSL
207-08-9	**Benzo(k)fluoranthene**	OS	0.188	J	0.188	J	07D00301	1/5	0.34-0.36	0.188	Not Avail	2.1 - C	5	FL Residential	yes	PAH
218-01-9	**Chyrsene**	OS	0.351		0.351		07D00301	1/5	0.34-0.36	0.351	Not Avail	21 - C	47	FL Residential	yes	PAH
53-70-3	**Dibenzo(a,h)anthracene**	OS	--		--		--	0/5	0.34-0.36	--	Not Avail	0.021 - C	0.03	FL Residential	yes	PAH
206-44-0	Fluoranthene	OS	0.756		0.756		07D00301	1/5	0.34-0.36	0.756	Not Avail	230 - N	290	FL Residential	no	BSL
193-39-5	**Indeno(1,2,3-cd)pyrene**	OS	0.146	J	0.146	J	07D00301	1/5	0.34-0.36	0.146	Not Avail	0.21 - C	0.5	FL Residential	yes	PAH
85-01-8	Phenanthrene	OS	0.228	J	0.228	J	07D00301	1/5	0.34-0.36	0.228	Not Avail	NA - N	200	FL Residential	no	BSL
129-00-0	Pyrene	OS	0.653		0.653		07D00301	1/5	0.34-0.36	0.653	Not Avail	230 - N	220	FL Residential	no	BSL
Metals (mg/kg)																
7429-90-5	Aluminum	M	7220		24500		07D01001	5/5	--	24500	15848	7600 - N	7200	FL Residential	no	AS
7440-38-2	Arsenic	M	2.6		3.8	J	07D01001	4/5	1.3	3.8	3.2	0.13 - C	0.27	FL Residential	no	AS
7440-39-3	Barium	M	9.5		20.3		07D01001	5/5	--	20.3	23.2	540 - N	110	FL Residential	no	BSL
7440-70-2	Calcium	M	138		319		07D00201	5/5	--	319	396	NA	NA	--	no	NUT/BKG
7440-47-3	**Chromium**	M	7.3		25		07D01001	5/5	--	25	11	10 - C	105	FL Residential	yes	ASL
7440-48-4	Cobalt	M	1.4		1.5		07D00201	4/5	0.55	1.5	3	470 - N	470	FL Residential	no	BSL
7440-50-8	Copper	M	3.2		8.7		07D01001	5/5	--	8.7	9.4	290 - N	110(s)	FL Residential	no	BSL
7439-89-6	Iron	M	4340		15900		07D01001	5/5	--	15900	8832	2300 - N	2300	FL Residential	no	AS
7439-92-1	Lead	M	5.8		19.3		07D01001	5/5	--	19.3	11.4	400	400	FL Residential	no	BSL
7439-95-4	Magnesium	M	98.4		291		07D01001	5/5	--	291	268	NA	NA	--	no	NUT
7439-96-5	Manganese	M	39.5		107		07D00201	5/5	--	107	392	180 - N	160	FL Residential	no	BSL
7439-97-6	Mercury	M	0.01		0.04		07D00801	5/5	--	0.04	0.12	2.3 - N	0.34	FL Residential	no	BSL
7440-02-0	Nickel	M	5.4		7	J	07D01001	4/5	2.4	7	7.2	160 - N	110(s)	FL Residential	no	BSL
7440-09-7	Potassium	M	262		351		07D01001	4/5	119	351	177	NA	NA	--	no	NUT
7440-23-5	Sodium	M	334		390		07D00201	5/5	--	390	406	NA	NA	--	no	NUT/BKG
7440-62-2	Vanadium	M	11		40.6		07D01001	5/5	--	40.6	21.8	55 - N	15(s)	FL Residential	no	AS
7440-66-6	Zinc	M	9		16.5		07D01001	5/5	--	16.5	15.4	230 - N	2300	FL Residential	no	BSL
TPH (mg/kg)																
	Total Petroleum Hydrocarbons	PET	13		58.7		07D01001	5/5	--	58.7	Not Avail	NA	340	FL Residential	no	BSL
Cyanide (mg/kg)																
57-12-5	Cyanide		0.6	J	0.91	J	07D00801	4/5	0.53	0.91	0.28	120 - N	30(s)	FL Residential	no	BSL

[1] Maximum concentration used as screening value
[2] The background screening value is twice the average of background concentrations for inorganic analytes.
[3] Based on Superfund Preliminary Remediation Goals, USEPA Region IX, Residential land use (Cancer benchmark value = 1E-06, Hazard Quotient = 0.1) (May 2000)
[4] FL Residential from Technical Report: Development of Soil Cleanup Levels for Chapter 62-777, F.A.C. (May 1999)(Cancer benchmark value = 1E-06, Hazard Quotient = 0.1)
[5] Rationale Codes

Selection Reason	Above Screening Levels (ASL)
	If one cPAH is selected as a COPC, all are selected (PAH)
Deletion Reason	Maximum detected concentration is below background screening level (BKG)
	Essential Nutrient (NUT)
	Below Screening Levels (BSL)
	Aluminum, arsenic, iron, manganese, and vanadium are determined to be un-related to site activities (AS)

Chemical names in bold indicate that chemical was selected as a COPC

Definitions:
NA = Not Applicable
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
COPC = Chemical of Potential Concern
s = direct exposure based on acute toxicity
N = noncarcinogen
C = carcinogen

TABLE 3-8
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
SITE 07 SUBSURFACE SOIL
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
1 OF 1

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil/ Air
Exposure Point: Site 07

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Region 9 PRG [3]	Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Organic Volatiles (mg/kg)																
67-64-1	Acetone	OV	0.18	J	0.18	J	07SB03520	1/8		0.18	Not Avail	157 - N	78 - N	FL Residential	no	BSL
71-43-2	**Benzene**	OV	0.054		0.28		07D02320	2/8	0.0047-3.1	0.28	Not Avail	0.11 - C	0.18	FL Residential	yes	ASL
100-41-4	Ethylbenzene	OV	0.438		17.3		07SB00210	5/8	0.0047	17.3	Not Avail	230 Csat	110	FL Residential	no	BSL
108-88-3	Toluene	OV	0.12	J	5.48		07D02406	4/8	0.014	5.48	Not Avail	520 Csat	38	FL Residential	no	BSL
1330-20-7	Xylenes	OV	0.291	J	37.2		07SB00210	5/8	0.014	37.2	Not Avail	210 Csat	590	FL Residential	no	BSL
Organic Semivolatiles (mg/kg)																
91-57-6	2-Methylnaphthalene	OS	1.73		1.73		07D02320	1/8	0.35-0.39	1.73	Not Avail	NA	8	FL Residential	no	BSL
83-32-9	Acenaphthene	OS	0.418		0.418		07D02320	1/8	0.35-0.39	0.418	Not Avail	370 - N	190	FL Residential	no	BSL
120-12-7	Anthracene	OS	0.929		0.929		07D02320	1/8	0.35-0.39	0.929	Not Avail	2200 - N	1800	FL Residential	no	BSL
56-55-3	**Benzo(a)anthracene**	OS	2.44		2.44		07D02320	1/8	0.078-0.36	2.44	Not Avail	0.10 - C	0.23	FL Residential	yes	ASL
50-32-8	**Benzo(a)pyrene**	OS	1.3		1.3		07D02320	1/8	0.078-0.36	1.3	Not Avail	0.010 - C	0.017	FL Residential	yes	ASL
205-99-2	**Benzo(b)fluoranthene**	OS	1.52		1.52		07D02320	1/8	0.078-0.36	1.52	Not Avail	0.10 - C	0.23	FL Residential	yes	ASL
191-24-2	Benzo(g,h,I)perylene	OS	0.441		0.441		07D02320	1/8	0.078-0.36	0.441	Not Avail	NA - N	230	FL Residential	no	BSL
207-08-9	**Benzo(k)fluoranthene**	OS	1.35		1.35		07D02320	1/8	0.078-0.36	1.35	Not Avail	1.0 - C	2.5	FL Residential	yes	ASL
117-81-7	Bis(2-ethylhexyl)phthalate	OS	0.286	J	0.286	J	07D02320	1/8	0.35-0.39	0.286	Not Avail	5.8 - C	12.7	FL Residential	no	BSL
86-74-8	Carbazole	OS	0.0668	J	0.0668	J	07D02320	1/8	0.35-0.39	0.0668	Not Avail	4 - C	8.8	FL Residential	no	BSL
218-01-9	**Chyrsene**	OS	1.75		1.75		07D02320	1/8	0.078-0.36	1.75	Not Avail	10 - C	23.3	FL Residential	yes	PAH
53-70-3	**Dibenzo(a,h)anthracene**	OS	0.128	J	0.128	J	07D02320	1/8	0.078-0.36	0.128	Not Avail	0.010 - C	0.017	FL Residential	yes	ASL
132-64-9	Dibenzofuran	OS	0.14	J	0.14	J	07D02320	1/8	0.35-0.39	0.14	Not Avail	29 - N	28	FL Residential	no	BSL
206-44-0	Fluoranthene	OS	0.169	J	6.56		07D02320	2/8	0.34-0.39	6.56	Not Avail	230 - N	290	FL Residential	no	BSL
86-73-7	Fluorene	OS	0.426		0.426		07D02320	1/8	0.35-0.39	0.426	Not Avail	260 - N	220	FL Residential	no	BSL
193-39-5	**Indeno(1,2,3-cd)pyrene**	OS	0.511		0.511		07D02320	1/8	0.078-0.36	0.511	Not Avail	0.10 - C	0.25	FL Residential	yes	ASL
91-20-3	Naphthalene	OS	1.26		1.26		07D02320	1/8	0.35-0.39	1.26	Not Avail	5.6 - N	4	FL Residential	no	BSL
85-01-8	Phenanthrene	OS	0.144	J	3.86		07D02320	2/8	0.34-0.39	3.86	Not Avail	NA - N	200	FL Residential	no	BSL
129-00-0	Pyrene	OS	0.13	J	5.52		07D02320	2/8	0.34-0.39	5.52	Not Avail	230 - N	220	FL Residential	no	BSL
Metals (mg/kg)																
7429-90-5	Aluminum	M	58.2	J	24000		07SB00120	8/8	--	24000	15848	7600 - N	7200	FL Residential	no	AS
7440-36-0	Antimony	M	1.8	J	1.8	J	07SB00210	1/8	0.28-0.51	1.8	8	3.1 - N	2.6	FL Residential	no	BSL
7440-38-2	Arsenic	M	3.2		5.7		07SB00210	4/8	0.4	5.7	3.2	0.065 - C	0.13	FL Residential	no	AS
7440-39-3	Barium	M	2		8		07SB00210	5/8	--	8	23.2	540 - N	110(s)	FL Residential	no	BSL
7440-43-9	Cadmium	M	0.08		0.08		07SB03520	1/8	0.026-0.04	0.08	--	3.7 - N	7.5 - N	FL Residential	no	BSL
7440-70-2	Calcium	M	128	J	229		07D02308	5/8	37.1-60.9	229	396	NA	NA	--	no	NUT/BKG
7440-47-3	**Chromium**	M	0.93		28.2		07SB00120	6/8	0.9-1.7	28.2	11	5 - C	35	FL Residential	yes	ASL
7440-48-4	Cobalt	M	0.89		2.6		07SB00210	4/8	0.054-0.24	2.6	3	470 - N	470	FL Residential	no	BSL
7440-50-8	Copper	M	6.7		12.1		07SB00210	4/8	0.61-1.9	12.1	9.4	290 - N	110(s)	FL Residential	no	BSL
7439-89-6	Iron	M	97.2		98500		07SB00210	8/8	--	98500	8832	2300 - N	2300	FL Residential	no	AS
7439-92-1	Lead	M	1.1		13.5	J	07SB00210	6/8	0.62-1.3	13.5	11.4	400 - N	400	FL Residential	no	BSL
7439-95-4	Magnesium	M	19.9		219		07D02308	6/8	2.5-5.4	219	268	NA	NA	--	no	NUT/BKG
7439-96-5	Manganese	M	1.9		338	J	07SB00120	7/8	0.98-1.6	338	392	180 - N	160	FL Residential	no	BKG
7439-97-6	Mercury	M	0.034	J	0.038	J	07SB03680	2/7	0.01-0.06	0.038	0.12	2.3 - N	0.34	FL Residential	no	BSL
7440-02-0	Nickel	M	2.8	J	5	J	07SB00120	4/8	0.1-0.53	5	7.2	160 - N	110(s)	FL Residential	no	BSL
7440-09-7	Potassium	M	297		297		07D02308	1/8	4.8-195	297	177	NA	NA	--	no	NUT
7782-49-2	Selenium	M	5.3	J	23.3	J	07SB00210	2/8	0.24-2.8	23.3	0.46	39 - N	39	FL Residential	no	BSL
7440-23-5	Sodium	M	106	J	134	J	07SB00120	2/8	55.7-198	134	406	NA	NA	--	no	NUT/BKG
7440-62-2	Vanadium	M	0.16		45.4		07SB00120	8/8	--	45.4	21.8	55 - N	15(s)	FL Residential	no	AS
7440-66-6	Zinc	M	4		11.8		07D02308	5/8	4.7-6	11.8	15.4	2300 - N	2300	FL Residential	no	BSL
TPH (mg/kg)																
	Total Petroleum Hydrocarbons	PET	9.01		244		07D02320	7/8	8.8	244	Not Avail	NA - N	340	FL Residential	no	BSL
Cyanide (mg/kg)																
57-12-5	Cyanide		1.5		1.7		07D02406	2/5	0.54-0.589	1.7	0.28	120 - N	30(s)	FL Residential	no	BSL

[1] Maximum concentration used as screening value
[2] The background screening value is twice the average of background concentrations for inorganic analytes.
[3] Based on Superfund Preliminary Remediation Goals, USEPA Region IX, Residential land use (Cancer benchmark value = 1E-06, Hazard Quotient = 0.1) (May 2000)
[4] FL Residential from Technical Report: Development of Soil Cleanup Levels for Chapter 62-777, F.A.C. (May 1999)(Cancer benchmark value = 1E-06, Hazard Quotient = 0.1)
[5] Rationale Codes

Selection Reason	Above Screening Levels (ASL) If one cPAH is selected as a COPC, all are selected (PAH)
Deletion Reason	Maximum detected concentration is below background screening level (BKG) Essential Nutrient (NUT) Below Screening Levels (BSL) Aluminum, arsenic, iron, manganese, and vanadium are determined to be unrelated to site activities (AS)

Chemical names in bold indicate that chemical was selected as a COPC

Definitions:
NA = Not Applicable
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
COPC = Chemical of Potential Concern
s = direct exposure based on acute toxicity
N = noncarcinogen
C = carcinogen
Csat = Saturation concentration. When the calculated Region IX PRG exceeds the Csat , the Csat is used as the PRG. This value does not reflect a Hazard Quotient of 0.1.

Exposure Setting Characterization

Section 1.2 describes the regional and site-specific environmental setting of Site 07. The site is non-residential and is expected to remain non-residential in the foreseeable future.

Identification of Potential Receptors and Exposure Pathways

The receptors to be evaluated were selected based on the current and realistic future use of the sites and surrounding areas.

For both current and future time frames for the HHRA, four potential receptors were evaluated for NAS Whiting Field Site 07. These receptors are:

- A construction worker. The construction worker was considered to perform intrusive work at relatively short durations. The construction worker is the only receptor potentially exposed to subsurface soil.

- A site occupational worker. The site occupational worker was assumed to be on site in a commercial/industrial scenario.

- A trespasser or visitor. These individuals may occasionally enter the site with or without proper authorization. Both an adult and an older child were considered.

- An on-site resident. The on-site resident is considered highly unlikely; however, this pathway was considered for purposes of completeness and conservatism.

As described in Section 1.4.3.2, exposure assessment parameters used in this RA are those used to derive the Florida SCTLs and represent only the on-site resident and the site occupational worker.

Additional surface soil samples were collected to delineate the benzo(a)pyrene impact around sample location 07SS03. Because of the bias of sample location and the differences in analysis (the delineation samples were not analyzed for cPAHs other than benzo(a)pyrene), the additional samples were not included in the screening level HHRA for Site 07 surface soil but were considered separately. The exposure of the on-site resident and the site occupational worker to the surface soil in the area of delineation (approximately 0.2 percent of Site 07) would be less than the exposure of a receptor exposed to all of Site 07. To account for this, the “fraction from contaminated source” or FC term in the development of the FDEP SCTL was adjusted (Figure 4 in FDEP 1999). For information purposes, unadjusted SCTLs (FC = 1.0) are presented along with SCTLs developed with FCs of 0.1, 0.01, and 0.002 representing exposure to the delineation area comprising 10 percent, 1 percent, and 0.2 percent of exposure to the entire site, respectively.

3.3.2.1.3 Toxicity Assessment

As described in Section 1.4.3.3, toxicity parameters used in this RA are those used to derive the Florida SCTLs.

Toxicological profiles for each of the COPCs are presented in Appendix F of the Technical Report: Development of SCTLs for Chapter 62-777, F.A.C. (FDEP, 2003). These profiles present a summary of the available literature on carcinogenic and noncarcinogenic effects associated with human exposure to the chemical.

3.3.2.1.4 Risk Characterization

This section contains a summary of the human health risk estimates for Site 07. The methodology used to calculate the risk estimates is provided in Section 1.4.3.4. A media-specific discussion of the estimated non-carcinogenic and carcinogenic risks is provided in the remainder of this section.

3.3.2.1.4.1 Surface Soil – Carcinogenic Risks

Cancer risk estimates and HI calculated for the COPCs for surface soils are presented in Table 3-9.

The estimated ILCR calculated for the hypothetical future resident and the typical occupational worker (based on the Florida SCTLs) are 1.6E-04 and 3.1 E-05, respectively. These risk estimates are not within the USEPA target risk range often used to evaluate the need for environmental remediation, but exceed the State of Florida benchmark of 1E-06. The primary risk drivers (i.e., contributors to risk) are the carcinogenic PAHs. The ILCR for the carcinogenic PAHs exceed 1E-06 for the hypothetical future resident and typical occupational worker. The ILCRs for chromium do not exceed 1E-06 for either the hypothetical future resident or the typical occupational worker.

Significant uncertainties identified for the PAH risk estimates (Section 3.3.3.5) are: 1) the PAH concentrations detected in the soils are similar to those concentrations often detected in rural and urban background samples, 2) the maximum concentration detected for each COPC was used as the EPC, 3) only the maximum detected concentration of benzo(a)pyrene exceeded its PRG or SCTL. The remaining six cPAHs were selected as COPCs either because of the conservative COPC selection process of lowering the screening level according to the number of carcinogenic initial COPCs or because of guidance stating if one cPAH is selected as a COPC, they all must be.

TABLE 3-9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - SURFACE SOIL
SITE 07

Chemical of Potential Concern	Concentration (maximum) (mg/kg)	Incremental Lifetime Carcinogenic Risk (ILCR)				Estimated Non-Carcinogenic Hazard Quotient (HQ)				
		FL SCTL[1]	Estimated Residential ILCR	FL SCTL [2]	Estimated Industrial ILCR	Primary Target Organs[3]	FL SCTL or PRG[1][4]	Estimated Residential HQ	FL SCTL or PRG[2][4]	Estimated Industrial HQ
Benzo(a)pyrene (equivalent)	15.5	0.1	**1.6E-04**	0.5	**3.1E-05**	NA[5]	NA	NA	NA	NA
Chromium	25	210	1.2E-07	420	6.0E-08	Respiratory	230	0.11	6100	4.1E-03
		Total Carcinogenic Risk	**1.6E-04**		**3.1E-05**		Total HI	0.11		4.10E-03

Target Organ Hits - Residential

Total Respiratory HI = 0.11

Target Organ Hits - Industrial

Total Respiratory HI = 4.1E-03

1 FL **Residential** SCTL from Technical Report: Development of Soil Clean-up Levels for Chapter 62-777, F.A.C. (May 1999)
2 FL **Industrial** SCTL from Technical Report: Development of Soil Clean-up Levels for Chapter 62-777, F.A.C. (May 1999)
3 Target organs from Technical Report: Development of Soil Clean-up Levels for Chapter 62-777, F.A.C. (May 1999)
4 If Florida SCTL is based on cancer risk, the USEPA Region IX PRG for noncarcinogenic health effects is given if available.
5 NA - Not applicable. The USEPA has either not established a cancer slope factor (CSF) or noncarcinogenic reference dose (RfD) for this chemical.
6 Vanadium residential SCTL of 15 mg/kg based on acute exposure. Consequently, a hazard quotient was not calculated. Risk estimates for acute and chronic exposure are discussed in text.
Bold indicates result exceeds 1E-06 for Carcinogenic Risk or 1.0 for Hazard Index
SCTL = Soil Cleanup Target Levels for Chapter 62-777, F.A.C. (May 1999)
PRG = Preliminary Remediation Goals, USEPA Region IX

Surface Soil Delineation Samples

Cancer risk estimates calculated for benzo(a)pyrene in surface soils collected in the area around sample location 07SS03 are also presented in Table 3-7. The area of delineation is approximately 0.2 percent of the entire site and the FC term in the development of the FDEP SCTL was adjusted (Figure 4 in FDEP 1999). Risk estimates are presented for SCTLs developed using an FC of 1.0 (unadjusted for information purposes), 0.1, 0.01, and 0.002 representing the delineation area comprising 100 percent, 10 percent, 1 percent, and 0.2 percent of the entire site, respectively.

The estimated ILCRs calculated for the hypothetical future resident and the typical occupational worker (based on the Florida SCTLs) exposed to only surface soils in the area around sample location 07SS03 are 8.6E-06 and 1.7E-06, respectively when the FC term of 0.1 was used. These risk estimates are within the USEPA target risk range often used to evaluate the need for environmental remediation; but exceed the State of Florida benchmark of 1E-06. When FC terms of 0.01 and 0.002 are used (more closely representing the area of impact compared to the area of Site 07), the estimated ILCRs calculated for the hypothetical future resident and the typical occupational worker exposed only to surface soils in the area around sample location 07SS03 do not exceed the USEPA target risk range or the State of Florida benchmark of 1E-06.

Carcinogenic PAH impact was detected in surface soil only at 07SS03 and in the area immediately surrounding 07SS03. The risk estimate with the removal of this hot spot would be below the State of Florida benchmark of 1E-06.

3.3.2.1.4.2 Surface Soil – Noncarcinogenic Risks

The total HI and the HI calculated on a target organ specific basis for the hypothetical future resident and the typical occupational worker (based on Florida SCTLs) do not exceed 1. Consequently, adverse non-carcinogenic health effects are not anticipated under the conditions established in the exposure assessment.

3.3.2.1.4.3 Subsurface Soil – Carcinogenic Risks

Cancer risk estimates and HIs calculated for the COPCs for subsurface soils are presented in Table 3-10.

The estimated ILCR calculated for the hypothetical future resident and the typical occupational worker (based on the Florida SCTLs) are 1.9E-05 and 4.0E-06, respectively. These risk estimates are within the USEPA target risk range often used to evaluate the need for environmental remediation; but exceed the State of Florida benchmark of 1E-06. The primary risk drivers (i.e., contributors to risk) are the carcinogenic PAHs. The ILCRs for the carcinogenic PAHs exceed 1E-06 for the hypothetical future

TABLE 3-10
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - SUBSURFACE SOIL
SITE 07

Chemical of Potential Concern	Concentration (maximum) (mg/kg)	Incremental Lifetime Carcinogenic Risk (ILCR)				Estimated Non-Carcinogenic Hazard Quotient (HQ)				
		FL SCTL[1]	Estimated Residential ILCR	FL SCTL [2]	Estimated Industrial ILCR	Primary Target Organs[3]	FL SCTL or PRG[1][4]	Estimated Residential HQ	FL SCTL or PRG[2][4]	Estimated Industrial HQ
Benzene	0.28	1.1	2.5E-07	1.6	1.8E-07	NA[5]	NA	NA	NA	NA
Benzo(a)pyrene (equivalent)	1.89	0.1	**1.9E-05**	0.5	**3.8E-06**	NA	NA	NA	NA	NA
Chromium	28.2	210	1.3E-07	420	6.7E-08	Respiratory	230	0.12	6100	4.6E-03
		Total Carcinogenic Risk	**1.9E-05**		**4.0E-06**		Total HI	**0.12**		4.62E-03

Target Organ Hits - Residential

Total Respiratory HI = 0.12

Target Organ Hits - Industrial

Total Respiratory HI = 4.6E-03

1 FL **Residential** SCTL from Technical Report: Development of Soil Clean-up Levels for Chapter 62-777, F.A.C. (May 1999)
2 FL **Industrial** SCTL from Technical Report: Development of Soil Clean-up Levels for Chapter 62-777, F.A.C. (May 1999)
3 Target organs from Technical Report: Development of Soil Clean-up Levels for Chapter 62-777, F.A.C. (May 1999)
4 If Florida SCTL is based on cancer risk, the USEPA Region IX PRG for noncarcinogenic health effects is given if available.
5 NA - Not applicable. The USEPA has either not established a cancer slope factor (CSF) or noncarcinogenic reference dose (RfD) for this chemical.
6 Vanadium residential SCTL of 15 mg/kg based on acute exposure. Consequently, a hazard quotient was not calculated. Risk estimates for acute and chronic exposure are discussed in text.
Bold indicates result exceeds 1E-06 for Carcinogenic Risk or 1.0 for Hazard Index
SCTL = Soil Cleanup Target Levels for Chapter 62-777, F.A.C. (May 1999)
PRG = Preliminary Remediation Goals, USEPA Region IX

resident and the typical industrial worker. The ILCRs for benzene and chromium do not exceed 1E-06 for either the hypothetical future resident or the typical occupational worker.

Significant uncertainties identified for the PAH risk estimates (Section 3.3.3.5) are: 1) the PAH concentrations detected in the soils are similar to those concentrations often detected in rural and urban background samples, 2) the maximum concentration detected for each COPC was used as the EPC, and 3) four of the maximum detected concentrations of the cPAHs exceeded their PRG or SCTL. The remaining three cPAHs were selected as COPCs either because of the conservative COPC selection process of lowering the screening level according to the number of carcinogenic initial COPCs or because of guidance stating if one cPAH is selected as a COPC, they all must be. The foregoing uncertainties, especially the similarity of PAH concentrations to typical background levels and the over conservative bias in using the maximum concentration to estimate risk, should be considered in any remedial decisions.

3.3.2.1.4.4 Subsurface Soil – Noncarcinogenic Risks

HIs calculated for the hypothetical future resident and the typical occupational worker (based on Florida SCTLs) do not exceed 1. Consequently, adverse non-carcinogenic health effects are not anticipated under the conditions established in the exposure assessment.

3.3.2.1.5 Uncertainty

The general uncertainties associated with the HHRA are presented in subparagraph 1.4.3.5. Uncertainties associated with Site 07 specifically are provided in this section.

3.3.2.1.5.1 Uncertainty in COPC Selection

As discussed in subparagraph 1.4.3.5.1, Region IX PRGs were not available for a few chemicals detected in this investigation. For those chemicals (acetone, benzo (g,h,I)perylene, phenanthracene), Florida SCTLs were available; therefore, a screening value was available for the RA. Because both the SCTLs and the PRGs are risk-based and because the maximum concentrations were less than the SCTLs by three orders of magnitude in each case, it is unlikely the lack of PRG values has resulted in the underestimation of risk.

Of the cPAHs, only one in surface soil and four in subsurface soil were selected as COPCs. The remaining cPAHs were selected as COPCs because A) of the conservative COPC selection process of lowering the screening level according to the number of carcinogenic initial COPCs or B) per methodology presented in page 5-22 of the RAGS (USEPA 1989), stating any member of a chemical class (e.g., detected cPAHs) having other members selected as COPCs should be retained as a COPC.

The PAH concentrations noted in the surface soils are similar to concentrations reported in urban and rural background samples.

3.3.2.1.5.2 Uncertainty in Exposure Assessment

The maximum detected concentration of each COPC was used to quantify potential risks. As a result of using the maximum concentration, the estimations of potential risk are likely to be overestimated because it is unlikely potential receptors would be exposed to the maximum concentration over the entire site for the assumed exposure period.

3.3.2.2 Ecological Risk Assessment

This section presents the results of the SERA for Site 07. The risk evaluation was performed using the general methodologies presented in Section 1.4.3.2.

3.3.2.2.1 Habitat Description

Section 1.2 of this report presents the site background, site layout, and a general site description. The South Fuel Tank Farm (Site 07) is surrounded on all sides by open field and is a turf grass-covered area, approximately 100 ft by 315 ft (approximately 0.72 acres). The surface soil samples collected during this investigation were located in the northern half of this area. Approximately 100 yards from the site, there is a row of large deciduous trees [Diameter at Breast Height (DBH) > 12 inches], as well as some industrial development, including buildings and a parking lot.

3.3.2.2.2 Potential Ecological Receptors and Exposure Pathways

Based on the above description of the site and potential contaminant migration pathways, ecological receptors (e.g., plants and soil invertebrates) could be directly exposed to chemicals in the surface soil. Because of the limited size and habitat of the site, it is unlikely upper trophic level organisms, such as small mammals and birds, would obtain a significant portion of their food at the site. As a result, ecological receptors would not be exposed to chemicals in the surface soil indirectly via the food chain (i.e., through the ingestion of plants and invertebrates). Therefore, soil vegetation and invertebrates were selected as assessment endpoints for Site 07.

3.3.2.2.3 Screening Results

This section contains the ecological risk screening evaluation conducted for the chemicals detected in the surface soil at Site 07. Sixteen surface soil samples collected in May 2000 and 2001 were evaluated as part of the SERA. Twelve surface soil samples (07SS03E1, 07SS03E2, 07SS03N1, 07SS03N2, 07SS03NE, 07SS03NW, 07SS03S1, 07SS03S2, 07SS03SE, 07SS03SW, 07SS03W1, and 07SS03W2) collected in May 2001 were collected and evaluated due to human health exceedances for

benzo(a)pyrene in May 2000. The general methodologies used for the exposure assessment and risk characterization are discussed in Section 1.4.3.2 of this report. Table 3-11 is the screening table for plants and invertebrates exposed to chemicals detected in the surface soil samples. In addition to the summary statistics (e.g., frequency of detection), the table also includes soil background/anthropogenic values, two times the average Base-specific soil background values (ABB-ES, 1996a). The background values were presented for informational purposes only; they were not used for selecting COPCs. In summary, 1 VOC, 10 SVOCs, and 18 inorganics were detected in the surface soil samples.

Four SVOCs (benzo(a)pyrene, fluoranthene, phenanthrene, and pyrene) and two inorganics, total chromium and cyanide, were selected as surface soil COPCs because their maximum concentrations exceeded USEPA Region IV screening levels (Table 3-9). Acetone was retained as a COPC because no USEPA Region IV screening level was available.

3.3.2.2.4 Step 3A Discussion

Foodchain Modeling

USEPA Region IV suggests food chain modeling should be done as part of COPC refinement for screening-level COPCs known to bioaccumulate or biomagnify (USEPA, 2000). However, terrestrial food chain modeling appears to be inappropriate at Site 07 for several reasons. Although the site is large enough to comprise a high percentage of the home range of a small mammal (e.g., 0.0659 acres for a meadow vole and 0.9699 acres for a short-tailed shrew), the lack of diverse vegetation and cover in the surrounding area make it unlikely the site could support a population of small mammals (USEPA, 1993). In addition, all six inorganic COPCs from the screening (aluminum, chromium, cyanide, iron, manganese, and vanadium) are present at relatively low concentrations (see chemical sections below), and are not expected to bioaccumulate or biomagnify. The concentrations of benzo(a)pyrene (15.5 mg/kg) detected in 07SS03S1, fluoranthene (0.756 mg/kg), phenanthrene (0.228 mg/kg), and pyrene (0.653 mg/kg) were detected in one sample (07D00301). The low concentrations do not warrant food chain modeling. For these reasons, terrestrial food chain modeling would add little to the decision-making process at Site 07, and will not be performed.

Soil Plants and Invertebrates

Acetone

Acetone was retained as a COPC because there was no USEPA Region IV screening level available for this chemical. However, because acetone is a common laboratory chemical, the relatively low maximum detected concentration (0.0342 mg/kg) is not likely to be site-related, or to cause unacceptable risks to ecological receptors. Therefore, acetone will be dropped from further consideration as a Step 3A COPC.

TABLE 3-11

ECOLOGICAL RISK SCREENING - SURFACE SOIL
SITE 07 - SOUTH AVGAS TANK SLUDGE DISPOSAL AREA
NAS WHITING FIELD, MILTON, FLORIDA

Chemical	Frequency of Detections[1]	Range of Detections[1]	Location of Maximum Detection	Average of Positive Detections	Concentration Used for Screening[2]	Base-Specific Soil Background/ Anthropogenic Value [3]	Region IV Surface Soil Screening Value	Ecological Effects Quotient	COPC Flag	Rationale for Contaminant Deletion or Selection
VOLATILES (mg/kg)										
Acetone	2/4	0.0239 - 0.0342	07D00801D	0.028	0.0342	---	NA	NA	Yes	NTX
SEMIVOLATILES (mg/kg)										
Benzo(a)anthracene	1/4	0.375	07D00301	0.375	0.375	---	1.0	0.38	No	BSL
Benzo(a)pyrene	8/16	0.0439-15.5	07SS03S1	2.242	15.5	---	0.1	155.0	Yes	ASL
Benzo(b)fluoranthene	1/4	0.243	07D00301	0.243	0.243	---	1.0	0.24	No	BSL
Benzo(g,h,i)perylene	1/4	0.128	07D00301	0.128	0.128	---	1.0	0.13	No	BSL
Benzo(k)fluoranthene	1/4	0.188	07D00301	0.188	0.188	---	1.0	0.19	No	BSL
Chrysene	1/4	0.351	07D00301	0.351	0.351	---	1.0	0.35	No	BSL
Fluoranthene	1/4	0.756	07D00301	0.756	0.756	---	0.1	7.6	Yes	ASL
Indeno(1,2,3-cd)pyrene	1/4	0.146	07D00301	0.146	0.146	---	1.0	0.15	No	BSL
Phenanthrene	1/4	0.228	07D00301	0.228	0.228	---	0.1	2.3	Yes	ASL
Pyrene	1/4	0.653	07D00301	0.653	0.653	---	0.1	6.5	Yes	ASL
INORGANICS (mg/kg)										
Aluminum	4/4	7220 - 24500	07D01001	17555	24500	15848	50	490	Yes	ASL
Arsenic	3/4	2.6 - 3.8	07D01001	3.2	3.8	3.2	10	0.38	No	BSL
Barium	4/4	9.5 - 20.3	07D01001	16.7	20.3	23.2	165	0.12	No	BSL
Calcium	4/4	138 - 319	07D00201	238	319	392	NA	NA	No	NT
Chromium (total)	4/4	7.3 - 25	07D01001	16.0	25	11.0	0.4	62.5	Yes	ASL
Cobalt	3/4	1.4 - 1.5	07D00201	1.4	1.5	3.0	20	0.075	No	BSL
Copper	4/4	3.2 - 8.7	07D01001	6.7	8.7	9.4	40	0.22	No	BSL
Cyanide	3/4	0.6 - 0.91	07D00801D	0.76	0.91	---	0.9	1.01	Yes	ASL
Iron	4/4	4340 - 15900	07D01001	10488	15900	8832	200	79.5	No	AS
Lead	4/4	5.8 - 19.3	07D01001	9.6	19.3	11.4	50	0.39	No	BSL
Magnesium	4/4	98.4 - 291	07D01001	232	291	268	NA	NA	No	NT
Manganese	4/4	39.5 - 107	07D00201	76.0	107	392	100	1.07	No	AS
Mercury	4/4	0.01 - 0.04	07D00801, 07D00801D	0.028	0.04	0.12	0.1	0.40	No	BSL
Nickel	3/4	5.4 - 7	07D01001	6.1	7	7.2	30	0.23	No	BSL
Potassium	3/4	262 - 351	07D01001	323	351	177	NA	NA	No	NT
Sodium	4/4	334 - 390	07D00201	361	390	406	NA	NA	No	NT
Vanadium	4/4	11 - 40.6	07D01001	26.9	40.6	21.8	2.0	20.3	No	AS
Zinc	4/4	9 - 16.5	07D01001	13.3	16.5	15.4	50	0.33	No	BSL

Footnotes:
1 The sample and duplicate were counted as two separate samples when determining the minimum and maximum detected concentrations, but were only counted as one sample when determining the frequency of distribution (if applicable).
2 The maximum detected concentration was used for screening purposes.
3 The value presented is 2X the average Base-specific background value for troup loamy soil [General Information Report (GIR), Remedial Investigation and Feasibility Study (ABB-ES, 1996)].

Note:
Shading indicates that the chemical was retained as a COPC, the background concentration was greater than the concentration used for screening, and/or the ecological effects quotient was greater than 1.0.

Definitions:
COPC = Chemical of Potential Concern
NA = Not Applicable / Not Available
--- = Base-Specific Background Value Not Available

Rationale Codes:
For Selection as a COPC:
ASL = Above COPC Screening Level
NTX = No Toxicity Information Available

For Elimination as a COPC:
BSL = Below COPC Screening Level
NT = Nontoxic
AS = Aluminum, arsenic, iron, manganese, and vanadium are determined by the FDEP to be un-related to site activities.

Benzo(a)pyrene, Fluoranthene, Phenanthrene, and Pyrene

Benzo(a)pyrene, fluoranthene, phenanthrene, and pyrene were retained as COPCs because their maximum concentrations exceeded the Region IV screening level of 0.1 for each individual PAH. The screening level is the Dutch Target Value. This value is indicative of the soil quality level is ultimately desired (MHSPE, 1994), and is therefore, very conservative. Based on the 10 PAHs detected at Site 07, the Dutch Intermediate Value for each individual PAH is 2.05 mg/kg (see Appendix A). None of the detected PAHs exceed this value with the exception of benzo(a)pyrene (see Table 3-11). The May 2001 collection aided in determining the extent of benzo(a)pyrene contamination at site 07SS03. Four samples (07SS03S1, 07SS03S1D, 07SS03W1, and 07SS03W2) for May 2001 had exceedances for this chemical with concentrations ranging from 0.712 mg/kg to 1.84 mg/kg. The sample with the greatest concentration (15.5 mg/kg) was surrounded by samples with no exceedances for benzo(a)pyrene. Therefore, the area with elevated benzo(a)pyrene concentrations is small and unlikely to pose an unacceptable risk to ecological receptors. For these reasons, benzo(a)pyrene, fluoranthene, phenanthrene, and pyrene should be dropped from further consideration as a Step 3A COPC at Site 07.

Chromium (total)

Chromium (total) was retained as a COPC because the maximum detected concentration (25 mg/kg) exceeded the USEPA Region IV screening level of 0.4 mg/kg, based on an earthworm study where potassium dichromate [Cr(IV)] was added to the soil as a solution (Efroymson et al., 1997a). However, chromium typically occurs in soil as Cr(III) (ASTDR, 1987), stable in most soil types (CCME, 1997), and typically thought to be nontoxic (Eisler, 1986). It is likely most, if not all, of the chromium detected in the soil samples at the site was Cr(III). In addition, the concentrations of total chromium detected at Site 07 are less than all of the alternate benchmarks and toxicity data presented in Appendix B. Therefore, chromium (total) will be dropped from further consideration as a Step 3A COPC at Site 07.

Cyanide

Cyanide was retained as a COPC because the maximum detected concentration (0.91 mg/kg) slightly exceeded the USEPA Region IV screening level of 0.9 mg/kg (Canadian Soil Quality Guideline). However, the maximum detected concentration is less than the Dutch Target Value of 1.0 mg/kg (MHSPE, 1994). At such low concentrations, it is unlikely cyanide will pose unacceptable risks to ecological receptors, and will be dropped from further consideration as a Step 3A COPC at Site 07.

3.3.2.2.5 Step 3A Summary and Conclusions

A SERA was performed for Site 07: South AVGAS Tank Sludge Disposal Area. Several metals and organic chemicals were detected in surface soil at maximum concentrations exceeding conservative screening levels and, thus, they were selected as COPCs. These COPCs were assessed in a less conservative Step 3A evaluation.

The results of the Step 3A analysis indicate the chemicals detected in the surface soil at Site 07 do not pose unacceptable risks to ecological receptors, and will not be evaluated further.

3.4 CONCLUSION AND RECOMMENDATION

3.4.1 Conclusion

Surface and subsurface soil samples were collected and analyzed for VOCs, SVOCs, pesticides/PCBs (surface soil only), inorganics, and TRPH analysis.

Surface Soil

One VOC, 10 SVOCs, TRPH, and 18 inorganic analytes were detected in the surface soil. Benzo(a)pyrene was detected above the FDEP DE1, DE2, and LE SCTLs. An HHRA conducted for Site 07 to determine if a human health risk from the detected contaminants existed, determined a possible human health risk (on-site resident) from benzo(a)pyrene was present (refer to section 3.3.2.1.4.4 of this report). However, if the localized area (hot spot) is removed then no risk from benzo(a)pyrene is present.

Benzo(a)pyrene, fluoranthene, phenanthrene, pyrene, aluminum, chromium, iron, manganese, vanadium, and cyanide were detected above the USEPA Region IV RAGS. The removal of the localized area (hot spot) of benzo(a)pyrene contamination would remove the USEPA Region IV RAGS exceedance. Based on the SERA, no ecological risk exists for fluoranthene, phenanthrene, and pyrene because the detected concentrations did not exceed the Intermediate Values, though the concentrations did exceed the Target Values (refer to section 3.3.2.2.4 of this report). The regulatory limits for the detected inorganics were determined to be inapplicable to this site. Therefore, no ecological risks from the detected contaminants are present.

Aluminum, iron, lead, manganese, and vanadium were detected in the surface soil leachate samples above the FDEP GCTLs. This indicates a possible adverse impact on the groundwater. The impact of surface soil leaching through the subsurface soil to the groundwater will be addressed in the Site 40 RI Report.

Subsurface Soil

Four VOCs, 19 SVOCs, TRPH, and 19 inorganic analytes were detected in the subsurface soil. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene were detected above the FDEP DE1 SCTL. Benzo(a)pyrene was also detected above the FDEP DE2 SCTL. The subsurface HHRA determined a possible human health risk (construction worker, site occupational

worker, and on-site resident) due to cPAH [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene] contamination is present.

Ethylbenzene, total xylenes, 2-methylnaphthalene, naphthalene, and TRPH were detected in the subsurface soil leachate samples above the FDEP GCTLs. This indicates a possible adverse impact on the groundwater. The impact of subsurface soil leaching to the groundwater will be addressed in the Site 40 RI Report.

3.4.2 Recommendation

Based on the comparison of the detected levels of surface and subsurface soil contamination with the SCTLs listed in Chapter 62-777, F.A.C., USEPA PRGs and RAGS, and the RAs performed, human health risks associated with benzo(a)pyrene in surface soil and PAHs in subsurface soil are present at Site 07.

Surface Soil

The human health risk associated with benzo(a)pyrene contamination appears to be localized in the vicinity of surface soil boring 07SS03. It is recommended a FFS be conducted to determine the most appropriate means of remediation.

Subsurface Soil

The human health risk associated with the PAH contamination appears to be localized in the vicinity of subsurface soil boring 07SB23 at a depth of 18 to 20 ft bls. Also the presence of FID readings above FDEP regulatory criteria to a depth of at least 100 ft. bls indicates contamination may be present at these depths. It is recommended a FFS be conducted to determine the most appropriate means of remediation.

4.0 SITE 29: AUTO HOBBY SHOP

Investigations at Site 29, the Auto Hobby Shop, were conducted to further delineate and determine the extent of surface soil contamination at two separate former waste oil and heating oil USTs. The investigations were also conducted to confirm previous UST removals eliminated potential contamination sources. This section describes the geologic setting, surface and subsurface soil assessments, data evaluation, and RA for Site 29.

4.1 GEOLOGIC SETTING

The soil sampled at Site 29 was characterized to 30 ft bls and is comprised of four layers. The first layer (0 to 2 ft bls) is a sandy-clay. The second layer (3 to 6 ft bls) is fine to course grain sand. The third layer (6 to 16 ft bls) is a silty-clay, with some sand. The fourth layer (16 to 30 ft bls) is a fine to medium grain sand. The surface soil was previously characterized as Troupe loamy sand (USDA, 1980).

4.2 SOIL ASSESSMENT

Six surface soil borings were advanced at the former waste oil location found between the southern end of Building 1404 and the western end of Building 2975. Five subsurface soil samples were collected from the same area. Five additional subsurface soil samples were collected from the former heating oil UST location. Surface soil samples were collected using stainless steel hand augers. Subsurface soil borings were advanced using DPT. Refer to Figure 4-1 for soil boring locations.

4.2.1 Surface Soil Assessment

Six surface soil samples (29SS01, 29SS02, 29SS03, 29SS04, 29SS05, and 29SS06) were collected from the six surface soil borings at Site 29. The location for sample 29SS06 was specifically selected to confirm results from the IRA. The samples were analyzed for TCL VOCs, TCL SVOCs, TAL inorganics, and TRPH. Analytical results are summarized in Table 4-1. SCTLs from Chapter 62-777, F.A.C., USEPA PRGs, USEPA RAGS, and the BSLs are also included in Table 4-1. SPLP analytical results are summarized in Table 4-2. Surface soil boring locations with exceedences of FDEP SCTLs are displayed in Figures 4-2 and 4-3.

VOCs

Acetone was the only VOC detected in the surface soil. Only one sample (29SS04) contained acetone (0.33 mg/kg; Table 4-1). The low-level acetone contamination is most likely laboratory contamination. Acetone is used in the semivolatile extraction process.

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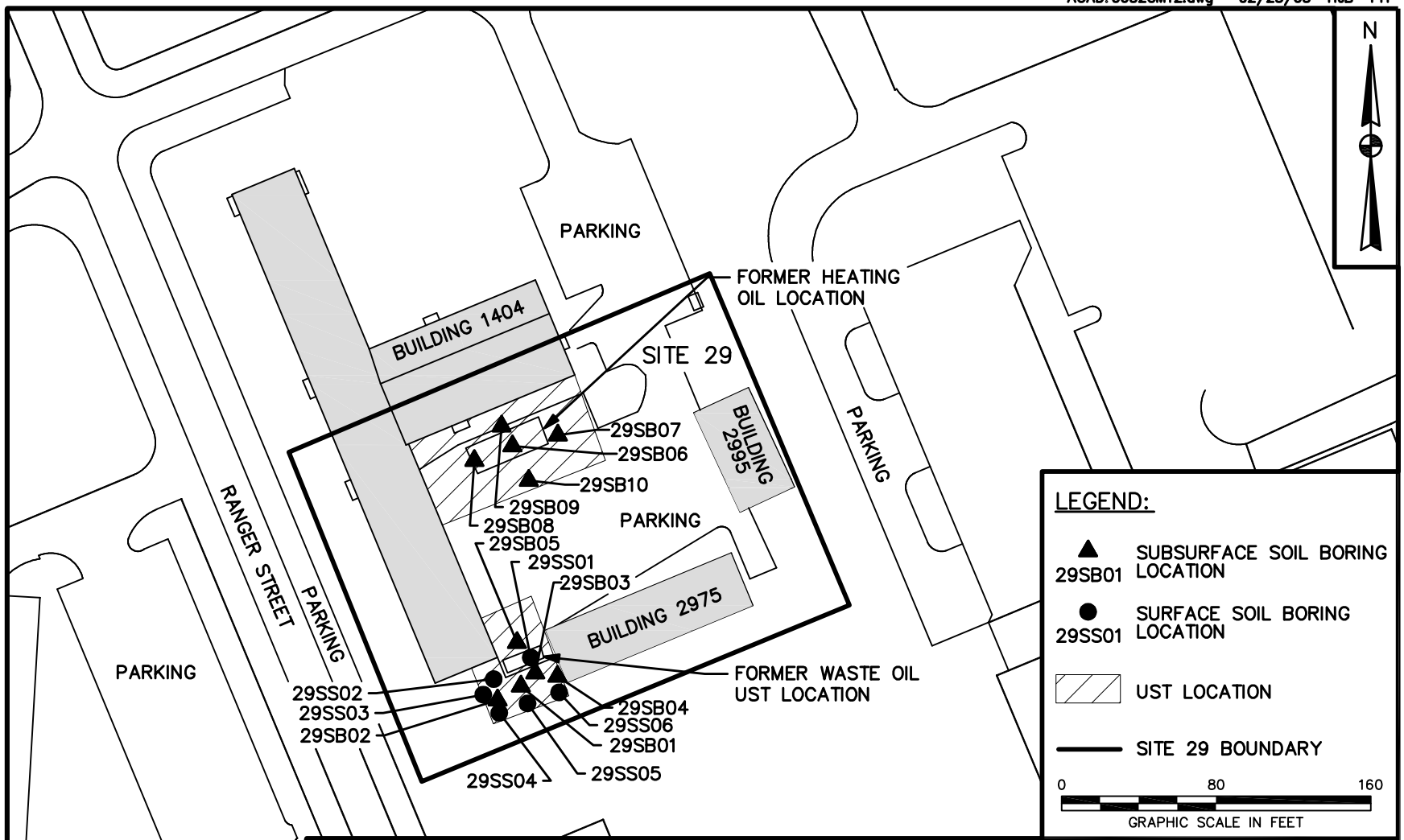

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TABLE 4-1

ANALYTICAL SUMMARY FOR ORGANIC COMPOUNDS AND INORGANIC ANALYTES DETECTED IN SURFACE SOIL SAMPLES - SITE 29
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA

Sample No.		29D00101	29D00201	29D00301	29D00401	29D00501	29D00601
Sample Location		29SS01	29SS02	29SS03	29SS04	29SS05	29SS06
Collect Date		5/26/2000	5/26/2000	5/26/2000	5/26/2000	5/26/2000	5/26/2000
Sample Depth (bls)		0-1'	0-1'	0-1'	0-1'	0-1'	0-1'
	DE1[1]/DE2[2]/LE[3]/BSL[4]/PRGR[5]/PRGI[6]/RAG[7] (mg/kg)						
Volatile [8] (mg/kg)							
Acetone	780/5500/2.8/1600/6200/NA	--	--	--	0.033[J]	--	--
Semivolatile [9] (mg/kg)							
Bis(2-ethylhexyl)phthalate	76/280/3600/35/18/**0.1**	--	--	**0.402**	**0.133[J]**	**0.377**	--
Butyl benzyl phthalate	15000/320000/310/12000/100000/**0.1**	--	--	**0.385**	**0.632**	**2.02**	**0.697**
Di-n-butyl phthalate	7300/140000/47/6100/88000/200	--	--	0.184[J]	--	0.174[J]	--
Total Recoverable Petroleum Hydrocarbons[10] (mg/kg)	340/2500/340/NA/NA/NA	49	257	27	60.7	151	31.4
TAL Metals[11] (mg/kg)							
Aluminum	72000/*/***/15848/76000/100000/**50**	**12900[J]**	**7390[J]**	**17200[J]**	**14600[J]**	**6910[J]**	**11400[J]**
Arsenic****	0.8/3.7/29/3.2/0.39/2.7/10	--	--	**--**	**--**	**--**	**--**
Barium	110**/87000/1600/**23.2**/5400/100000/165	11.6[J]	16[J]	**51.1[J]**	20.5[J]	**40.7[J]**	**28.1[J]**
Cadmium	75**/1300/8/0.58/37/810/**1.6**	--	--	**1.9**	**--**	**3.3**	**0.77**
Calcium	NA/NA/NA/**396**/NA/NA/NA	192[J]	225[J]	**711[J]**	**557[J]**	**695[J]**	**555[J]**
Chromium	210/420/38/**11**/30/64/**0.4**	**13.5[J]**	**24.7[J]**	**30.4[J]**	**15.9[J]**	**16.6[J]**	**15.4[J]**
Cobalt	4700/110000/***/3/4700/100000/20	--	0.78	1.4	0.8	1	0.79
Copper	110**/76000/***/9.4/2900/76000/40	4.9	3.9	**13.5**	7.5	6.6	7.7
Iron	23000/480000/***/**8832**/23000/100000/**200**	**8700[J]**	**4880[J]**	**12000[J]**	**9530[J]**	**5190[J]**	**7290[J]**
Lead	400/920/***/**11.4**/400/1000/50	5.3	**16.9**	**294**	**36.5**	**69.9**	**34.7**
Magnesium	NA/NA/NA/268/NA/NA/NA	114	127	261	176	154	146
Manganese	1600/22000/***/392/1800/32000/100	28.9[J]	57.4[J]	36[J]	41[J]	30.7[J]	32[J]
Mercury	3.4/26/2.1/0.12/23/610/0.1	--	**--**	**--**	**--**	**--**	**--**
Nickel	110**/28000/130/7.2/1600/41000/30	--	**9.8**	**--**	**--**	**--**	**--**
Potassium	NA/NA/NA/**177**/NA/NA/NA	--	--	154	**196**	**--**	**--**
Sodium	NA/NA/NA/406/NA/NA/NA	280	333	**432**	369	376	389
Vanadium	**15****/7400/980/**21.8**/550/14000/**2.0**	**23.1[J]**	**12.4[J]**	**28.1[J]**	**24.6[J]**	**11.9[J]**	**26.4**
Zinc	3400/53000/**19**/**15.4**/23000/100000/**50**	8.1	11.1	**206**	**34.7**	**92.8**	**44**

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4] Background screening value from Table 3-9, General Information Report,Remedial Investigation and Feasability Study, ABB, January 1998.
[5/6] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[7] EPA Region 4 Risk Assessment Guidance Ecological Screening Values.
[8] SW-846 8260B, [9] SW-846 8270C, [10] FDEP FL-PRO, [11] SW-846 7470A/7471
* Contaminant is not a health concern for this default exposure scenario.
** Direct exposure value based on acute toxicity considerations.
*** Leachability values may be derived using the SPLP Test to calculate site-specific SCTLs or may be determined using TCLP in the event oily wastes are present.
**** FDEP has agreed that arsenic is naturally occuring at this site (Appendix B).
Bold indicates the exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 4-2

ANALYTICAL SUMMARY OF ORGANIC COMPOUNDS AND INORGANIC ANALYTES
DETECTED IN SURFACE SOIL LEACHATE SAMPLES - SITE 29
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA

Sample No.		29D00101	29D00201	29D00301	29D00401	29D00501	29D00601
Sample Location		29SS01	29SS02	29SS03	29SS04	29SS05	29SS06
Collect Date		5/26/2000	5/26/2000	5/26/2000	5/26/2000	5/26/2000	5/26/2000
Sample Depth		0-1'	0-1'	0-1'	0-1'	0-1'	0-1'
	Groundwater Criteria[1]/Primary[2]/ Secondary[3]						
Volatile[4] (ug/L)							
Acetone	700/NA/NA	14.2[J]	102[J]	39.3[J]	--	53.1	393[J]
Chloroform	**5.7**/NA/NA	**6.5**	**6.3**	**6.1**	**6.4**	**6.7**	**6.6**
Methylene Chloride	**5**/**5**/NA	**73[J]**	**33.1[J]**	**24.7[J]**	**22.1[J]**	**24.8[J]**	**36.1[J]**
Semivolatile[5] (ug/L)		NA	NA	--	--	--	--
Total Recoverable Petroleum Hydrocarbons[6] (ug/L)	5000/NA/NA	--	--	--	--	--	--
TAL Metals[7] (ug/L)							
Aluminum	**200**/NA/**50-200**	--	**13900**	**29700**	**24700**	**13700**	**28700**
Arsenic	50/NA/NA	--	--	6.6	10	--	--
Barium	2000/2000/NA	--	6.7	14	10	10	13
Calcium	NA/NA/NA	1700[J]	1400[J]	3100[J]	5600[J]	6500[J]	3400[J]
Chromium	100/100/NA	--	--	29	20	--	24
Cobalt	420/NA/NA	--	--	--	--	--	--
Copper	1000/NA/1000	--	--	12	8.3	--	--
Iron	**300**/NA/**300**	--	**6900**	**12600**	**13000**	**7600**	**12300**
Lead	**15**/NA/NA	--	--	**68**	**24**	**28**	**19**
Magnesium	NA/NA/NA	250	300	790	870	610	490
Manganese	50/NA/50	--	24	14	22	21	17
Nickel	100/NA/NA	--	--	5.6	3.5	2.7	3.7
Potassium	NA/NA/NA	--	--	1100	1600		--
Sodium	160000/NA/NA	9200[J]	18800[J]	21500[J]	20700[J]	18400[J]	22400[J]
Vanadium	49/NA/NA	--	20	36	36	20	**53**
Zinc	5000/NA/5000	--	9.5	140	31	66	43

[1] Groundwater Clean-up Criteria as provided in Chapter 62-777,F.A.C.
[2] EPA 40 CFR Primary Drinking Water Standard
[3] EPA 40 CFR Secondary Drinking Water Standard
[4] SW-846 8260B, [5] SW-846 8270C, [6] FDEP FL-PRO, [7] SW-846 6010B
Bold indicates an exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

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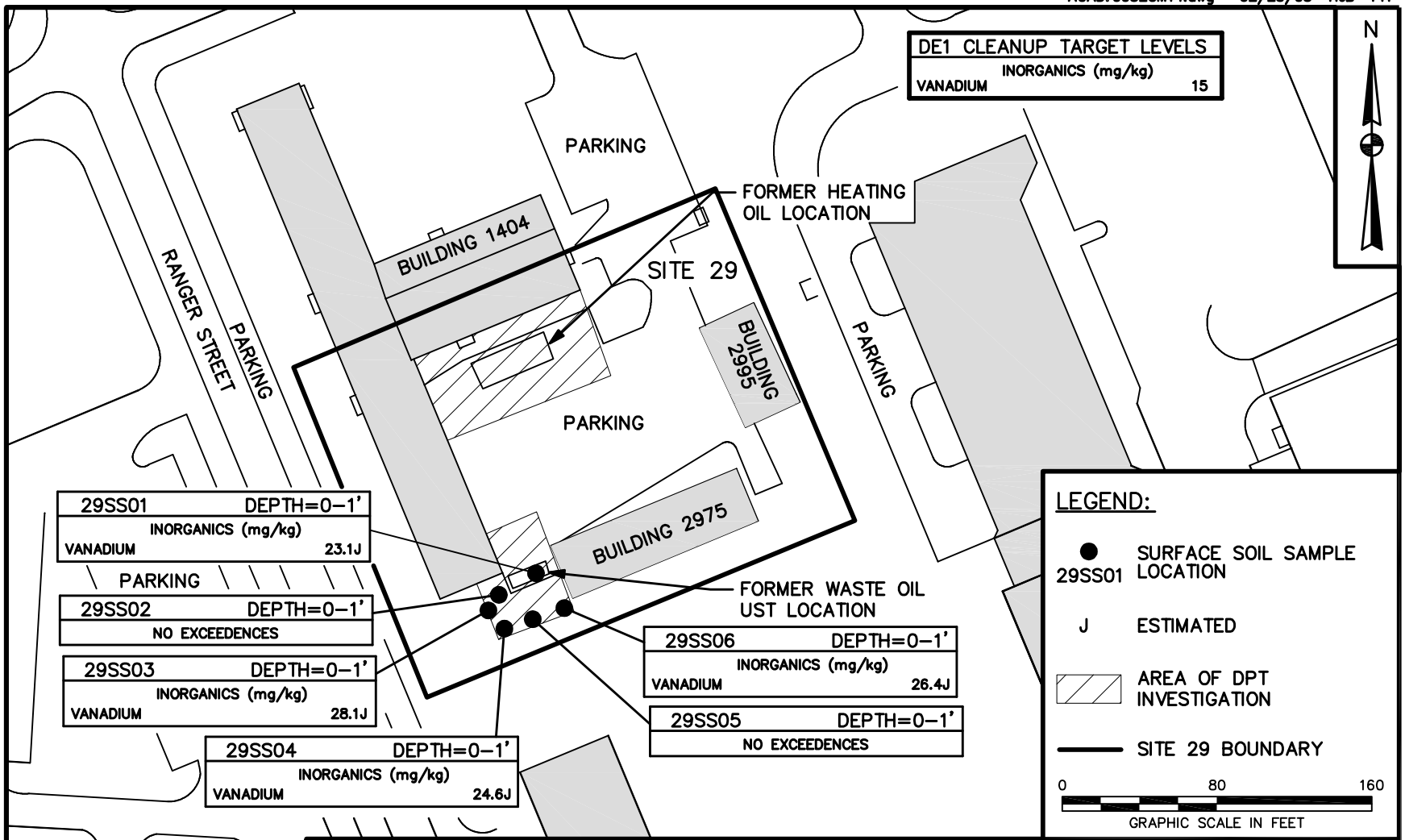

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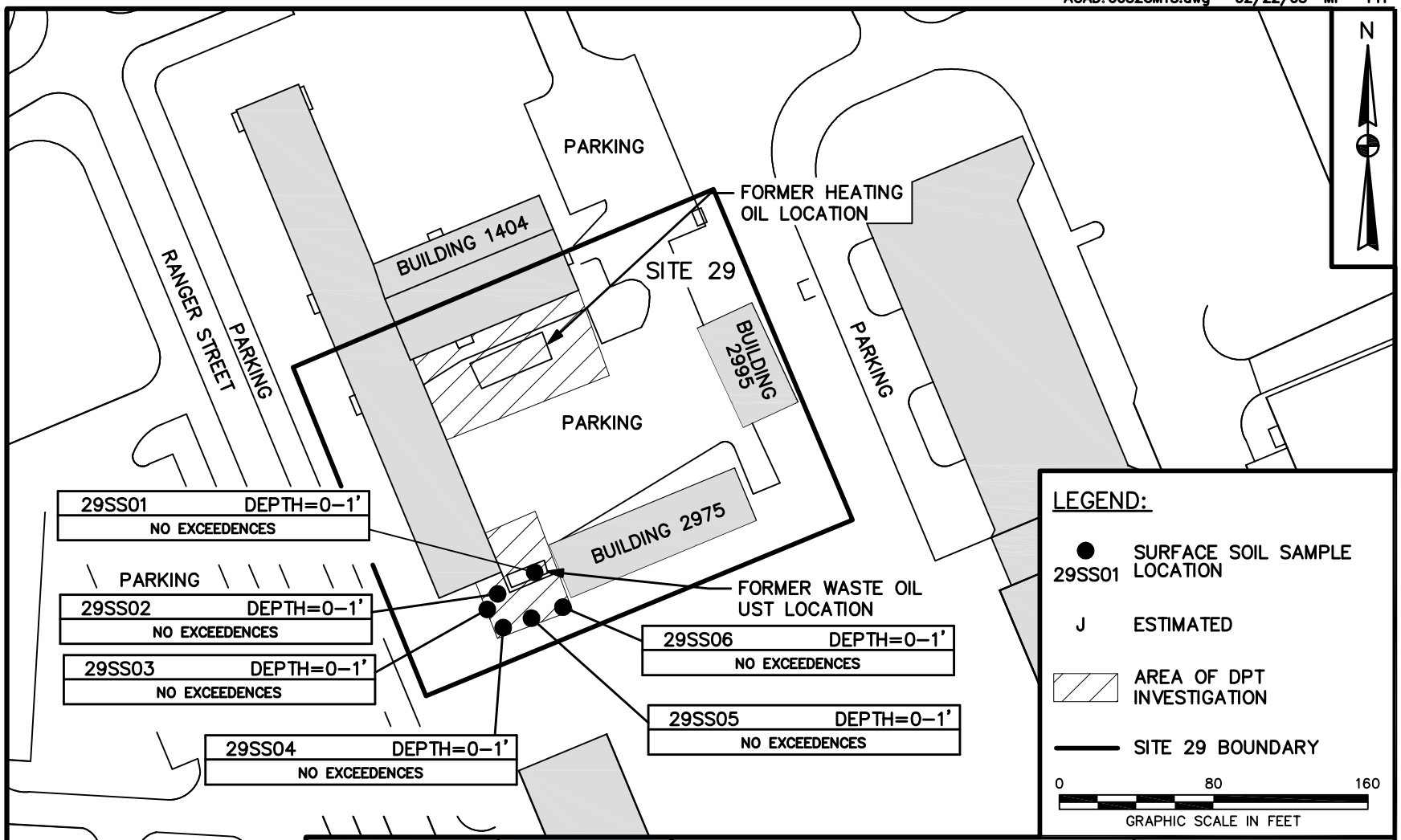

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SVOCs

Three compounds (bis(2-ethylhexyl)phthalate, butyl-benzyl phthalate, and di-n-butyl phthalate) were detected in the surface soil. Bis(2-ethylhexyl) phthalate and butyl-benzyl phthalate were detected above the USEPA RAGS (Table 4-1). Phthalates are a common contaminant found in SVOC analyses. It is likely the contamination is a result of laboratory contamination.

TRPH

TRPH was detected in all the surface soil samples. None of the detections were above the regulatory limits (Table 4-1).

Inorganics

Sixteen analytes (Table 4-1) were detected in the surface soil. Twelve analytes (aluminum, barium, calcium, chromium, copper, iron, lead, magnesium, manganese, sodium, vanadium, and zinc) were detected in all the samples. Cobalt was detected in five samples (29SS02, 29SS03, 29SS04, 29SS05, and 29SS06). Cadmium was detected in three samples (29SS03, 29SS05, and 29SS06). Potassium was detected in two samples (29SS03 and 29SS06). Nickel was detected in sample 29SS02.

Twelve analytes (aluminum, barium, cadmium, calcium, chromium, copper, iron, lead, nickel, sodium, vanadium, and zinc) were detected above the BSLs. Chromium was detected above the USEPA Residential PRG in sample 29SS03. Vanadium was detected above the FDEP DE1 SCTL (15 mg/kg) in four samples [29SS01 (23.1J mg/kg), 29SS03 (28.1J mg/kg), 29SS04 (24.6J mg/kg), and 29SS06 (26.4 mg/kg)]. Zinc was detected above the FDEP LE SCTL (19 mg/kg) in four samples [29SS03 (206 mg/kg), 29SS04 (34.7 mg/kg), 29SS05 (92.8 mg/kg), 29SS06 (44 mg/kg)].

SPLP analysis was performed on all the surface soil samples (Table 4-2). Zinc was not detected above the FDEP GCTL (5000 µg/L). Several analytes (aluminum, copper, iron, and lead) detected in the surface soil do not have specific FDEP LE SCTLs for comparison. LE SCTLs are determined on a site-specific basis. At the concentrations detected in the surface soil leachate samples, aluminum, copper, iron, and may possibly leach from the surface soil at concentrations above the FDEP GCTLs. This may have an adverse affect on the groundwater. The impact on the groundwater will be addressed in the Site 40 RI Report.

4.2.2 Subsurface Soil Assessment

The subsurface soil was screened for organic vapors using an FID at three depths (9 – 10 ft, 19 – 20 ft, and 28 – 30 ft). No organic vapors were detected; therefore, no subsurface soil samples were collected for fixed-based laboratory analysis since, as defined in Chapter 62-770, F.A.C., no “excessively contaminated soil” was present.

4.2.3 Soil Assessment Summary

One VOC, 3 SVOCs, TRPH, and 16 inorganics were detected in the surface soil. Bis(2-ethylhexyl) phthalate and butyl-benzyl phthalate were detected above the USEPA RAGs; chromium was detected above the USEPA Residential PRG; vanadium was detected above the FDEP DE1 SCTL; aluminum, copper, and iron were detected above the FDEP GCTL in the surface soil leachate samples. Zinc was detected above the FDEP LE SCTL, but was not detected above the FDEP GCTL in the surface soil leachate samples.

4.3 DATA EVALUATION

4.3.1 Data Validation

Refer to Appendix D (CD-ROM) of this report for the complete data validation report. This section summarizes the data validation remarks for Site 29 analytical data.

VOCs

Positive results for acetone were qualified estimated (J) due to calibration noncompliance. The response factor for acetone was low in the initial and continuing calibrations. Because of the low response factor, the results may be biased low. Nondetects were rejected because the instrument used for the analysis was not detecting low-level acetone sufficiently. Acetone is used in the SVOC extraction process. It is likely the laboratory ambient atmosphere contains acetone at low levels. These low levels will result in the detection of acetone during the VOC analysis.

SVOCs

All the SVOC data associated with Site 29 are acceptable.

TRPH

All the TRPH data associated with Site 29 are acceptable.

Inorganics

In sample 29D00301, a known interfering analyte, iron was present at significant concentrations. Due to this analyte, thallium nondetects were qualified estimated (UJ). Thallium concentrations may be biased low due to the interfering affect of iron.

Aluminum, barium, calcium, chromium, iron, manganese, and vanadium were qualified estimated (J), due to serial dilution noncompliance. When a dilution was performed, the recovery of these analytes was not within method standards. Therefore, the results may be biased high.

Several analytes in all the samples were qualified as nondetects (U) due to laboratory blank contamination. Metals contamination in laboratory blanks is common and therefore, analytes qualified for blank contamination in no way affects the quality of the data. The qualification simply filters out false-positive results.

4.3.2 Risk Assessment

4.3.2.1 Human Health Risk Assessment

A screening level HHRA has been conducted as part of the RI report for Site 29 at NAS Whiting Field. The purpose of the HHRA is to characterize the risks to humans associated with the potential exposures to chemicals in surface soil. This HHRA was conducted in accordance with procedures as outlined in Section 1.4.3.

4.3.2.1.1 Selection of COPCs for Site 29

Table 4-3 lists the candidate COPCs (those with at least one detection) and shows those selected as surface soil COPCs for the risk evaluation. The initial candidate COPCs included nine carcinogenic chemicals; therefore, the carcinogenic screening levels were divided by nine. (Beryllium and cadmium were considered in the nine carcinogenic chemicals although their noncarcinogenic screening values were lower than the one used in COPC screening.) Chromium was identified as a COPC for surface soil at Site 29.

4.3.2.1.2 Exposure Assessment

This exposure assessment was conducted to identify the human pathways of potential exposure, the magnitude of potential exposure, and the frequency and duration of exposure.

Exposure Setting Characterization

Section 1.2 describes the regional and site-specific environmental setting of Site 29. The site is non-residential and is expected to remain non-residential for the foreseeable future.

Identification of Potential Receptors and Exposure Pathways

The receptors to be evaluated were selected based on the current and realistic future use of the sites and surrounding areas.

TABLE 4-3
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
SITE 29
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/ Air
Exposure Point: Site 29

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits[4]	Concentration Used For Screening[1]	Background Value[2]	Region 9 PRG [3]	Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Organic Volatiles (mg/kg)																
67-64-1	Acetone	OV	0.033	J	0.4	J	29SB4-0-2	4/10	0.029-0.059	0.4	Not Avail	NA - N	78	FL Residential	no	BSL
78-93-3	2-Butanone	OV	0.004	J	0.004	J	29SB4-0-2	1/10	0.010-0.027	0.004	Not Avail	NA - N	310	FL Residential	no	BSL
Organic Semivolatiles (mg/kg)																
117-81-7	Bis(2-ethylhexyl)phthalate	OS	0.133	J	0.402		29D00301	3/9	0.34-0.36	0.402	Not Avail	3.9 - C	8.4	FL Residential	no	BSL
85-68-7	Butyl benzyl phthalate	OS	0.044	J	2.02		29D00501	5/9	0.34-0.36	2.02	Not Avail	1200 - N	1500	FL Residential	no	BSL
84-74-2	Di-n-butyl phthalate	OS	0.174	J	0.184	J	29D00301	2/9	0.34-0.36	0.184	Not Avail	610 - N	730	FL Residential	no	BSL
Pesticides (mg/kg)																
72-54-8	4,4'-DDD	PEST	0.027	J	0.027	J	29SB5-0-2	1/3	0.036	0.027	Not Avail	0.27 - C	0.51	FL Residential	no	BSL
72-55-9	4,4'-DDE	PEST	0.022	J	0.022	J	29SB5-0-2	1/3	0.036	0.022	Not Avail	0.19 - C	0.37	FL Residential	no	BSL
5103-71-9	alpha-Chlordane[6]	PEST	0.0026	J	0.0026	J	29SB3-0-2	1/3	0.0018	0.0026	Not Avail	0.18 - C	0.34	FL Residential	no	BSL
5103-71-9	gamma-Chlordane[6]	PEST	0.0031	J	0.0031	J	29SB3-0-2	1/3	0.0018	0.0031	Not Avail	0.18 - C	0.34	FL Residential	no	BSL
Metals (mg/kg)																
7429-90-5	Aluminum	M	4090	J	17200	J	29D00301	9/9	--	17200	15848	7600 - N	7200	FL Residential	no	AS
7440-38-2	Arsenic	M							--	0	3.2	0.39	0.8	FL Residential	no	ASL
7440-38-2	Arsenic	M	2.5		3.7		29SB3-0-2	3/9	1.5-3.2	3.7	3.2	0.043 - C	0.089	FL Residential	no	AS
7440-39-3	Barium	M	7.1	J	51.1	J	29D00301	9/9	--	51.1	23.2	540 - N	110(s)	FL Residential	no	BSL
7440-41-7	Beryllium	M	0.09	J	0.09	J	29SB3-0-2	1/9	0.06-0.14	0.09	0.36	15 - N	12	FL Residential	no	BSL
7440-43-9	Cadmium	M	0.77		3.3		29D00501	3/9	0.03-0.86	3.3	0.58	3.7 - N	7.5	FL Residential	no	BSL
7440-70-2	Calcium	M	192	J	711	J	29D00301	9/9	--	711	396	NA	NA	--	no	NUT
7440-47-3	**Chromium**	M	8.4		30.4	J	29D00301	9/9	--	30.4	11	3.3 - C	23.3	FL Residential	yes	ASL
7440-48-4	Cobalt	M	0.65	J	1.4		29D00301	8/9	0.54	1.4	3	470 - N	470	FL Residential	no	BSL
7440-50-8	Copper	M	1.7	J	13.5		29D00301	9/9	--	13.5	9.4	290 - N	110(s)	FL Residential	no	BSL
7439-89-6	Iron	M	4880	J	12000	J	29D00301	9/9	--	12000	8832	2300 - N	2300	FL Residential	no	AS
7439-92-1	Lead	M	5.3		294		29D00301	9/9	--	294	11.4	400	400	FL Residential	no	BSL
7439-95-4	Magnesium	M	75.5	J	298	J	29SB5-0-2	9/9	--	298	268	NA	NA	--	no	NUT
7439-96-5	Manganese	M	21.8		80.9		29SB5-0-2	9/9	--	80.9	392	180 - N	160	FL Residential	no	BSL
7439-97-6	Mercury	M	0.02	J	0.17		29SB5-0-2	2/9	0.02-0.08	0.17	0.12	2.3 - N	0.34	FL Residential	no	BSL
7440-02-0	Nickel	M	2.8	J	9.8		29D00201	2/9	2.0-3.6	9.8	7.2	160 - N	110(s)	FL Residential	no	BSL
7440-09-7	Potassium	M	154		196		29D00401	2/9	92.9-130	196	177	NA	NA	--	no	NUT
7782-49-2	Selenium	M	0.79	J	1.4		29SB3-0-2	3/9	0.68-1.5	1.4	0.46	39 - N	39	FL Residential	no	BSL
7440-23-5	Sodium	M	12.9	J	432		29D00301	7/9	11.9-12	432	406	NA	NA	--	no	NUT
7440-62-2	Vanadium	M	11.9	J	41		29SB3-0-2	9/9	--	41	21.8	55 - N	15(s)	FL Residential	no	AS
7440-66-6	Zinc	M	6		206		29D00301	9/9	--	206	15.4	2300 - N	2300	FL Residential	no	BSL
TPH (mg/kg)																
	Total Petroleum Hydrocarbons	PET	27		257		29D00201	8/8	--	257	Not Avail	NA - N	340	FL Residential	no	BSL
Cyanide (mg/kg)																
57-12-5	Cyanide		0.46	J	0.57	J	29SB5-0-2	4/5	0.16	0.57	0.28	120 - N	30(s)	FL Residential	no	BSL

[1] Maximum concentration used as screening value
[2] The background screening value is twice the average of background concentrations for inorganic analytes.
[3] Based on Superfund Preliminary Remediation Goals, USEPA Region IX, Residential land use (Cancer benchmark value = 1E-06, Hazard Quotient = 0.1) (May 2000)
[4] FL Residential from Technical Report: Development of Soil Cleanup Levels for Chapter 62-777, F.A.C. (May 1999)(Cancer benchmark value = 1E-06, Hazard Quotient = 0.1)
[5] Rationale Codes

Selection Reason	Above Screening Levels (ASL)
	If one cPAH is selected as a COPC, all are selected (PAH)
Deletion Reason	Maximum detected concentration is below background screening level (BKG)
	Essential Nutrient (NUT)
	Below Screening Levels (BSL)
	Aluminum, arsenic, iron, manganese, and vanadium has been determined to be unrelated to site activities (AS)

[6] Screening values for Chlordane used for alpha-chlordane and gamma chlordane

Definitions:
NA = Not Applicable
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
COPC = Chemical of Potential Concern
s = direct exposure based on acute toxicity
N = noncarcinogen
C = carcinogen

For both current and future time frames for the HHRA, three potential receptors were evaluated for NAS Whiting Field Site 29. These receptors are:

- A site occupational worker. The site occupational worker was assumed to be on site in a commercial/industrial scenario.
- A trespasser or visitor. These individuals may occasionally enter the site with or without proper authorization. Both an adult and an older child were considered.
- An on-site resident. The on-site resident is considered highly unlikely; however, this pathway was considered for purposes of completeness and conservatism.

As described in Section 1.4.3.2, exposure assessment parameters used in this RA are those used to derive the Florida SCTLs and represent only the on-site resident and the site occupational worker.

4.3.2.1.3 Toxicity Assessment

As described in Section 1.4.3.3, toxicity parameters used in this RA are those used to derive the Florida SCTLs.

Toxicological profiles for each of the COPCs are presented in Appendix F of the Technical Report: Development of SCTLs for Chapter 62-777, F.A.C. (FDEP, 1999). These profiles present a summary of the available literature on carcinogenic and noncarcinogenic effects associated with human exposure to the chemical.

4.3.2.1.4 Risk Characterization

This section contains a summary of the human health risk estimates for Site 29. The methodology used to calculate the risk estimates is provided in Section 1.4.3.4. A media-specific discussion of the estimated non-carcinogenic and carcinogenic risks is provided in the remainder of this section.

4.3.2.1.4.1 Surface Soil – Carcinogenic Risks

Cancer risk estimates and HIs calculated for the COPCs are presented in Table 4-4.

The ILCR calculated for the hypothetical future resident and the typical occupational worker (based on Florida SCTLs) are 1.4E-07 and 7.2E-08, respectively. These risk estimates are within the USEPA target risk range and the State of Florida benchmark of 1E-06. Therefore, NFA is recommended.

TABLE 4-4
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - SURFACE SOIL
SITE 29

Chemical	Concentration (maximum) (mg/kg)	Incremental Lifetime Carcinogenic Risk (ILCR)				Estimated Non-Carcinogenic Hazard Quotient (HQ)				
		FL SCTL[1]	Estimated Residential ILCR	FL SCTL [2]	Estimated Industrial ILCR	Primary Target Organs[3]	FL SCTL or PRG[1][4]	Estimated Residential HQ	FL SCTL or PRG[2][4]	Estimated Industrial HQ
Chromium	30.4	210	1.4E-07	420	7.2E-08	Respiratory	230	0.13	6100	5.0E-03
Total Carcinogenic Risk			1.4E-07		7.2E-08		Total HI	0.13		5.0E-03

Target Organ Hits - Residential

Total Respiratory HI = 0.13

Target Organ Hits - Industrial

Total Respiratory HI = 5.0E-03

1 FL **Residential** SCTL from Technical Report: Development of Soil Clean-up Levels for Chapter 62-777, F.A.C. (May 1999)
2 FL **Industrial** SCTL from Technical Report: Development of Soil Clean-up Levels for Chapter 62-777, F.A.C. (May 1999)
3 Target organs from Technical Report: Development of Soil Clean-up Levels for Chapter 62-777, F.A.C. (May 1999)
4 If Florida SCTL is based on cancer risk, the USEPA Region IX PRG for noncarcinogenic health effects is given if available.
5 NA - Not applicable. The USEPA has either not established a cancer slope factor (CSF) or noncarcinogenic reference dose (RfD) for this chemical.
6 Vanadium residential SCTL of 15 mg/kg based on acute exposure. Consequently, a hazard quotient was not calculated. Risk estimates for acute and chronic exposure are discussed in text.
Bold indicates result exceeds 1E-06 for Carcinogenic Risk or 1.0 for Hazard Index
SCTL = Soil Cleanup Target Levels for Chapter 62-777, F.A.C. (May 1999)
PRG = Preliminary Remediation Goals, USEPA Region IX

4.3.2.1.4.2 Surface Soil – Noncarcinogenic Risks

The total HI and the HI calculated on a target organ specific basis for the hypothetical future resident and the typical occupational worker (based on Florida SCTLs) do not exceed 1. Consequently, adverse non-carcinogenic health effects are not anticipated under the conditions established in the exposure assessment.

4.3.2.1.5 Uncertainty

The general uncertainties associated with the HHRA are presented in Section 1.4.3.5. Uncertainties associated with Site 29 specifically are provided in this section.

4.3.2.1.5.1 Uncertainty in COPC Selection

As discussed in Section 1.4.3.5.1, Region IX PRGs were not available for a few chemicals detected in this investigation. For those chemicals (acetone, 2-butanone, di-n-butylphthalate), Florida SCTLs were available; therefore, a screening value was available for the RA. Because both the SCTLs and the PRGs are risk-based and because the maximum concentrations were less than the SCTLs by three orders of magnitude in each case, it is unlikely the lack of PRG values has resulted in the underestimation of risk.

4.3.2.1.5.2 Uncertainty in Exposure Assessment

The maximum detected concentration of each COPC was used to quantify potential risks. As a result of using the maximum concentration, the estimations of potential risk are likely to be overestimated because it is unlikely potential receptors would be exposed to the maximum concentration over the entire site for the assumed exposure period.

4.3.2.2 Ecological Risk Assessment

This section presents the results of the SERA for Site 29. The risk evaluation was performed using the general methodologies presented in Section 1.4.3.2.

4.3.2.2.1 Habitat Description

Section 1.2 of this report presents the site background, site layout, and a general site description. The surface soil samples at Site 29 were collected in a small turf grass-covered area approximately 30 ft by 40 ft. A concrete parking lot, with trees located approximately 50 yards from it, and Buildings 1404 and 2975 surround the area.

4.3.2.2.2 Potential Ecological Receptors and Exposure Pathways

Based on the above description of the site and potential contaminant migration pathways, ecological receptors (e.g., plants and soil invertebrates) could be directly exposed to chemicals in the surface soil. Because of the limited size and habitat of the site, it is unlikely upper trophic level organisms, such as small mammals and birds, would obtain a significant portion of their food at the site. As a result, ecological receptors would not be exposed to chemicals in the surface soil via the food chain (i.e., through the ingestion of plants and invertebrates). Therefore, soil vegetation and invertebrates were selected as assessment endpoints for Site 29.

4.3.2.2.3 Screening Results

This section contains the ecological risk screening conducted for the chemicals detected in the surface soil at Site 29. Nine surface soil samples, including three samples collected in January 1993 (29SB302, 29SB402, and 29SB502) and six samples collected in May 2000 (29SS01, 29SS02, 29SS03, 29SS04, 29SS05, and 29SS06), were evaluated as part of the SERA. The general methodologies used for the exposure assessment and risk characterization are discussed in Section 1.4.3.2 of this report.

Table 4-5 is the screening table for plants and invertebrates exposed to chemicals detected in the surface soil samples. In addition to the summary statistics (e.g., frequency of detection), the table also includes soil background/anthropogenic values, two times the average Base-specific soil background values (ABB-ES, 1996a). The background values were presented for informational purposes only; they were not used for selecting COPCs. In summary, 2 VOCs, 3 SVOCs, 4 pesticides, and 21 inorganics were detected in the surface soil samples.

Two VOCs (acetone and 2-butanone) were retained as COPCs because no USEPA Region IV screening levels were available. Two SVOCs [bis(2-ethylhexyl)phthalate and butyl benzyl phthalate], two pesticides (4,4'-DDD and 4,4'-DDE), and six inorganic chemicals (cadmium, total chromium, lead, mercury, selenium, and zinc) were selected as surface soil COPCs because their maximum concentrations exceeded USEPA Region IV screening levels (Table 4-4). Two pesticides (alpha-chlordane and gamma-chlordane) were retained as COPCs because no USEPA Region IV screening levels were available.

4.3.2.2.4 Step 3A Discussion

Foodchain Modeling

USEPA Region IV (2000) suggests foodchain modeling should be done as part of COPC refinement for screening-level COPCs are known to bioaccumulate or biomagnify. However, terrestrial food chain modeling appears to be inappropriate at Site 29 for several reasons. Site 29 contains a turf grass-covered area, approximately 30 ft by 40 ft (0.0276 acres), and is surrounded by buildings and concrete

TABLE 4-5

ECOLOGICAL RISK SCREENING - SURFACE SOIL
SITE 29 - AUTO HOBBY SHOP
NAS WHITING FIELD, MILTON, FLORIDA

Chemical	Frequency of Detections	Range of Detections	Location of Maximum Detection	Average of Positive Detections	Concentration Used for Screening(1)	Base-Specific Soil Background/ Anthropogenic Value	Region IV Surface Soil	Ecological Effects Quotient	COPC Flag	Rationale for Contaminant Deletion or
VOLATILES (mg/kg)										
Acetone	3/9	0.033-0.4	29SB402RE	0.16	0.4	---	NA	NA	Yes	NTX
2-Butanone	1/9	0.0040	29SB402	0.0040	0.0040		NA	NA	Yes	NTX
SEMIVOLATILES (mg/kg)										
Bis(2-ethylhexyl)phthalate	3/9	0.133 - 0.402	29D00301	0.30	0.40	---	0.1	4.0	Yes	ASL
Butyl benzyl phthalate	5/9	0.044 - 2.02	29D00501	0.76	2.0	---	0.1	20.2	Yes	ASL
Di-n-butyl phthalate	2/9	0.174 - 0.184	29D00301	0.18	0.18	---	200	0.00092	No	BSL
PESTICIDES (mg/kg)										
4,4'-DDD	1/9	0.027	29SB502	0.027	0.027	---	0.0025	10.8	Yes	ASL
4,4'-DDE	1/9	0.022	29SB502	0.022	0.022	---	0.0025	8.8	Yes	ASL
alpha-chlordane	1/9	0.0026	29SB302	0.0026	0.0026	---	NA	NA	Yes	NTX
gamma-chlordane	1/9	0.0031	29SB302	0.0031	0.0031	---	NA	NA	Yes	NTX
INORGANICS (mg/kg)										
Aluminum	9/9	4090 - 17200	29D00301	11243	17200	15848	50	344	No	AS
Arsenic	3/9	2.5 - 3.7	29SB302	3.1	3.7	3.2	10	0.37	No	BSL
Barium	9/9	7.1 - 51.1	29D00301	21.5	51.1	23.2	165	0.31	No	BSL
Beryllium	1/9	0.09	29SB302	0.090	0.090	---	1.1	0.082	No	BSL
Cadmium	3/9	0.77 - 3.3	29D00501	2.0	3.3	0.58	1.6	2.1	Yes	ASL
Calcium	9/9	192 - 711	29D00301	433	711	392	NA	NA	No	NT
Chromium (total)	9/9	8.4 - 30.4	29D00301	16.7	30.4	11.0	0.4	76.0	Yes	ASL
Cobalt	8/9	0.65 - 1.4	29D00301	0.88	1.4	3.0	20	0.070	No	BSL
Copper	9/9	1.7 - 13.5	29D00301	6.3	13.5	9.4	40	0.34	No	BSL
Cyanide	3/9	0.46 - 0.57	29SB502	0.52	0.57	---	0.9	0.63	No	BSL
Iron	9/9	4880 - 12000	29D00301	8143	12000	8832	200	60	No	AS
Lead	9/9	5.3 - 294	29D00301	55.6	294	11.4	50	5.9	Yes	ASL
Magnesium	9/9	75.5 - 298	29SB502	165	298	268	NA	NA	No	NT
Manganese	9/9	21.8 - 80.9	29SB502	41.6	80.9	392	100	0.81	No	BSL
Mercury	2/9	0.02 - 0.17	29SB502	0.095	0.17	0.12	0.1	1.7	Yes	ASL
Nickel	2/9	2.8 - 9.8	29D00201	6.3	9.8	7.2	30	0.33	No	BSL
Potassium	2/9	154 - 196	29D00401	175	196	177	NA	NA	No	NT
Selenium	3/9	0.79 - 1.4	29SB302	1.1	1.4	0.46	0.81	1.7	Yes	ASL
Sodium	7/9	12.9 - 432	29D00301	313	432	406	NA	NA	No	NT
Vanadium	9/9	11.9 - 41	29SB302	22.4	41.0	21.8	2.0	20.5	No	AS
Zinc	9/9	6 - 206	29D00301	47.5	206	15.4	50	4.1	Yes	ASL

Footnotes:
1 The maximum detected concentration was used for screening purposes.
2 The value presented is 2X the average Base-specific background value for troup loamy soil [General Information Report (GIR), Remedial Investigation and Feasibility Study (ABB-ES, 1996)].

Note:
Shading indicates that the chemical was retained as a COPC, the background concentration was greater than the concentration used for screening, and/or the ecological effects quotient was greater than 1.0.

Definitions:
COPC = Chemical of Potential Concern
NA = Not Applicable / Not Available
--- = Base-Specific Background Value Not Available

Rationale Codes:
For Selection as a COPC:
ASL = Above COPC Screening Level
NTX = No Toxicity Information Available

For Elimination as a COPC:
BSL = Below COPC Screening Level
NT = Nontoxic
AS = Aluminum, arsenic, iron, manganese, and vanadium are determined by the FDEP to be un-related to site activities.

parking lots. Based on the size of the turf grass-covered area, the possible extent of surface soil contamination is many times smaller than the home ranges of small mammals (e.g., 0.0659 acres for a meadow vole and 0.9699 acres for a short-tailed shrew). In addition, the lack of diverse vegetation and cover in the surrounding area make it unlikely the site could support a population of small mammals or birds (USEPA, 1993). Because of the limited size and habitat at Site 29, terrestrial food chain modeling would add little to the decision-making process, and will not be performed.

Soil Plants and Invertebrates

Acetone and 2-Butanone

Acetone and 2-butanone were retained as COPCs because there were no USEPA Region IV screening levels available for these chemicals. However, because acetone and 2-butanone are common laboratory chemicals, the relatively low maximum detected concentrations of 0.4 mg/kg and 0.004 mg/kg, respectively, are not likely to be site-related, or to cause unacceptable risks to ecological receptors. Therefore, acetone and 2-butanone will be dropped from further consideration as Step 3A COPCs.

Bis(2-ethylhexyl)phthalate and Butyl benzyl phthalate

Bis(2-ethylhexyl)phthalate and butyl benzyl phthalate were retained as COPCs because the maximum detected concentrations (0.40 and 2.0 mg/kg, respectively) exceeded the screening level of 0.1 mg/kg for total phthalates. However, the screening level is the conservative Dutch Target Value, indicative of the soil quality level is ultimately desired (MHSPE, 1994). Moreover, the Dutch Intermediate Value for total phthalates is 30.05 mg/kg, approximately 12 times greater than the total concentration of all phthalates detected at Site 29 (2.58 mg/kg) (see Table 4-1). Based on a recent discussion of the Dutch Values in Swartjes (1999), a concentration greater than the Target Value, but less than the Intermediate Value, suggests the soil may be slightly contaminated, but requires no further investigation. In addition, all phthalate esters are considered to be common laboratory contaminants so the detected concentrations are not likely to be site-related. For these reasons, bis(2-ethylhexyl)phthalate and butyl benzyl phthalate will be dropped from further consideration as Step 3A COPCs.

4,4'-DDD and 4,4'-DDE

4,4'-DDD and 4,4'-DDE were retained as COPCs because the maximum detected concentrations (0.027 and 0.022 mg/kg, respectively) exceeded the USEPA Region IV screening level of 0.0025 mg/kg for the total concentration of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT (Dutch Target Value); however, this screening level is very conservative. The concentrations of 4,4'-DDD and 4,4'-DDE detected at Site 29 are approximately 37 and 45 times less, respectively, than the Dutch Intermediate Value of 1.0 mg/kg (for each individual pesticide). Based on a recent discussion of the Dutch Values in Swartjes (1999), a concentration greater than the Target Value, but less than the Intermediate Value, suggests the soil may be slightly contaminated, but requires no further investigation. Due to the low detected concentrations, these pesticides will not be retained as COPCs in Step 3A for Site 29.

Alpha- and Gamma-Chlordane

Alpha- and gamma-chlordane were retained as COPCs because there were no USEPA Region IV screening levels available for these chemicals. However, the total concentration of alpha- and gamma-chlordane detected at Site 29 (0.0057 mg/kg) is 175 times less than the Region III Baseline Toxicity Assessment Guidelines (BTAG) screening level for chlordane (0.1 mg/kg) (USEPA, 1995a). In addition, alpha- and gamma-chlordane were detected in only one sample (29SB302). Because of the low frequency and detected concentrations of these pesticides, alpha- and gamma-chlordane will not be retained as COPCs in Step 3A for Site 29.

Cadmium

Cadmium was retained as a COPC because the maximum detected concentration (3.3 mg/kg) exceeded the USEPA Region IV screening level of 1.6 mg/kg, the Dutch Maximum Permissible Concentration (Crommenttuijn, 1997). However, the maximum detected concentration of cadmium is less than most of the other benchmarks and toxicity data presented in Appendix A, including the Dutch Intermediate Value (6.0 mg/kg), the Canadian Soil Quality Guideline for Plants and Invertebrates (10 mg/kg), and the ORNL Benchmarks for Plants (4 mg/kg) and Invertebrates (20 mg/kg). Because of the low detected concentrations, cadmium will be dropped from further consideration as a Step 3A COPC at Site 29.

Chromium (total)

Chromium (total) was retained as a COPC because the maximum detected concentration (30.4 mg/kg) exceeded the USEPA Region IV screening level of 0.4 mg/kg, based on an earthworm study where potassium dichromate [Cr(IV)] was added to the soil as a solution (Efroymson et al., 1997a). However, chromium typically occurs in soil as Cr(III) (ASTDR, 1987), stable in most soil types (CCME, 1997), and is typically thought to be nontoxic (Eisler, 1986). It is likely most, if not all, of the chromium detected in the soil samples at the site was Cr(III). In addition, the maximum concentration of total chromium detected at Site 29 is less than most of the other benchmarks and toxicity data presented in Appendix A. Therefore, chromium (total) will be dropped from further consideration as a Step 3A COPC at Site 29.

Lead

Lead was retained as a COPC because the maximum detected concentration (294 mg/kg) exceeded the USEPA Region IV screening level of 50 mg/kg (ORNL benchmark for plants). Although lead was detected in all nine surface soil samples, the detected concentrations only exceed the screening level in two samples, 29SS03 and 29SS05. The lead concentration detected in sample 29SS05 (69.9 mg/kg) only slightly exceeded the screening level, and based on the alternate benchmarks and toxicity data in Appendix A, is not expected to adversely impact ecological receptors. Moreover, the alternate toxicity data indicate the detected concentration of lead in sample 29SS03 (294 mg/kg) is not expected to pose any risk to earthworms, but may reduce weight, yield, and root elongation in various plants

(CCME, 1997). However, sample 29SS03 was collected several feet south of Building 1404. The sample location is bounded in the other directions by a concrete parking lot, and surface soil samples, 29SS02 and 29SS04. These samples contain lead concentrations (16.9 and 36.5 mg/kg, respectively) less than the screening level. The high concentration of lead and consequently, any adverse impacts to ecological receptors, appear to be limited to a small area. Therefore, lead will be dropped from further consideration as a Step 3A COPC at Site 29.

Mercury

Mercury was retained as a COPC because the maximum detected concentration (0.17 mg/kg) slightly exceeded the USEPA Region IV screening level of 0.1 mg/kg (ORNL benchmark for earthworms). This conservative screening level is based on an earthworm study where mercury was added to the soil as a solution and expected to be more bioavailable than mercury in the soil at the site. In addition, the maximum detection of mercury in the soil at the site is less than all of the alternate benchmarks and toxicity data presented in Appendix A. Because of the low detected concentrations, mercury will be dropped from further consideration as a Step 3A COPC at Site 29.

Selenium

Selenium was retained as a COPC because the maximum detected concentration (1.4 mg/kg) exceeded the USEPA Region IV screening level of 0.81 mg/kg (Dutch Maximum Permissible Concentration). However, the maximum detected concentration is less than the Dutch Intermediate Value of 2.85 mg/kg (Swartjes, 1999), the ORNL benchmark for earthworms of 70 mg/kg, and the ORNL benchmark for soil microorganisms and microbial processes of 100 mg/kg (Efroymson et al., 1997a). Because of the low detected concentrations, selenium is not expected to pose unacceptable risks to ecological receptors, and will not be considered further as a Step 3A COPC.

Zinc

Zinc was retained as a COPC because the maximum detected concentration (206 mg/kg) exceeded the USEPA Region IV screening level of 50 mg/kg (ORNL benchmark for plants). However, all of the studies used to develop this benchmark consisted of adding zinc to soil as a solution and are expected to be more bioavailable than the zinc in the soil at the sites (Efroymson et al., 1997b). Although zinc was detected in all nine surface soil samples, the concentrations exceeded the screening level in only two samples, 29SS03 and 29SS05, with concentrations of 206 and 92.8 mg/kg, respectively. Based on the alternate benchmarks and toxicity data in Appendix A, the maximum concentrations of zinc are not expected to adversely impact earthworms, but may decrease seed yield, and leaf and/or root weight in plants (CCME, 1997 and Efroymson et al., 1997b). However, these samples were collected in a small turf grass-covered area with low quality wildlife habitat. The sample locations are bounded in all directions by Building 1404, concrete parking lot, and surface soil samples (29SS02, 29SS04, and 29SS06) containing

concentrations of zinc (11.1, 34.7, and 44 mg/kg, respectively) less than the screening level. As a result, the high concentrations of zinc and consequently, any adverse impacts to ecological receptors, appear to be limited to a small area. Because of the relatively low detected concentrations of zinc and the limited potential impact to plants and invertebrates, zinc will be dropped from further consideration as a Step 3A COPC at Site 29.

4.3.2.2.5 Step 3A Summary and Conclusions

A SERA was performed for Site 29: The Auto Hobby Shop. Several organic chemicals and metals were detected in the surface soil at maximum concentrations exceeding conservative screening levels and, thus, they were selected as COPCs. These COPCs were assessed in a less conservative Step 3A evaluation.

The results of the Step 3A analysis indicate the chemicals detected in the surface soil at Site 29 do not pose unacceptable risks to ecological receptors, and will not be evaluated further.

4.4 CONCLUSION AND RECOMMENDATION

4.4.1 Conclusion

Surface soil samples were analyzed for TCL VOCs, TCL SVOCs, TAL inorganics, and TRPH. No subsurface soil samples were collected because no organic vapors were detected with the FID. One VOC, 3 SVOCs, TRPH, and 16 inorganics were detected in the surface soil. Bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, aluminum, cadmium, chromium, iron, vanadium, and zinc were detected above the USEPA Region IX RAGS. An HHRA was conducted for Site 29 to determine if a human health risk existed. Chromium was selected as a COPC because it exceeded the initial screening concentrations; however, the HHRA determined no health risk exists for chromium. The calculated HI and cancer risk were below the regulatory limits of 1.0 for HI and 1×10^{-6} for cancer. Therefore, no COC was selected indicating human health risks from the detected contaminants are not present.

According to the SERA, conducted for Site 29 to determine if an ecological risk from the detected contaminants existed, there is no risk. Bis (2-ethylhexyl)phthalate and butyl benzyl phthalate were detected below the Intermediate Value, although the contaminants were detected above the Target Value. The regulatory limits for the detected inorganics were determined to be inapplicable to this Site (refer to section 4.3.3.2.4 of this report). Therefore, no ecological risks from the detected contaminants are present.

Zinc was detected above the FDEP LE SCTL; however, the SPLP leachate result was below the FDEP GCTL. SPLP leachate results for aluminum, iron, and lead were above the FDEP GCTLs. This indicates

a possible adverse impact on the subsurface soil, and therefore on the groundwater. The impact of surface soil leaching to the groundwater will be addressed in the Site 40 RI Report.

4.4.2 Recommendation

Based on the comparison of the detected levels of surface soil contamination with the SCTLs listed in Chapter 62-777, F.A.C., the USEPA PRGs and RAGS, and the RAs performed, no risk associated with Site 29 is present. NFA is recommended at Site 29.

5.0 SITE 35: BUILDING 1429, PUBLIC WORKS MAINTENANCE FACILITY

Investigations at Site 35 (Building 1429, the Public Works Maintenance Facility) were conducted to define the extent of subsurface soil contamination around the USTs (Tank Numbers 2851, 1429I, and 1429J), previously investigated by HLA in 1997 (HLA, 1998). This section describes the geologic setting, subsurface soil assessment, data quality, and RA for Site 35.

5.1 GEOLOGIC SETTING

The soil sampled at Site 35 is comprised of three layers. The first layer (0 to 10 ft bls) is a firm, sandy-clay. The second layer (10 to 20 ft bls) is a medium to fine grain sand. The third layer (20 to 30 ft bls) is a firm, sandy-clay. The soil was previously characterized as Troupe loamy sand (USDA, 1980).

5.2 SOIL ASSESSMENT

Thirteen subsurface soil borings using DPT were advanced at Site 35, at the northeast end of Building 1429, around and over the former fuel island location. Refer to Figure 5-1 for soil boring locations.

5.2.1 Surface Soil Assessment

Site 35 is completely covered by concrete and asphalt; therefore, Site 35 has no surface soil to sample.

5.2.2 Subsurface Soil Assessment

Ten subsurface soil samples (35D01020, 35D01115, 35D01132, 35D01215, 35D01230, 35D01320, 35D01325, 35SB01115, 35SB01220, and 35SB01315) were collected from four borings (35SB10, 35SB11, 35SB12, and 35SB13) at Site 35. The four soil borings were selected for sampling based on the FID readings and the geologist's discretionary judgment. The samples were analyzed for TCL VOCs, PAHs, TRPH, and TAL inorganics. Analytical results are summarized in Table 5-1 with SCTLs from Chapter 62-777, F.A.C., USEPA PRG values, and the BSLs. SPLP leachate analytical results are summarized in Table 5-2. Exceedences of FDEP SCTLs in subsurface soil are displayed in Figures 5-2 and 5-3.

VOCs

Five compounds (2-butanone, acetone, benzene, ethylbenzene, and total xylenes) were detected in the subsurface soil at Site 35. Ethylbenzene and/or total xylenes were detected above the FDEP LE SCTL in

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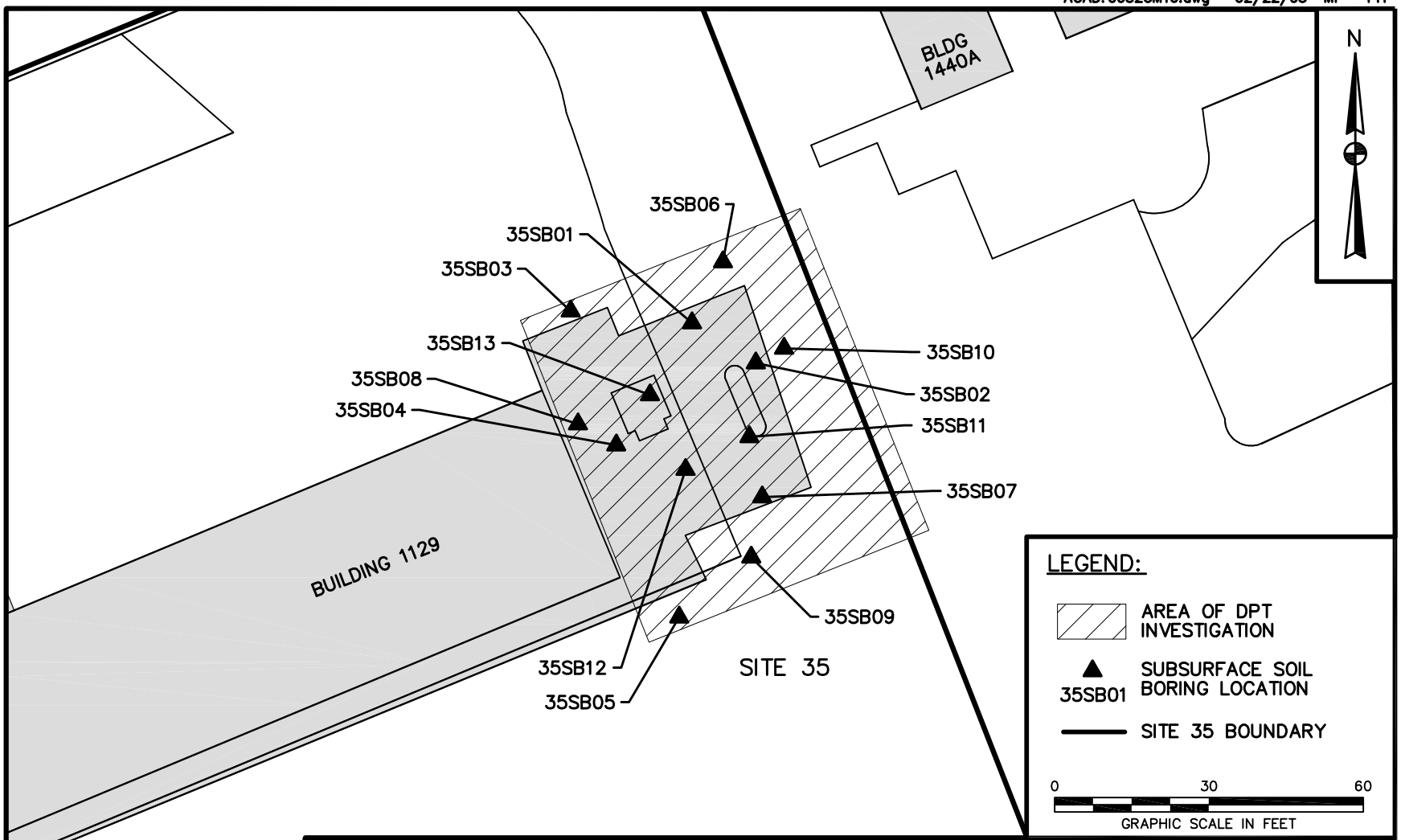

DRAWN BY MF	DATE 2/22/05	SITE 35 SUBSURFACE SOIL BORING LOCATION MAP REMEDIAL INVESTIGATION REPORT NAS WHITING FIELD, MILTON, FLORIDA	CONTRACT NO. 0052
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TABLE 5-1

ANALYTICAL SUMMARY FOR VOLATILE ORGANIC COMPOUNDS AND INORGANIC ANALYTES
DETECTED IN SUBSURFACE SOIL SAMPLES - SITE 35
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
PAGE 1 OF 2

Sample No.		35D01020	35D01115	35D01132	35D01215	35D01230	35D01320	35D01325
Sample Location		35SB10	35SB11	35SB11	35SB12	35SB12	35SB13	35SB13
Collect Date		6/6/2000	6/6/2000	6/6/2000	6/6/2000	6/6/2000	6/6/2000	6/6/2000
Sample Depth (bls)		18-20'	13-15'	30-32'	13-15'	28-30'	18-20'	23-25'
	DE1[1]/DE2[2]/LE[3]/BSL[4]/PRGR[5]/PRGI[6] (mg/kg)							
Volatile[7] (mg/kg)								
2-Butanone	3100/21000/17/NA/NA/NA	--	--	--	--	--	0.007[J]	--
Acetone	780/5500/2.8/NA/1600/6200	--	--	0.0095[J]	--	0.0133	0.0218[J]	--
Benzene	1.1/1.6/0.007/NA/67/1.5	--	--	0.0019[J]	--	--	--	--
Ethylbenzene	1100/8400/**0.6**/NA/230/230	--	**41**	0.0514	**5.95**	0.0752[J]	0.0032[J]	--
Total Xylenes	5900/40000/**0.2**/NA/210/210	--	**42.5**	0.0558	**8.9**	0.12	0.0045[J]	--
Metals[8] (mg/kg)								
Aluminum	72000/*/***/**27834**/76000/100000	22400	**35600**	1580	**34600**	3210	19500	2580
Antimony	26/240/5/4.4/31/820	0.49[J]	0.78[J]	--	0.77[J]	0.27[J]	0.42[J]	--
Arsenic****	**0.8/3.7**/29/**6.2**/**0.39/2.7**	**5.9**	**7**	--	**6.4**	**4.7**	**5.2**	--
Barium	110**/87000/1600/15.8/5400/100000	5.8[J]	7.0[J]	5.5[J]	7.9[J]	9.6[J]	4.7[J]	9.1[J]
Calcium	NA/NA/NA/444/NA/NA	75.8	93.1	83.3	215	229	163	110
Chromium	210/420/38/**22.8**/**30**/64	**24.4[J]**	**29.7[J]**	--	**32.2[J]**	**27[J]**	18.8[J]	--
Cobalt	4700/110000/***/1.48/4700/100000	--	0.80[J]	--	0.75[J]	--	--	--
Copper	110**/76000/***/**8.8**/2900/76000	8.1	**10.2**	2.8	**10.6**	6.4	6.6	2.2
Iron	**23000**/480000/***/**18110**/**23000**/100000	**20900[J]**	**24800[J]**	2540[J]	**24700[J]**	7260[J]	17500[J]	1460[J]
Lead	400/920/***/**8.4**/400/1000	2.2[J]	4.7[J]	2.3	**12.3**	5.3	2.4[J]	3.6
Magnesium	NA/NA/NA/272/NA/NA	64.8	82.2	48.5	73	137	65.8	90.8
Manganese	1600/22000/***/42.6/1800/32000	16[J]	35.9[J]	5.9[J]	33.3[J]	5.5[J]	15.3[J]	6.3[J]
Potassium	NA/NA/NA/181/NA/NA	64.7	144	67.4	110	135	67.3	134
Selenium	390/10000/5/**0.30**/390/10000	--	**2.4**	--	--	--	--	--
Sodium	NA/NA/NA/NA/NA/NA	103	91.6	151	101	123	115	95.3
Vanadium	**15****/7400/980/**45**/550/14000	**61.5[J]**	**65.6[J]**	14.5[J]	**62.9[J]**	**55.6[J]**	**48.7[J]**	7.3[J]
Zinc	3400/53000/19/15.6/23000/100000	5.9[J]	7.6[J]	5.3[J]	8.2[J]	4.7[J]	5.6[J]	5.4[J]

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4] Background screening value from Table 3-18, General Information Report,Remedial Investigation and Feasability Study, ABB, January 1998.
[5/6] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[7] SW-846 8260B, [8] SW-846 6010B and 7470A/7471A
* Contaminant is not a health concern for this default exposure scenario.
** Direct exposure value based on acute toxicity considerations.
*** Leachability values may be derived using the SPLP Test to calculate site-specific SCTLs or may be determined using TCLP in the event oily wastes are present.
**** Arsenic exceeds DE1 criteria; however, FDEP has agreed that arsenic is naturally accurring at this site (Appendix B).
Bold indicates the exceedance of limits. **Bold** indicates which regulatory limit has been exceed.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 5-1

ANALYTICAL SUMMARY FOR VOLATILE ORGANIC COMPOUNDS AND INORGANIC ANALYTES
DETECTED IN SUBSURFACE SOIL SAMPLES - SITE 35
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
PAGE 2 OF 2

Sample No.		35SB01115	35SB01220	35SB01315
Sample Location		35SB11	35SB12	35SB13
Collect Date		5/14/2001	5/14/2001	5/14/2001
Sample Depth (bls)		13-15'	18-20'	13-15'
	DE1[1]/DE2[2]/LE[3]/BSL[4]/PRGR[5]/PRGI[6] (mg/kg)			
Volatile[7] (mg/kg)				
2-Butanone	3100/21000/17/NA/NA/NA	--	--	--
Acetone	780/5500/2.8/NA/1600/6200	--	--	--
Benzene	1.1/1.6/0.007/NA/67/1.5	--	--	--
Ethylbenzene	1100/8400/0.6/NA/230/230	0.0397	0.318	--
Total Xylenes	5900/40000/**0.2**/NA/210/210	0.0295	**0.53[J]**	--
Polycyclic Aromatic Hydrocarbons[8] (mg/kg)				
2-Methylnaphthalene	80/560/6.1/NA/NA	--	0.51	--
Anthracene	18000/260000/2500/22000/390000	--	0.669	--
Benzo(a)anthracene	1.4/5/3.2/62/2.9	--	0.754	--
Benzo(a)pyrene	**0.1**/0.5/8620/29	--	**0.335**	--
Benzo(b)fluoranthene	1.4/4.8/10/62/2.9	--	0.224	--
Benzo(g,h,i)perylene	2300/41000/32000/NA/NA	--	0.21	--
Benzo(k)fluoranthene	15/52/25/6.2/29	--	0.14	--
Chrysene	140/450/77/62/290	--	0.492	--
Fluoranthene	2900/48000/1200/2300/30000	--	2.8	--
Fluorene	2200/28000/160/2600/33000	--	0.312[J]	--
Indeno(1,2,3-cd)pyrene	1.5/5.3/28/62/2.9	--	0.0989	--
Phenanthrene	2000/30000/250/NA/NA	--	2.38	--
Pyrene	2200/37000/880/2300/54000	--	2.21	--
Total Petroleum Hydrocarbons[9] (mg/kg)	340/2500/340/NA/NA	--	46.2	--
Metals[10] (mg/kg)				
Aluminum	72000/*/***/**27834**/76000/100000	**29800[J]**	14500[J]	**28600[J]**
Cobalt	4700/110000/***/1.48/4700/100000	0.92[J]	0.49[J]	0.83[J]
Copper	110**/76000/***/8.8/2900/76000	8.0	4.9	7.2
Iron	**23000**/480000/***/**18110**/**23000**/100000	**25300[J]**	15500[J]	**22400[J]**
Lead	400/920/***/8.4/400/1000	7.8	5.2	6.8
Manganese	1600/22000/***/42.6/1800/32000	34.3	11.7	30.6

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4] Background screening value from Table 3-18, General Information Report,Remedial Investigation and Feasability Study, ABB, January 1998.
[5/6] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[7] SW-846 8260B, [8] SW-846 8310, [9] FDEP FL-PRO, [10] SW-846 6010B and 7470/7471A
* Contaminant is not a health concern for this default exposure scenario.
** Direct exposure value based on acute toxicity considerations.
*** Leachability values may be derived using the SPLP Test to calculate site-specific SCTLs or may be determined using TCLP in the event oily wastes are present.
Bold indicates the exceedance of limits. **Bold** indicates which regulatory limit has been exceed.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

Table 5-2

SUMMARY OF ORGANIC COMPOUNDS and INORGANIC ANALYTES DETECTED IN SUBSURFACE SOIL LEACHATES - SITE 35
Naval Air Station Whiting Field, Milton, Florida

Sample No.		35D01020	35D01115	35SB01115	35D1132	35D1215	35SB01220	35D01230	35D01320	35D01325	35SB01315
Sample Location		35SB10	35SB11	35SB11	35SB11	35SB12	35SB12	35SB12	35SB13	35SB13	35SB13
Collect Date		6/6/2000	6/6/2000	5/14/2001	6/6/2000	6/6/2000	5/14/2001	6/6/2000	6/6/2000	6/6/2000	5/14/2001
Sample Depth		18-20'	13-15'	13-15'	30-32'	13-15'	18-20'	28-30'	18-20'	23-25'	13-15'
	Groundwater Criteria[1]/Primary[2]/ Secondary[3]										
Metals[4] (ug/L)											
Aluminum	200/NA/50-200	--	--	**1,400**	--	--	**1,800**	--	--	--	**2,300**
Cobalt	420/NA/NA	--	--	--	--	--	--	--	--	--	--
Copper	1,000/NA/1,000	--	--	--	--	--	--	--	--	--	--
Iron	300/NA/300	--	--	**940**	--	--	**1,100**	--	--	--	**2,300**
Lead	15/NA/NA	--	--	--	--	--	--	--	--	--	--
Manganese	50/NA/NA	--	--	--	--	--	--	--	--	--	--
Volatile[5] (mg/L)											
Acetone	700/NA/NA	NA	NA	--	NA	NA	100	NA	NA	NA	NA

[1] Groundwater Clean-up Criteria as provided in Chapter 62-777, F.A.C.
[2] EPA 40 CFR Primary Drinking Standard
[3] EPA 40 CFR Secondary Drinking Water Standard
[4] SW-846 6010B, [5] SW-846 8260B
NA = Not Applicable -- = not detected
Bold indicates the exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.

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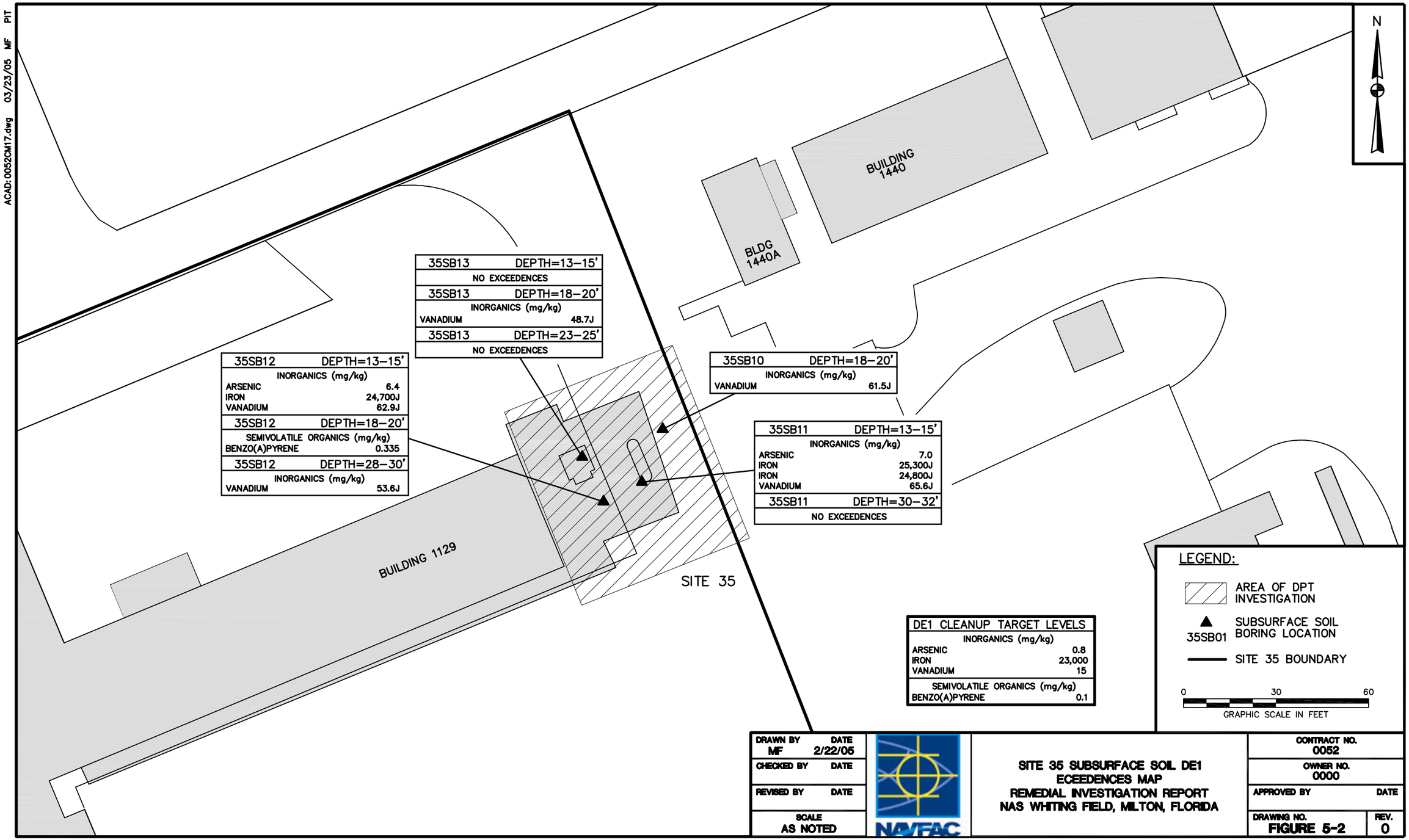

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SITE 35 SUBSURFACE SOIL DE1 ECEEDENCES MAP
REMEDIAL INVESTIGATION REPORT
NAS WHITING FIELD, MILTON, FLORIDA

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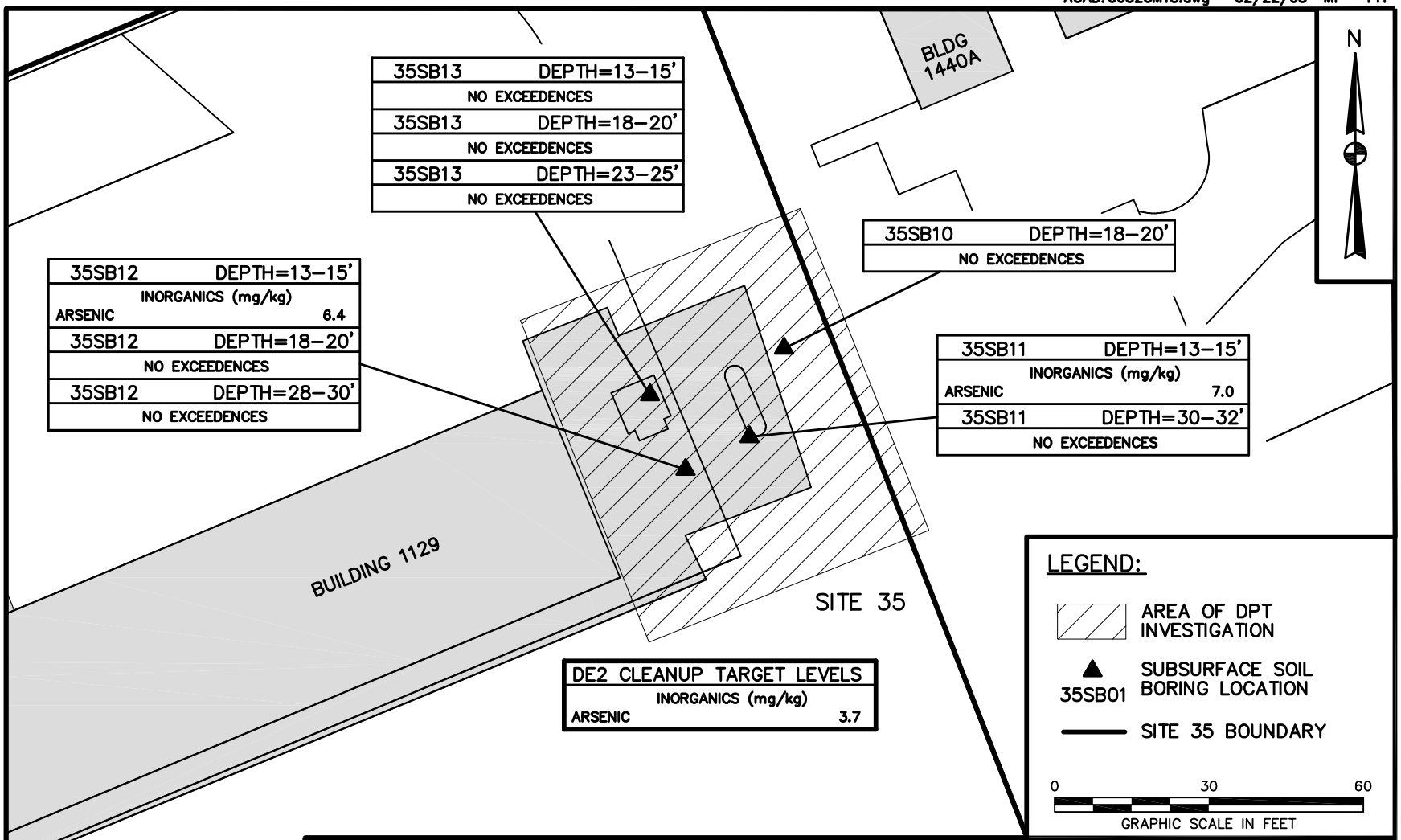

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three samples (35D01115, 35D01215, and 35SB01220; Table 5-1). Neither, ethylbenzene or total xylenes were detected in the SPLP leachate analysis.

PAHs

One PAH [benzo(a)pyrene] was detected in sample 35SB01220 (0.335 mg/L) above the FDEP DE1 SCTL (0.1 mg/L).

Inorganics

Table 5-1 lists 17 analytes detected in the subsurface soil at Site 35 (Table 5-1). Twelve analytes (aluminum, barium, calcium, copper, iron, lead, magnesium, manganese, potassium, sodium, vanadium, and zinc) were detected in all of the samples. Three analytes (antimony, arsenic, and chromium) were detected in five samples (35D010202, 35D01115, 35D1215, 35D1230, and 35D1320). Cobalt was detected in two samples (35D01115 and 35D1215) and selenium was detected in sample 35D01115.

Seven analytes (aluminum, chromium, copper, iron, lead, selenium, and vanadium) were detected above the BSLs. Vanadium was detected above FDEP DE1 SCTL (15 mg/kg) in five samples [35D01020 (61.5J mg/kg), 35D01115 (65.6J mg/kg), 35D1215 (62.9J mg/kg), 35D1230 (55.6J mg/kg), and 35D1320 (48.7J mg/kg)]. Chromium was detected above the USEPA Residential PRG (30 mg/kg) in sample 35D1215 (32.2J mg/kg).

Arsenic was detected above the BSL, FDEP DE1 and DE2 SCTL, and the USEPA Residential and Industrial PRGs in two samples (35D01115 and 35D01215). Iron was detected above FDEP DE1 SCTL (23,000 mg/kg) and USEPA Residential PRG (23,000 mg/kg) in samples 35D01115 (24,800J mg/kg) and 35D1215 (24,700J mg/kg).

Several analytes (aluminum, cobalt, copper, iron, lead, and manganese) detected in the subsurface soil do not have specific FDEP LE SCTLs for comparison. LE SCTLs are determined on a site-specific basis. Therefore, SPLP analysis was performed on five samples (35D01320, 35D01325, 35D01115, 35D01220, and 35D01315; Table 5-2). Aluminum and iron were detected above FDEP GCTLs in three samples (35SB01115, 35SB01220, and 35SB01315). Based on these results it is possible the subsurface soil may be leaching contaminants into the groundwater. The impact on groundwater will be addressed in the Site 40 RI Report.

5.2.3 Soil Assessment Summary

Five VOCs and 17 inorganics were detected in the subsurface. Ethylbenzene and total xylenes were detected above the FDEP LE SCTL. Vanadium was detected above the FDEP DE1 SCTL. Chromium was detected above the USEPA Residential PRG. Aluminum and lead were detected above the FDEP

GCTLs in subsurface soil leachate samples. Arsenic was detected above the FDEP and USEPA regulatory limits and iron and was detected above the FDEP DE1 SCTL.

5.3 DATA EVALUATION

5.3.1 Data Validation

Refer to Appendix D (CD-ROM) of this report for the complete data validation report. This section summarizes the data validation remarks for Site 35 analytical data.

VOCs

Samples 35D01132, 35D01230, and 35D1320 contained compounds qualified as estimated (J) because the reported concentration was below the RL, but above the MDL.

Ethylbenzene was qualified as estimated (J) in sample 35D01215 because the reported concentration was above the upper limit of the instruments linear calibration curve. The reported concentration for ethylbenzene may be biased low.

Ethylbenzene was qualified as estimated (J) in sample 35D01230 because of possible laboratory cross-contamination. The reported concentration for ethylbenzene may be biased high. The concentration of ethylbenzene was reported to be 0.075 mg/kg. The ethylbenzene in sample 35D01230 may be from instrument contamination after analyzing sample 35D01215.

Methylene chloride was qualified as nondetected in samples 35D0115 and 35D01215 due to laboratory blank contamination. Methylene chloride is a common laboratory contaminant. This qualification in no way affects the quality of the data. It simply filters out false-positive results.

Inorganics

In samples 35D01020, 35D01115, 35D01215, and 35D01320 interfering analytes aluminum and/or iron were present at significant concentrations. Due to these two analytes, reported concentrations for antimony, cadmium, cobalt, lead, and thallium were qualified estimated (J). Nondetects were qualified estimated (UJ). The concentrations of antimony, cadmium, cobalt, lead, and thallium concentrations may be biased low due to the interference of iron.

Several analytes in all the samples were qualified as nondetects (U) due to laboratory blank contamination. Metals contamination in laboratory blanks is common and therefore, analytes qualified for blank contamination in no way affects the quality of the data. The qualification simply filters out false-positive results.

5.3.2 Risk Assessment

5.3.2.1 Human Health Risk Assessment

A screening level HHRA has been conducted as part of the RI report for Site 35 at NAS Whiting Field. The purpose of the HHRA is to characterize the risks to humans associated with the potential exposures to chemicals in surface and subsurface soil. This HHRA was conducted in accordance with procedures as outlined in Section 1.4.3.

5.3.2.1.1 Selection of COPCs for Site 35

The COPC selection method is described in Section 1.4.3.1 of this report. Table 5-3 lists the candidate COPCs (those with at least one detection) and shows those selected as subsurface soil COPCs for the risk evaluation. The initial COPCs included five carcinogenic chemicals; therefore, the carcinogenic screening levels were divided by five. The following chemicals were identified as COPCs for subsurface soil at Site 35: benzo(a)pyrene (equiv.) and chromium.

5.3.2.1.2 Exposure Assessment

This exposure assessment was conducted to identify the human pathways of potential exposure, the magnitude of potential exposure, and the frequency and duration of exposure.

Exposure Setting Characterization

Section 1.2 describes the regional and site-specific environmental setting of Site 35. The site is non-residential and is expected to remain non-residential in the foreseeable future.

Identification of Potential Receptors and Exposure Pathways

The receptors to be evaluated were selected based on the current and realistic future use of the sites and surrounding areas.

For both current and future time frames for the HHRA, four potential receptors were evaluated for NAS Whiting Field Site 35. These receptors are:

- A construction worker. The construction worker was considered to perform intrusive work at relatively short durations. The construction worker is the only receptor potentially exposed to subsurface soil.
- A site occupational worker. The site occupational worker was assumed to be on site in a commercial/industrial scenario.

TABLE 5-3
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
SITE 35
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
1 OF1

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil
Exposure Point: Site 35

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used For Screening[1]	Background Value[2]	Region 9 PRG [3]	Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Volatiles (mg/kg)																
78-93-3	2-Butanone	OV	0.007	J	0.034		35B00102	2/27	0.0094-1.4	0.034	Not Avail	NA - N	310	FL Residential	no	BSL
67-64-1	Acetone	OV	0.007	J	0.1		35B00102	5/27	0.01-46	0.1	Not Avail	160 - N	78	FL Residential	no	BSL
71-43-2	Benzene	OV	0.0019	J	0.0019	J	35D01132	1/27	0.0047-4.6	0.0019	Not Avail	0.17 - C	0.28	FL Residential	no	BSL
100-41-4	Ethylbenzene	OV	0.0032	J	41		35D01115	8/27	0.0047-0.012	41	Not Avail	230 - Csat	110	FL Residential	no	BSL
75-09-2	Methylene Chloride	OV	0.002	J	0.004	J	35B00502	8/27	0.0094-9.45	0.004	Not Avail	2.23 - C	4	FL Residential	no	BSL
1330-20-7	Xylenes, total	OV	0.0045	J	42.5		35D01115	7/27	0.01-0.015	42.5	Not Avail	210 - Csat	590	FL Residential	no	BSL
Polycyclic Aromatic Hydrocarbons (mg/kg)																
	Benzo(a)pyrene	SV	0.369		0.369		35SB01220	1/3	0.1	0.369	Not Avail	0.021 - C	0.03	FL Residential	yes	ASL
Metals (mg/kg)																
7429-90-5	Aluminum	M	1580		35600		35D01115	10/10	--	35600	15848	7600 - N	7200	FL Residential	no	AS
7440-36-0	Antimony	M	0.27	J	0.78	J	35D01115	5/7	0.28-0.30	0.78	8	3.1 - N	2.6	FL Residential	no	BSL
7440-38-2	Arsenic	M	4.7		6.4		35D01215	5/7	0.96-1.2	6.4	3.2	0.10 - C	0.2	FL Residential	no	AS
7440-39-3	Barium	M	4.7	J	9.6	J	35D01230	7/7	--	9.6	23.2	540 - N	110(s)	FL Residential	no	BSL
7440-70-2	Calcium	M	75.8		229		35D01230	7/7	--	229	396	NA	NA	--	no	NUT - BKG
7440-47-3	**Chromium**	M	18.8	J	32.2	J	35D01215	5/7	2.2-2.5	32.2	11	7.5 - C	52.5	FL Residential	yes	ASL
7440-48-4	Cobalt	M	0.49	J	0.92	J	35SB01115	5/10	0.13-0.52	0.92	3	470 - N	470	FL Residential	no	BSL
7440-50-8	Copper	M	2.2		10.6		35D01215	5/10	--	10.6	9.4	290 - N	110(s)	FL Residential	no	BSL
7439-89-6	Iron	M	1460	J	25300	J	35SB01115	10/10	--	25300	8832	2300 - N	2300	FL Residential	no	AS
7439-92-1	Lead	M	2.2	J	12.3		35D01215	10/10	--	12.3	11.4	400	400	FL Residential	no	BSL
7439-95-4	Magnesium	M	48.5		137		35D01230	7/7	--	137	268	NA	NA	--	no	NUT - BKG
7439-96-5	Manganese	M	5.5	J	35.9	J	35D01115	10/10	--	35.9	392	180 - N	160	FL Residential	no	BSL
7440-09-7	Potassium	M	64.7		144		35D01115	7/7	--	144	177	NA	NA	--	no	NUT - BKG
7782-49-2	Selenium	M	2.4		2.4		35D01115	1/7	0.21-2.1	2.4	0.46	39 - N	39	FL Residential	no	BSL
7440-23-5	Sodium	M	91.6		151		35D01132	7/7	--	151	406	NA	NA	--	no	NUT - BKG
7440-62-2	Vanadium	M	7.3	J	65.6	J	35D01115	7/7	--	65.6	21.8	55 - N	15(s)	FL Residential	no	AS
7440-66-6	Zinc	M	4.7	J	8.2	J	35D01215	7/7	--	8.2	15.4	2300 - N	2300	FL Residential	no	BSL

[1] Maximum concentration used as screening value
[2] The background screening value is twice the average of background concentrations for inorganic analytes.
[3] Based on Superfund Preliminary Remediation Goals, USEPA Region IX, Residential land use (Cancer benchmark value = 1E-06, Hazard Quotient = 0.1) (May 2000)
[4] FL Residential from Technical Report: Development of Soil Cleanup Levels for Chapter 62-777, F.A.C. (May 1999)(Cancer benchmark value = 1E-06, Hazard Quotient = 0.1)
[5] Rationale Codes

Selection Reason	Above Screening Levels (ASL)
	If one cPAH is selected as a COPC, all are selected (PAH)
Deletion Reason	Maximum detected concentration is below background screening level (BKG)
	Essential Nutrient (NUT)
	Below Screening Levels (BSL)
	Aluminum, arsenic, iron, manganese, and vanadium were determined to be unrelated to site activities (AS)

Chemical names in bold indicate that chemical was selected as a COPC

Definitions:
NA = Not Applicable
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
COPC = Chemical of Potential Concern
s = direct exposure based on acute toxicity
N = noncarcinogen
C = carcinogen
Csat = Saturation concentration. When the calculated Region IX PRG exceeds the Csat , the Csat is used as the PRG. This value does not reflect a Hazard Quotient of 0.1.

- A trespasser or visitor. These individuals may occasionally enter the site with or without proper authorization. Both an adult and an older child were considered.
- An on-site resident. The on-site resident is considered highly unlikely; however, this pathway was considered for purposes of completeness and conservatism.

As described in Section 1.4.3.2, exposure assessment parameters used in this RA are those used to derive the Florida SCTLs and represent only the on-site resident and the site occupational worker.

5.3.2.1.3 Toxicity Assessment

As described in Section 1.4.3.3, toxicity parameters used in this RA are those used to derive the Florida SCTLs.

Toxicological profiles for each of the COPCs are presented in Appendix F of the Technical Report: Development of SCTLs for Chapter 62-777, F.A.C.. These profiles present a summary of the available literature on carcinogenic and noncarcinogenic effects associated with human exposure to the chemical.

5.3.2.1.4 Risk Characterization

This section contains a summary of the human health risk estimates for Site 35. The methodology used to calculate the risk estimates is provided in Section 1.4.3.4. A media-specific discussion of the estimated non-carcinogenic and carcinogenic risks is provided in the remainder of this section.

5.3.2.1.4.1 Subsurface Soil – Carcinogenic Risks

Cancer risk estimates and HIs calculated for the COPCs for subsurface soils are presented in Table 5-4.

The estimated ILCRs calculated for the hypothetical future resident and the typical occupational worker (based on the Florida SCTLs) are 3.8E-06 and 8.1E-07, respectively. These risk estimates are within the USEPA target risk range often used to evaluate the need for environmental remediation; but exceed the State of Florida benchmark of 1E-06 for the hypothetical future resident. The primary risk driver (i.e., contributor to risk) is the carcinogenic PAHs. The ILCR for the carcinogenic PAHs exceeds 1E-06 for the hypothetical future resident. The ILCRs for chromium do not exceed 1E-06 for either the hypothetical future resident or the typical occupational worker.

TABLE 5-4
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - SUBSURFACE SOIL
SITE 35

Chemical	Concentration (maximum) (mg/kg)	Incremental Lifetime Carcinogenic Risk (ILCR)				Estimated Non-Carcinogenic Hazard Quotient (HQ)				
		FL SCTL[1]	Estimated Residential ILCR	FL SCTL [2]	Estimated Industrial ILCR	Primary Target Organs[3]	FL SCTL or PRG[1][4]	Estimated Residential HQ	FL SCTL or PRG[2][4]	Estimated Industrial HQ
Benzo(a)pyrene equivalent	0.369	0.1	**3.7E-06**	0.5	7.4E-07	NA	NA	NA	NA	NA
Chromium	32.2	210	1.5E-07	420	7.7E-08	Respiratory	230	0.14	6100	0.01
		Total carcinogenic risk	**3.8E-06**		8.1E-07		Total HI	0.14		0.01

Target Organ Hits - Residential

Total Respiratory HI = 0.14

Target Organ Hits - Industrial

Total Respiratory HI = 0.01

1 FL **Residential** SCTL from Technical Report: Development of Soil Clean-up Levels for Chapter 62-777, F.A.C. (May 1999)
2 FL **Industrial** SCTL from Technical Report: Development of Soil Clean-up Levels for Chapter 62-777, F.A.C. (May 1999)
3 Target organs from Technical Report: Development of Soil Clean-up Levels for Chapter 62-777, F.A.C. (May 1999)
4 If Florida SCTL is based on cancer risk, the USEPA Region IX PRG for noncarcinogenic health effects is given if available.
5 NA - Not applicable. The USEPA has either not established a cancer slope factor (CSF) or noncarcinogenic reference dose (RfD) for this chemical.
6 Vanadium residential SCTL of 15 mg/kg based on acute exposure. Consequently, a hazard quotient was not calculated. Risk estimates for acute and chronic exposure are discussed in text.
Bold indicates result exceeds 1E-06 for Carcinogenic Risk or 1.0 for Hazard Index
SCTL = Soil Cleanup Target Levels for Chapter 62-777, F.A.C. (May 1999)
PRG = Preliminary Remediation Goals, USEPA Region IX

Significant uncertainties identified for the PAH risk estimates (Section 5.3.3.5) are: 1) the PAH concentrations detected in the soils are similar to those concentrations often detected in rural and urban background samples, 2) the maximum concentration detected for each COPC was used as the EPC, and 3) two of the maximum detected concentrations of the cPAHs exceeded their PRG or SCTL. The remaining five cPAHs were selected as COPCs either because of the conservative COPC selection process of lowering the screening level according to the number of carcinogenic initial COPCs or because of guidance stating if one cPAH is selected as a COPC, they all must be.

The foregoing uncertainties, especially the similarity of PAH concentrations to typical background levels and the over conservative bias in using the maximum concentration to estimate risk, should be considered in any remedial decisions.

5.3.2.1.4.2 Subsurface Soil – Noncarcinogenic Risks

The total HI and the HI calculated on a target organ specific basis for the hypothetical future resident and the typical occupational worker (based on Florida SCTLs) do not exceed 1. Consequently, adverse non-carcinogenic health effects are not anticipated under the conditions established in the exposure assessment.

5.3.2.1.5 Uncertainty

The general uncertainties associated with the HHRA are presented in Section 1.4.3.5. Uncertainties associated with Site 35 specifically are provided in this section.

5.3.2.1.5.1 Uncertainty in COPC Selection

As discussed in Section 1.4.3.5.1, Region IX PRGs were not available for a few chemicals detected in this investigation. For those chemicals (2-butanone, acetone), Florida SCTLs were available; therefore, a screening value was available for the RA. Because both the SCTLs and the PRGs are risk-based and because the maximum concentrations were less than the SCTLs by three orders of magnitude in each case, it is unlikely the lack of PRG values has resulted in the underestimation of risk.

Of the cPAHs, only two were selected as COPCs. The remaining cPAHs were selected as COPCs because A) of the conservative COPC selection process of lowering the screening level according to the number of carcinogenic initial COPCs or B) per methodology presented in page 522 of the RAGS (USEPA 1989), states any member of a chemical class (e.g., detected cPAHs) having other members selected as COPCs should be retained as a COPC. The PAH concentrations noted in the surface soils are similar to concentrations reported in urban and rural background samples.

5.3.2.1.5.2 Uncertainty in Exposure Assessment

The maximum detected concentration of each COPC was used to quantify potential risks. As a result of using the maximum concentration, the estimations of potential risk are likely to be overestimated because it is unlikely potential receptors would be exposed to the maximum concentration over the entire site for the assumed exposure period.

5.3.2.2 Ecological Risk Assessment

Because the PSC at Site 35 is a UST, subsurface soil samples were collected (not surface soil). It is unlikely there would be significant contact between ecological receptors and contaminants in the subsurface soil (greater than 2 ft bls). Typical avian receptors (e.g., bobwhite quail and American woodcock) do not burrow in the subsurface soil. Typical small mammal receptors (e.g., meadow vole and short-tail shrew) may burrow in the soil, but rarely deeper than 50 centimeter, eliminating exposure through direct contact and grooming activities (USEPA, 1993). Because most, if not all, of the food (i.e., plants, soil invertebrates) consumed by these birds and mammals will primarily be exposed to contaminants in the surface soil (0 to 2 ft bls), the upper trophic level receptors will not be exposed to chemicals in the subsurface soil through incidental ingestion or consumption of organisms and/or vegetation having taken up the chemicals. Therefore, the subsurface soil samples at Site 35 will not be quantitatively evaluated in a SERA.

5.4 CONCLUSION AND RECOMMENDATION

5.4.1 Conclusion

Subsurface soil samples were collected and analyzed for VOC and inorganics. Five VOCs and 17 inorganics were detected in the subsurface soil. Ethylbenzene and total xylenes were detected above the FDEP LE SCTL. Iron was detected above the FDEP DE1 SCTL and the USEPA Region IX RAGS. Vanadium was detected above the FDEP DE1 SCTL. Chromium was detected above the USEPA Region IV PRGs.

No analysis for ethylbenzene and total xylenes leaching was conducted. SPLP leachate results for aluminum and iron were above the FDEP GCTLs. This indicates a possible adverse impact on the subsurface soil, and therefore on the groundwater. The impact of surface soil leaching to the groundwater will be addressed in the Site 40 RI Report.

An HHRA was conducted for Site 35 to determine if a human health risk from the detected contaminants existed for a construction worker, on-site worker, trespasser or on-site resident. Benzo(a)pyrene and chromium were selected as COPCs because they exceeded the initial screening criteria. Chromium was

not selected as a COC; however, because the HI and associated cancer risk did not exceed 1.0 or 1E-6 (respectively) for either the future resident or typical site worker. Although chromium was not selected as a COC, benzo(a)pyrene was selected because the cancer risk exceeded 1E-6 for future residents.

5.4.2 Recommendation

Based on the comparison of the detected levels of subsurface soil contamination with the SCTLs listed in Chapter 62-777, F.A.C., the USEPA PRGs and RAGS, and the RAs performed, a FFS should be conducted to determine the most appropriate means of remediation.

6.0 SITE 38: BUILDING 2877, FORMER GOLF COURSE MAINTENANCE BUILDING

Investigations were conducted at Site 38, the Former Golf Course Maintenance Building to define the lateral and vertical extent of soil contamination if present and to determine the direct exposure risk associated with any contamination associated with the site. This section describes the geologic setting, surface soil assessment, subsurface soil assessment, data quality, and RA for Site 38.

6.1 GEOLOGIC SETTING

The soil sampled at Site 38 is comprised of two distinct layers. The first layer (0 to 10 ft bls) is a firm, sandy-clay. The second layer (10 to 30 ft bls) is a loose sand with medium to fine grain. The soil was previously characterized as Troupe loamy sand (ABB, 1996a).

6.2 SOIL ASSESSMENT

Nineteen surface soil borings (38SS01 through 38SS19) and 19 subsurface soil borings (38SB01 through 38SB12) were advanced using either hand augers or DPT were advanced at Site 38. The borings were typically located around the perimeter of former Building 2877. Refer to Figure 6-1 for soil boring locations.

6.2.1 Surface Soil Assessment

Nineteen surface soil samples (38D00101 through 38D01901) and three duplicate surface soil samples (38D00301D, 38D01101D, and 38D01301D) were collected at Site 38. Twelve samples (38D00101 through 38D01201) and two duplicate samples (38D00301D and 38D01101D) were analyzed for TCL VOCs, TCL SVOCs, TCL Pesticides, TCL PCBs, TRPH, and TAL inorganics. Seven samples (38D01301 through 38D01901) and one duplicate sample (38D01301D) were analyzed for pesticides/PCBs and TRPH. Analytical results are summarized in Table 6-1 and 6-2. SCTLs from Chapter 62-777, F.A.C., USEPA PRG values, USEPA RAGS, and the BSLs are also include in Table 6-1. SPLP analytical results are summarized in Table 6-3. Exceedences of FDEP SCTL limits in surface soil are displayed in Figures 6-2 and 6-3.

Volatile Organic Compounds

Acetone was detected at eight sample locations (38SS01, 38SS02, 38SS03, 28SS10, 38SS11, and its duplicate 38SS11D, and 38SS012; Table 6-1). Acetone is used in both the volatile and semi-volatile organic extraction process and is commonly present in ambient laboratory air. The low concentrations detected are most likely due to laboratory contamination.

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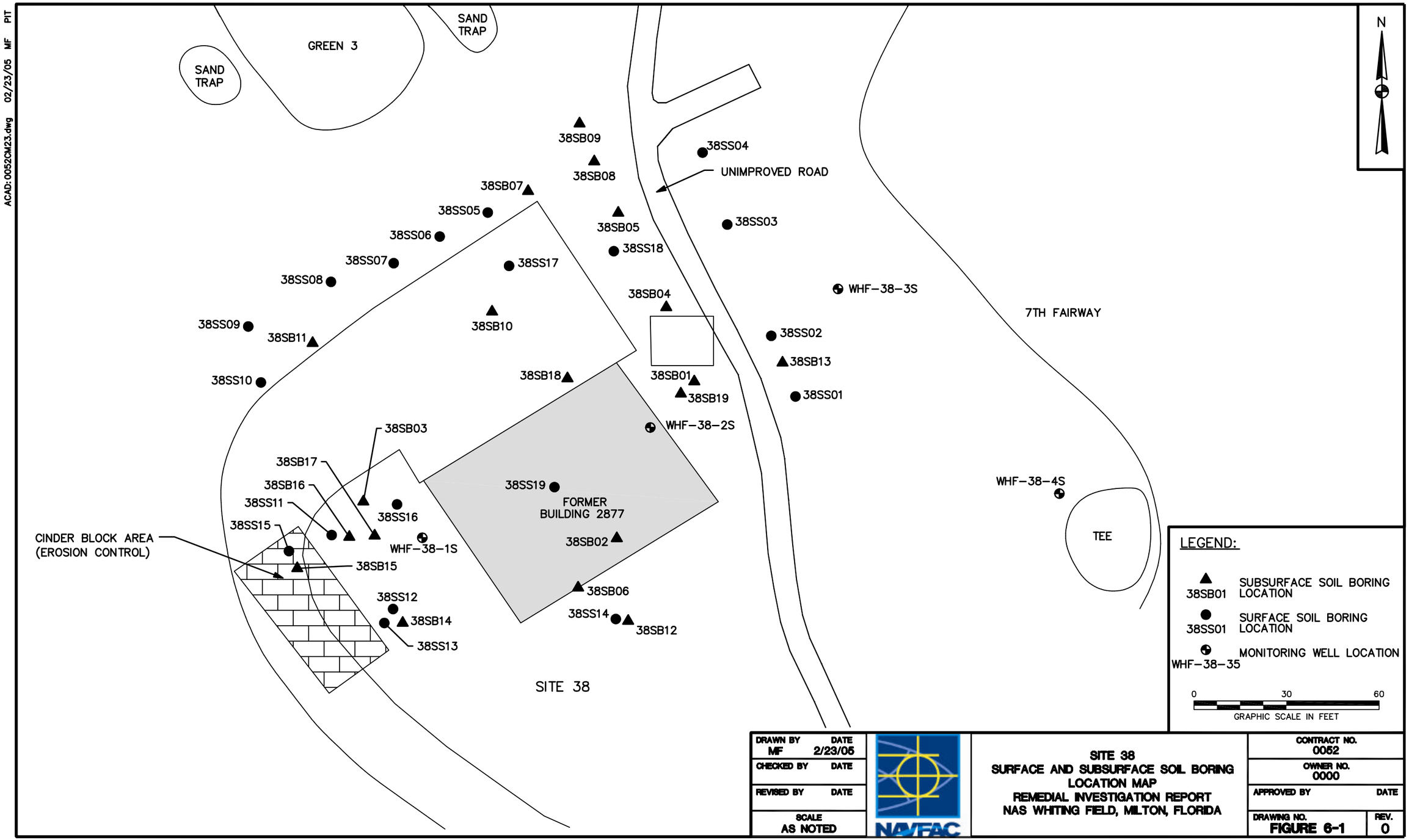

DRAWN BY MF	DATE 2/23/05	SITE 38 SURFACE AND SUBSURFACE SOIL BORING LOCATION MAP REMEDIAL INVESTIGATION REPORT NAS WHITING FIELD, MILTON, FLORIDA	CONTRACT NO. 0052
CHECKED BY	DATE		OWNER NO. 0000
REVISED BY	DATE		APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 6-1 / REV. 0

FORM CADD NO. SDIV-BH.DWG – REV 1 – 9/10/98

TABLE 6-1

ANALYTICAL SUMMARY FOR ORGANIC COMPOUNDS DETECTED IN SURFACE SOIL SAMPLES - SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
PAGE 1 OF 5

Sample No.		38D00101	38D00201	38D00301	38D00301D	38D00401
Sample Location		38SS01	38SS02	38SS03	38SS03	38SS04
Collect Date		5/31/2000	5/31/2000	5/31/2000	5/31/2000	5/31/2000
Sample Depth (bls)		0-1'	0-1'	0-1'	0-1'	0-1'
	DE1[1]/DE2[2]/LE[3]/PRGR[4]/PRGI[5]/RAG[6] (mg/kg)					
Volatile [7] (mg/kg)						
Acetone	780/5500/2.8/1600/6200/NA	0.0871	0.0164[J]	0.0277[J]	--	--
Semi-Volatile [8] (mg/kg)						
no detects						
Pesticides/PCBs [9] (mg/kg)						
4,4'-DDE	3.3/13/18/1.7/12/**0.0025**	--	--	--	--	**0.019**
4,4'-DDT	3.3/13/11/1.7/12/0.0025	--	--	--	--	0.0022[J]
alpha-Chlordane	3.1/12/9.6/1.6/11/NA	--	--	--	--	--
Dieldrin	0.07/0.3/0.004/0.03/0.15/**0.0005**	--	--	--	--	**0.0015[J]**
gamma-Chlordane	3.1/12/9.6/1.6/11/NA	--	--	--	--	0.002[J]
Heptachlor Epoxide	0.1/0.4/0.6/0.053/0.27/NA	--	--	--	--	--
Total Recoverable Petroleum Hydrocarbons [10] (mg/kg)	340/2500/340/NA/NA/NA	30.2	11.7	14.1	12.4	23.5

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4/5] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[6] EPA Region 4 Risk Assessment Guidance Ecological Screening Values.
[7] SW-846 8260B, [8] SW-846 8270C, [9] SW-846 8081A/8082,10 FDEP FL-PRO
Bold indicates the exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 6-1

ANALYTICAL SUMMARY FOR ORGANIC COMPOUNDS DETECTED IN SURFACE SOIL SAMPLES - SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
PAGE 2 OF 5

Sample No.		38D00501	38D00601	38D00701	38D00801	38D00901
Sample Location		38SS05	38SS06	38SS07	38SS08	38SS09
Collect Date		5/31/2000	5/31/2000	5/31/2000	5/31/2000	5/31/2000
Sample Depth (bls)		0-1'	0-1'	0-1'	0-1'	0-1'
	DE1[1]/DE2[2]/LE[3]/PRGR[4]/PRGI[5]/RAG[6] (mg/kg)					
Volatile [7] (mg/kg)						
Acetone	780/5500/2.8/1600/6200/NA	--	--	--	--	--
Semi-Volatile [8] (mg/kg)						
no detects						
Pesticides/PCBs [9] (mg/kg)						
4,4'-DDE	3.3/13/18/1.7/12/**0.0025**	--	--	--	**0.0047**	**0.0089**
4,4'-DDT	3.3/13/11/1.7/12/**0.0025**	--	0.0014[J]	--	0.0022[J]	**0.0035[J]**
alpha-Chlordane	3.1/12/9.6/1.6/11/NA	--	--	--	--	--
Dieldrin	0.07/0.3/0.004/0.03/0.15/**0.0005**	--	--	--	--	**0.001[J]**
gamma-Chlordane	3.1/12/9.6/1.6/11/NA	--	--	--	--	0.0013[J]
Heptachlor Epoxide	0.1/0.4/0.6/0.053/0.27/NA	--	--	--	--	--
Total Recoverable Petroleum Hydrocarbons [10] (mg/kg)	340/2500/340/NA/NA/NA	27.8	14.7	18.6	13.2	14.1

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4/5] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[6] EPA Region 4 Risk Assessment Guidance Ecological Screening Values.
[7] SW-846 8260B, [8] SW-846 8270C, [9] SW-846 8081A/8082,10 FDEP FL-PRO
Bold indicates the exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable
[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 6-1

ANALYTICAL SUMMARY FOR ORGANIC COMPOUNDS DETECTED IN SURFACE SOIL SAMPLES - SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
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Sample No.		38D01001	38D01101	38D01101D	38D01201	38D01301
Sample Location		38SS10	38SS11	38SS11	38SS12	38SS13
Collect Date		5/31/2000	5/31/2000	5/31/2000	5/31/2000	1/23/2001
Sample Depth (bls)		0-1'	0-1'	0-1'	0-1'	0-1'
	DE1[1]/DE2[2]/LE[3]/PRGR[4]/PRGI[5]/RAG[6] (mg/kg)					
Volatile [7] (mg/kg)						
Acetone	780/5500/2.8/1600/6200/NA	0.0147[J]	0.0256[J]	0.0401[J]	0.0174[J]	Not Analyzed
Semi-Volatile [8] (mg/kg)						
no detects						
Pesticides/PCBs [9] (mg/kg)						
4,4'-DDE	3.3/13/18/1.7/12/**0.0025**	**0.01**	**0.446[J]**	**0.402[J]**	**0.148**	--
4,4'-DDT	3.3/13/11/1.7/12/**0.0025**	**0.0034[J]**	**0.517[J]**	**0.468[J]**	**0.116[J]**	--
alpha-Chlordane	**3.1**/12/9.6/**1.6**/11/NA	**--**	**5.72[J]**	**5.46[J]**	0.929[J]	--
Dieldrin	0.07/0.3/0.004/**0.03**/0.15/**0.0005**	**0.0025[J]**	-	-	**0.035[J]**	--
gamma-Chlordane	**3.1**/12/9.6/**1.6**/11/NA	0.012[J]	**4.55**	**4.26**	0.649	--
Heptachlor Epoxide	**0.1**/0.4/0.6/**0.053**/0.27/NA	0.0025[J]	-	**0.194[J]**	0.097	--
Total Recoverable Petroleum Hydrocarbons [10] (mg/kg)	**340**/2500/**340**/NA/NA/NA	21	321	**479**	27.8	8.26[J]

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4/5] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[6] EPA Region 4 Risk Assessment Guidance Ecological Screening Values.
[7] SW-846 8260B, [8] SW-846 8270C, [9] SW-846 8081A/8082,10 FDEP FL-PRO
Bold indicates the exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable
[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 6-1

ANALYTICAL SUMMARY FOR ORGANIC COMPOUNDS DETECTED IN SURFACE SOIL SAMPLES - SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
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Sample No.		38D01301D	38D01401	38D01501	38D01601	38D01701
Sample Location		38SS13	38SS14	38SS15	38SS16	38SS17
Collect Date		1/23/2001	1/23/2001	1/23/2001	1/23/2001	1/23/2001
Sample Depth (bls)		0-1'	0-1'	0-1'	0-1'	0-1'
	DE1[1]/DE2[2]/LE[3]/PRGR[4]/PRGI[5]/RAG[6] (mg/kg)					
Pesticides/PCBs [7] (mg/kg)						
4,4'-DDE	3.3/13/18/1.7/12/0.0025	--	--	--	--	--
4,4'-DDT	3.3/13/11/1.7/12/0.0025	--	--	--	--	--
alpha-Chlordane	3.1/12/9.6/1.6/11/NA	--	--	--	--	--
Dieldrin	0.07/0.3/0.004/0.03/0.15/0.0005	--	--	--	--	--
gamma-Chlordane	3.1/12/9.6/1.6/11/NA	--	--	--	--	--
Heptachlor Epoxide	0.1/0.4/0.6/0.053/0.27/NA	--	--	--	--	--
Total Recoverable Petroleum Hydrocarbons [8] (mg/kg)	340/2500/340/NA/NA/NA	12.2	9.75	9.83	--	7.3[J]

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4/5] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[6] EPA Region 4 Risk Assessment Guidance Ecological Screening Values.
[7] SW-846 8081A/8082, [8] FDEP FL-PRO
Bold indicates the exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable
[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 6-1

ANALYTICAL SUMMARY FOR ORGANIC COMPOUNDS DETECTED IN SURFACE SOIL SAMPLES - SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
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Sample No.		38D01801	38D01901
Sample Location		38SS18	38SS19
Collect Date		1/23/2001	1/23/2001
Sample Depth (bls)		0-1'	0-1'
	DE1[1]/DE2[2]/LE[3]/PRGR[4]/PRGI[5]/RAG[6] (mg/kg)		
Pesticides/PCBs [7] (mg/kg)			
4,4'-DDE	3.3/13/18/1.7/12/0.0025	--	--
4,4'-DDT	3.3/13/11/1.7/12/0.0025	--	--
alpha-Chlordane	3.1/12/9.6/1.6/11/NA	--	--
Dieldrin	0.07/0.3/0.004/0.03/0.15/0.0005	--	--
gamma-Chlordane	3.1/12/9.6/1.6/11/NA	--	--
Heptachlor Epoxide	0.1/0.4/0.6/0.053/0.27/NA	--	--
Total Recoverable Petroleum Hydrocarbons [8] (mg/kg)	340/2500/340/NA/NA/NA	--	10.1

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4/5] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[6] EPA Region 4 Risk Assessment Guidance Ecological Screening Values.
[7] SW-846 8081A/8082, [8] FDEP FL-PRO
Bold indicates the exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable
[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 6-2

ANALYTICAL SUMMARY FOR INORGANIC ANALYTES DETECTED IN SURFACE SOIL SAMPLES - SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
PAGE 1 OF 3

Sample No.		38D00101	38D00201	38D00301	38D00301D	38D00401
Sample Location		38SS01	38SS02	38SS03	38SS03	38SS04
Collect Date		5/31/2000	5/31/2000	5/31/2000	5/31/2000	5/31/2000
Sample Depth (bls)		0-1'	0-1'	0-1'	0-1'	0-1'
	DE1[1]/DE2[2]/LE[3]/BSL[4]/PRGR[5]/ PRGI[6]/RAG[7] (mg/kg)					
TAL Metals[8] (mg/kg)						
Aluminum	72000/*/***/15848/76000/100000/**50**	**5110**	**5710**	**6110**	**6610**	**6250**
Arsenic	0.8/3.7/29/3.2/0.39/2.7/10	--	--	--	--	--
Barium	110**/87000/1600/23.2/5400/100000/165	10.6	10.7	13.7	14.6	11.4
Calcium	NA/NA/NA/396/NA/NA/NA	171[J]	187[J]	306[J]	373[J]	267[J]
Chromium	210/420/38/11/30/64/**0.4**	**5.6**	**4.8**	**6.9**	**7.5**	**8.7**
Cobalt	4700/110000/***/3/4700/100000/20	0.83	0.92	1	1.1	0.88
Copper	110**/76000/***/9.4/2900/76000/40	3.1	3.4	3.7	3.7	3.6
Iron	23000/480000/***/8832/23000/100000/**200**	**3080**	**3540**	**3700**	**4150**	**3850**
Lead	400/920/***/11.4/400/1000/50	3	3.1	3.6	4.2	7.7
Magnesium	NA/NA/NA/268/NA/NA/NA	121[J]	125[J]	154[J]	160[J]	132[J]
Manganese	1600/22000/***/392/1800/32000/**100**	**128**	**146**	**164**	**175**	**109**
Mercury	3.4/26/2.1/0.12/23/610/0.1	--	--	--	--	--
Nickel	110**/28000/130/7.2/1600/41000/30	--	--	--	--	--
Potassium	NA/NA/NA/177/NA/NA/NA	--	--	--	--	--
Sodium	NA/NA/NA/406/NA/NA/NA	--	--	--	--	--
Vanadium	15**/7400/980/21.8/550/14000/**2.0**	**7.8**	**8.8**	**9.2**	**10.1**	**9.8**
Zinc	3400/53000/19/15.4/23000/100000/50	8.9[J]	8.1[J]	8.7[J]	8.8[J]	10[J]
Cyanide[9] (mg/kg)	30**/39000/40/**0.28**/1200/18000/**0.9**	--	--	**1.8**	--	**1.3**

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4] Background screening value from Table 3-9, General Information Report,Remedial Investigation and Feasability Study, ABB, January 1998.
[5/6] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[7] EPA Region 4 Risk Assessment Guidance Ecological Screening Values.
[8] SW-846 6010B and 7470A/7471A, [9] EPA 335.2
* Contaminant is not a health concern for this default exposure scenario.
** Direct exposure value based on acute toxicity considerations.
*** Leachability values may be derived using the SPLP Test to calculate site-specific SCTLs or may be determined using TCLP in the event oily wastes are present.
Bold indicates the exceedance of limits.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 6-2

ANALYTICAL SUMMARY FOR INORGANIC ANALYTES DETECTED IN SURFACE SOIL SAMPLES - SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
PAGE2 OF 3

Sample No.		38D00501	38D00601	38D00701	38D00801	38D00901
Sample Location		38SS05	38SS06	38SS07	38SS08	38SS09
Collect Date		5/31/2000	5/31/2000	5/31/2000	5/31/2000	5/31/2000
Sample Depth (bls)		0-1'	0-1'	0-1'	0-1'	0-1'
	DE1[1]/DE2[2]/LE[3]/BSL[4]/PRGR[5]/ PRGI[6]/RAG[7] (mg/kg)					
TAL Metals[8] (mg/kg)						
Aluminum	72000/*/***/15848/76000/100000/**50**	**4620**	**4820**	**5130**	**8140**	**6210**
Arsenic	0.8/3.7/29/3.2/0.39/2.7/10	--	--	--	--	--
Barium	110**/87000/1600/23.2/5400/100000/165	8.1	9.6	10.5	17.7	11.4
Calcium	NA/NA/NA/396/NA/NA/NA	182[J]	234[J]	145[J]	363[J]	216[J]
Chromium	210/420/38/11/30/64/**0.4**	**5.1**	**4.8**	**5.2**	**8.1**	**7.3**
Cobalt	4700/110000/***/3/4700/100000/20	--	0.72	0.83	1.1	0.73
Copper	110**/76000/***/9.4/2900/76000/40	3.4	3.3	3.7	5	4.1
Iron	23000/480000/***/8832/23000/100000/**200**	**2850**	**2960**	**3290**	**5250**	**4540**
Lead	400/920/***/11.4/400/1000/50	2.6	2.9	4.1	9.2	7.1
Magnesium	NA/NA/NA/268/NA/NA/NA	94.9[J]	110[J]	108[J]	172[J]	131[J]
Manganese	1600/22000/***/392/1800/32000/**100**	89.9	**101**	**139**	**236**	67
Mercury	3.4/26/2.1/0.12/23/610/0.1	--	--	--	--	--
Nickel	110**/28000/130/7.2/1600/41000/30	--	--	--	2.9	2.1
Potassium	NA/NA/NA/177/NA/NA/NA	--	--	--	--	--
Sodium	NA/NA/NA/406/NA/NA/NA	--	--	--	--	--
Vanadium	15**/7400/980/21.8/550/14000/**2.0**	**7.4**	**7.6**	**8.4**	**13**	**11**
Zinc	3400/53000/19/15.4/23000/100000/50	6.8[J]	7.3[J]	8.9[J]	13.4[J]	10.3[J]
Cyanide[9] (mg/kg)	30**/39000/40/0.28/1200/18000/0.9	--	**1**	**1.5**	0.61	0.6

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4] Background screening value from Table 3-9, General Information Report,Remedial Investigation and Feasability Study, ABB, January 1998.
[5/6] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[7] EPA Region 4 Risk Assessment Guidance Ecological Screening Values.
[8] SW-846 6010B and 7470A/7471A, [9] EPA 335.2
* Contaminant is not a health concern for this default exposure scenario.
** Direct exposure value based on acute toxicity considerations.
*** Leachability values may be derived using the SPLP Test to calculate site-specific SCTLs or may be determined using TCLP in the event oily wastes are present.
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[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 6-2

ANALYTICAL SUMMARY FOR INORGANIC ANALYTES DETECTED IN SURFACE SOIL SAMPLES - SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
PAGE 3 OF 3

Sample No.		38D01001	38D01101	38D01101D	38D01201
Sample Location		38SS10	38SS11	38SS11	38SS12
Collect Date		5/31/2000	5/31/2000	5/31/2000	5/31/2000
Sample Depth (bls)		0-1'	0-1'	0-1'	0-1'
	DE1[1]/DE2[2]/LE[3]/BSL[4]/PRGR[5]/ PRGI[6]/RAG[7] (mg/kg)				
TAL Metals[8] (mg/kg)					
Aluminum	72000/*/***/15848/76000/100000/**50**	**7180**	**9740**	**8780**	**8900**
Arsenic	**0.8**/**3.7**/29/**3.2**/**0.39**/**2.7**/**10**	**4.3**	**15.7**	**14.5**	**10**
Barium	110**/87000/1600/23.2/5400/100000/165	13	20.3	19.5	18.6
Calcium	NA/NA/NA/396/NA/NA/NA	259[J]	220[J]	237[J]	213[J]
Chromium	210/420/38/11/30/64/**0.4**	**6.6**	**16.2**	**10.9**	**11.6**
Cobalt	4700/110000/***/3/4700/100000/20	0.94	1.6	1.4	1.4
Copper	110**/76000/***/9.4/2900/76000/40	4.3	5.9	5.6	5.5
Iron	23000/480000/***/8832/23000/100000/**200**	**4590**	**5900**	**5220**	**5340**
Lead	400/920/***/11.4/400/1000/50	5.8	13	10.9	10.3
Magnesium	NA/NA/NA/268/NA/NA/NA	181[J]	213[J]	197[J]	209[J]
Manganese	1600/22000/***/392/1800/32000/**100**	**178**	**368**	**362**	**353**
Mercury	**3.4**/26/**2.1**/**0.12**/23/610/**0.1**	**0.19**	**5.2**	**4.8**	**1.2**
Nickel	110**/28000/130/7.2/1600/41000/30	2.3	3.8	-	-
Potassium	NA/NA/NA/177/NA/NA/NA	176	172	149	170
Sodium	NA/NA/NA/406/NA/NA/NA	--	372	356	388
Vanadium	15**/7400/980/21.8/550/14000/**2.0**	**11.8**	**14.8**	**13.1**	**13.4**
Zinc	3400/53000/19/15.4/23000/100000/50	13.9[J]	--	--	--
Cyanide[9] (mg/kg)	30**/39000/40/0.28/1200/18000/0.9	--	--	--	--

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4] Background screening value from Table 3-9, General Information Report,Remedial Investigation and Feasability Study, ABB, January 1998.
[5/6] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
[7] EPA Region 4 Risk Assessment Guidance Ecological Screening Values.
[8] SW-846 6010B and 7470A/7471A, [9] EPA 335.2
* Contaminant is not a health concern for this default exposure scenario.
** Direct exposure value based on acute toxicity considerations.
*** Leachability values may be derived using the SPLP Test to calculate site-specific SCTLs or may be determined using TCLP in the event oily wastes are present.
Bold indicates the exceedance of limits.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 6-3

SUMMARY OF ORGANIC COMPOUNDS AND INORGANIC ANALYTES DETECTED IN SURFACE SOIL LEACHATE-SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
PAGE 1 OF 3

Sample No.		38D00101	38D00201	38D00301	38D00301D	38D00401
Sample Location		38SS01	38SS02	38SS03	38SS03	38SS04
Collect Date		5/31/2000	5/31/2000	5/31/2000	5/31/2000	5/31/2000
Sample Depth		0-1'	0-1'	0-1'	0-1'	0-1'
	Groundwater Criteria[1]/Primary[2]/ Secondary[3]					
Pesticides/PCBs [4] (ug/L)						
alpha-Chlordane	2/2/NA	NA	NA	NA	NA	--
gamma-Chlordane	2/2/NA	NA	NA	NA	NA	--
Heptachlor Epoxide	0.2/0.2/NA	NA	NA	NA	NA	--
Total Recoverable						
Petroleum Hydrocarbons[5] (ug/L)	5000/NA/NA	--	--	--	--	--
Metals[6] (ug/L)						
Aluminum	**200**/NA/**50-200**	**15800[J]**	--	**3600[J]**	**13800[J]**	**24000[J]**
Arsenic	50/NA/NA	--	--	--	--	6.1
Barium	2000/2000/NA	19[J]	--	--	--	22[J]
Calcium	NA/NA/NA	--	--	--	--	--
Chromium	100/100/NA	14	--	--	9.3	17
Copper	1000/NA/1000	--	--	--	--	--
Iron	**300**/NA/**300**	**8400[J]**	--	**1900[J]**	**7900[J]**	**12600[J]**
Lead	15/NA/NA	--	--	--	--	12
Magnesium	NA/NA/NA	630	--	520	670	530
Manganese	**50**/NA/**50**	**220[J]**	--	**57[J]**	**120[J]**	**130[J]**
Mercury	2/2/NA	--	--	--	--	--
Nickel	100/NA/NA	--	--	--	--	--
Potassium	NA/NA/NA	--	--	--	--	--
Vanadium	49/NA/NA	23	--	5.3	21	35
Zinc	5000/NA/5000	--	--	--	--	--

[1] Groundwater Clean-up Criteria as provided in Chapter 62-777,F.A.C.
[2] EPA 40 CFR Primary Drinking Water Standard
[3] EPA 40 CFR Secondary Drinking Water Standard
[4] SW-846 8081A/8082, [5] FL-PRO, [6] SW-846 6010B/7470
Bold indicates an exceedance of regulatory limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 6-3

SUMMARY OF ORGANIC COMPOUNDS AND INORGANIC ANALYTES DETECTED IN SURFACE SOIL LEACHATE-SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
PAGE 2 OF 3

Sample No.		38D00501	38D00601	38D00701	38D00801	38D00901
Sample Location		38SS05	38SS06	38SS07	38SS08	38SS09
Collect Date		5/31/2000	5/31/2000	5/31/2000	5/31/2000	5/31/2000
Sample Depth		0-1'	0-1'	0-1'	0-1'	0-1'
	Groundwater Criteria[1]/Primary[2]/ Secondary[3]					
Pesticides/PCBs [4] (ug/L)						
alpha-Chlordane	2/2/NA	NA	NA	NA	--	--
gamma-Chlordane	2/2/NA	NA	NA	NA	--	--
Heptachlor Epoxide	0.2/0.2/NA	NA	NA	NA	--	--
Total Recoverable Petroleum Hydrocarbons[5] (ug/L)	5000/NA/NA	--	--	--	--	--
Metals[6] (ug/L)						
Aluminum	**200**/NA/**50-200**	**3800[J]**	**12300[J]**	**13500[J]**	**46000[J]**	**17200[J]**
Arsenic	50/NA/NA	--	--	--	10	4.9
Barium	2000/2000/NA	--	12[J]	18[J]	42[J]	17[J]
Calcium	NA/NA/NA	1700	--	--	2000	--
Chromium	100/100/NA	--	9.8	12	31	13
Copper	1000/NA/1000	--	--	--	12	--
Iron	**300**/NA/**300**	**2200[J]**	**7100[J]**	**7700[J]**	**22500[J]**	**10300[J]**
Lead	15/NA/NA	--	--	--	**18**	--
Magnesium	NA/NA/NA	600	510	550	1100	670
Manganese	**50**/NA/**50**	**180[J]**	**170[J]**	**270[J]**	**400[J]**	**180[J]**
Mercury	2/2/NA	--	--	--	--	--
Nickel	100/NA/NA	--	--	--	--	--
Potassium	NA/NA/NA	--	--	--	--	--
Vanadium	**49**/NA/NA	6.2	19	21	**64**	27
Zinc	5000/NA/5000	--	--	--	--	--

[1] Groundwater Clean-up Criteria as provided in Chapter 62-777,F.A.C.
[2] EPA 40 CFR Primary Drinking Water Standard
[3] EPA 40 CFR Secondary Drinking Water Standard
[4] SW-846 8081A/8082, [5] FL-PRO, [6] SW-846 6010B/7470
Bold indicates an exceedance of regulatory limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 6-3

SUMMARY OF ORGANIC COMPOUNDS AND INORGANIC ANALYTES DETECTED IN SURFACE SOIL LEACHATE-SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
PAGE 3 OF 3

Sample No.		38D01001	38D01101	38D01101D	38D01201
Sample Location		38SS10	38SS11	38SS11	38SS12
Collect Date		5/31/2000	5/31/2000	5/31/2000	5/31/2000
Sample Depth		0-1'	0-1'	0-1'	0-1'
	Groundwater Criteria[1]/Primary[2]/ Secondary[3]				
Pesticides/PCBs [4] (ug/L)					
alpha-Chlordane	2/2/NA	--	1.3	**2.4**	1
gamma-Chlordane	2/2/NA	--	0.94[J]	1.8	0.61[J]
Heptachlor Epoxide	0.2/0.2/NA	--	0.19[J]	**0.28[J]**	**0.42[J]**
Total Recoverable Petroleum Hydrocarbons[5] (ug/L)	5000/NA/NA	--	--	--	--
Metals[6] (ug/L)					
Aluminum	**200**/NA/**50-200**	**41500[J]**	**37000[J]**	**24000[J]**	**50500[J]**
Arsenic	50/NA/NA	24	**68**	**50**	**55**
Barium	2000/2000/NA	39[J]	27[J]	24[J]	39[J]
Calcium	NA/NA/NA	--	--	--	--
Chromium	100/100/NA	30	26	18	37
Copper	1000/NA/1000	12	11	--	13
Iron	**300**/NA/**300**	**21200[J]**	**19800[J]**	**12100[J]**	**28600[J]**
Lead	**15**/NA/NA	12	**20**	**15**	**23**
Magnesium	NA/NA/NA	1200	830	750	1200
Manganese	**50**/NA/**50**	**490[J]**	**650[J]**	**450[J]**	**770[J]**
Mercury	**2**/**2**/NA	--	**12[J]**	**7.9[J]**	**7.9[J]**
Nickel	100/NA/NA	--	39	--	--
Potassium	NA/NA/NA	--	--	--	--
Vanadium	**49**/NA/NA	**62**	**53**	35	**76**
Zinc	5000/NA/5000	--	100	83	--
Semivolatile[7] (ug/L)		not analyzed	no detects	no detects	not analyzed

[1] Groundwater Clean-up Criteria as provided in Chapter 62-777,F.A.C.
[2] EPA 40 CFR Primary Drinking Water Standard
[3] EPA 40 CFR Secondary Drinking Water Standard
[4] SW-846 8081A/8082, [5] FL-PRO, [6] SW-846 6010B/7470, [7] SW-846 8270C
Bold indicates an exceedance of regulatory limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

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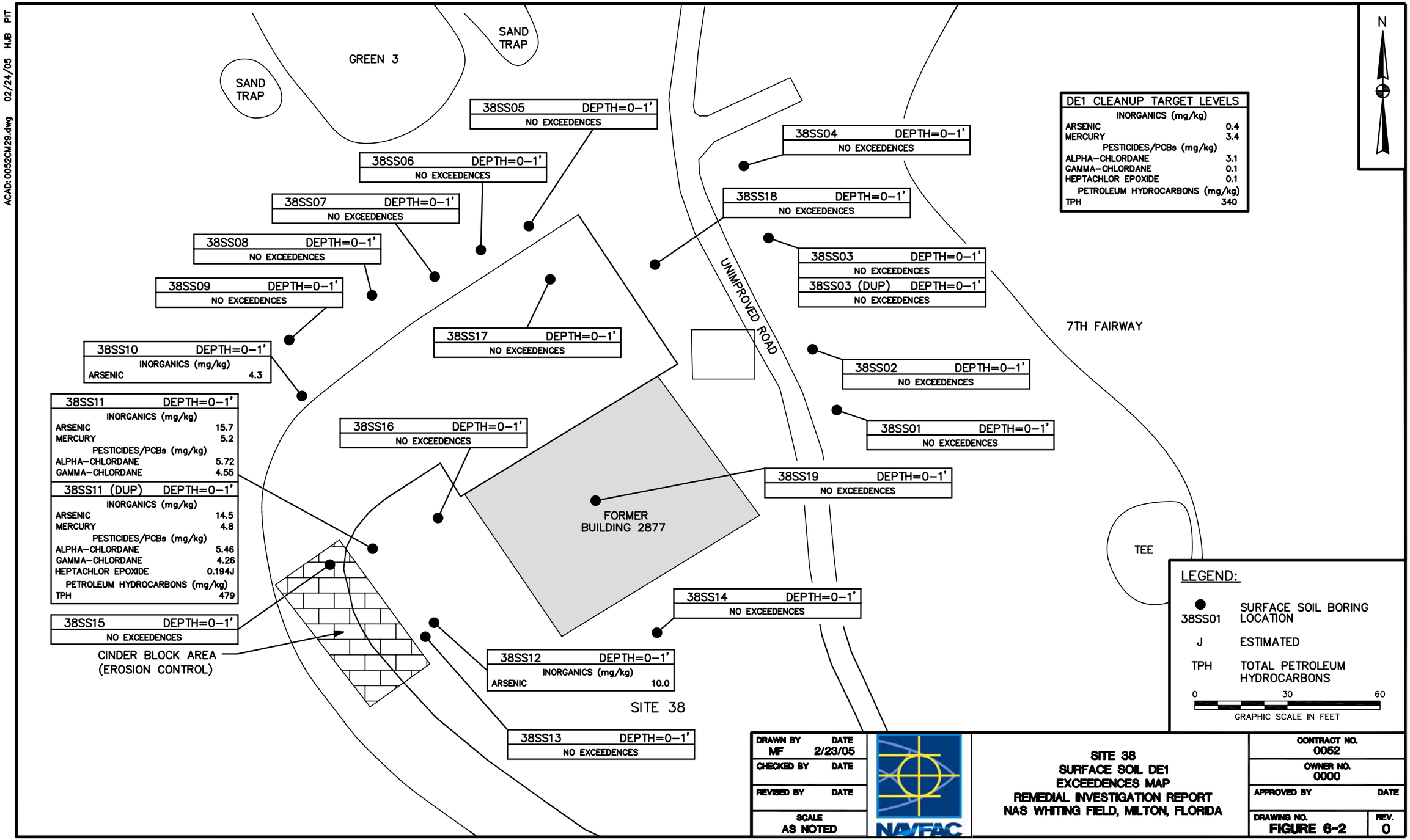

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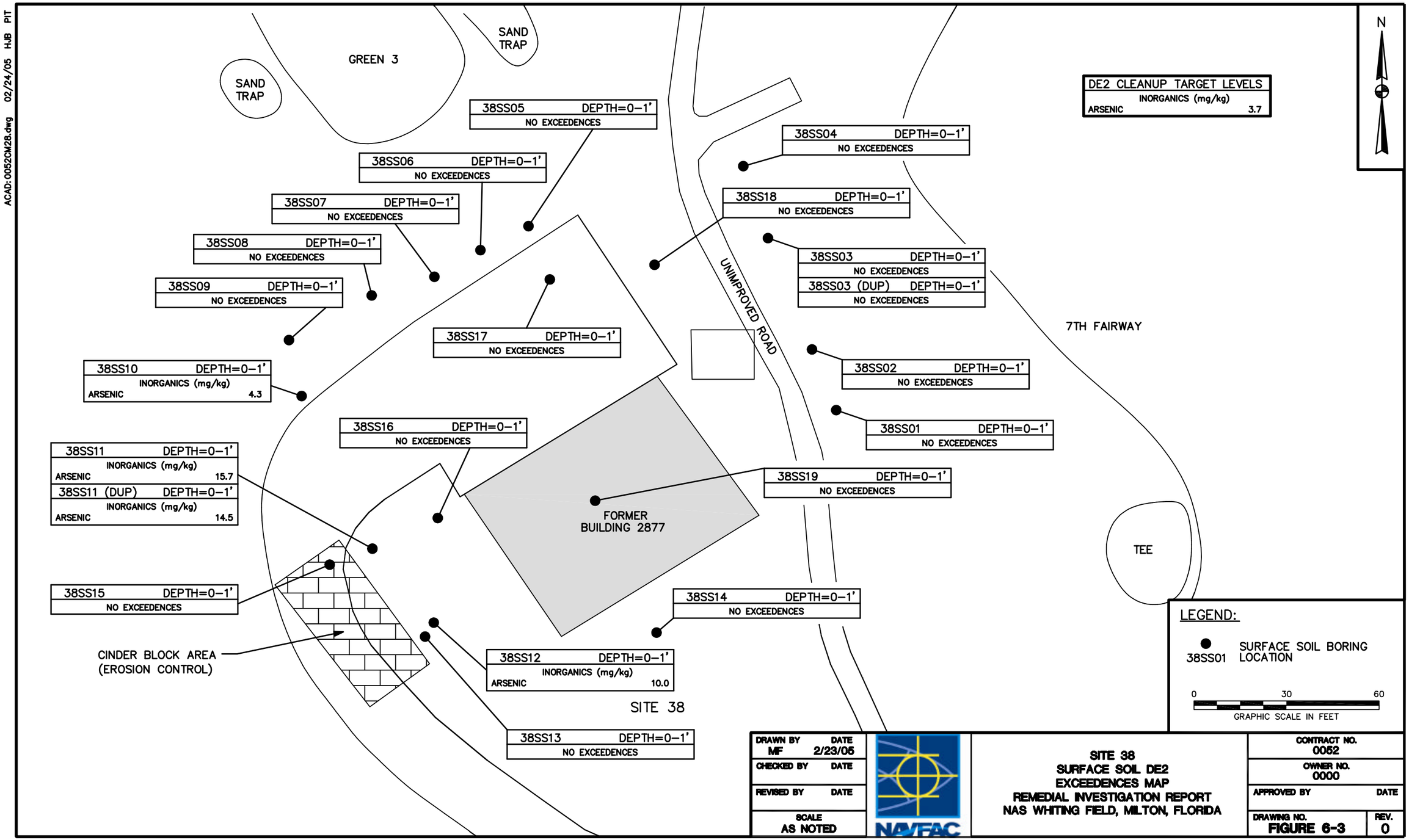

DRAWN BY MF	DATE 2/23/05	SITE 38 SURFACE SOIL DE2 EXCEEDENCES MAP REMEDIAL INVESTIGATION REPORT NAS WHITING FIELD, MILTON, FLORIDA	CONTRACT NO. 0052
CHECKED BY	DATE		OWNER NO. 0000
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SCALE AS NOTED			DRAWING NO. FIGURE 6-3 / REV. 0

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SVOCs

No SVOCs were detected in the surface soil at Site 38.

Pesticides/PCBs

Six pesticides (4,4'-DDE, 4,4'-DDT, alpha-chlordane, dieldrin, gamma-chlordane, and heptachlor epoxide; Table 6-1) were detected in the surface soil. Alpha-chlordane and gamma-chlordane were detected above the FDEP DE1 SCTL (3.1 and 3.1 mg/kg) and the USEPA Residential PRG (1.6 and 1.6 mg/kg) in two samples [38D01101 (5.72J and 4.55 mg/kg, respectively) and 38D01101D (5.46 and 4.26 mg/kg, respectively)]. Heptachlor epoxide was also detected above the FDEP DE1 SCTL (0.1 mg/kg) in one duplicate sample [38D01101D (0.194J mg/kg)], but did not exceed FDEP DE1 in sample 38D01101.

TRPH

TRPH was detected in 20 surface soil samples (Table 6-1). Only sample 38D1101D, the duplicate of 38D01101, contained TRPH (479 mg/kg) above the FDEP DE1 SCTL (340 mg/kg).

Inorganics

Table 6-2 lists 17 analytes detected in the surface soil. Ten analytes (aluminum, barium, calcium, chromium, copper, iron, lead, magnesium, manganese, and vanadium) were detected in all of the samples. Cobalt was detected in all of the samples, except one (38D00501). Zinc was detected in 11 samples (38D00101 through 38D01001, and the duplicate 38D00301D). Nickel was detected in four samples (38D00801, 38D00901, 38D01001, and 38D01101). Arsenic, mercury, and potassium were detected in three sample locations (38SS10, 38SS11, and 38SS12). Sodium was detected in two sample locations (38SS11 and 38SS12).

Mercury was detected above the BSL, FDEP DE1 SCTL (3.4 mg/kg), and FDEP LE SCTL (2.1 mg/kg) in one sample and its duplicate [38D01101 (5.2 mg/kg) and 38D01101D (4.8 mg/kg)]. Mercury was detected above the FDEP GCTL (2.0 µg/L) in two surface soil SPLP leachates and one duplicate leachate [38D01101 (12J µg/L), 38D01101D (7.9J µg/L), and 38D01201 (7.9J µg/L)]. The impact of surface soil leaching mercury to groundwater will be addressed in the Site 40 RI Report.

Arsenic was detected above the BSL, FDEP DE1 and DE2 SCTLs, and the USEPA Residential and Industrial PRGs limits in three samples (38D01001, 38D01101, 38D01201) and one duplicate sample (38D01101D). Although arsenic was detected above the regulatory limits, upon closer examination of all the data collected at NAS Whiting Field, arsenic has been determined to be a naturally occurring constituent in the soil at NAS Whiting Field (Appendix B). Therefore, arsenic will not be addressed as a COPC.

Five analytes (aluminum, copper, iron, lead, and manganese) detected in the surface soil do not have specific FDEP LE SCTLs for comparison. LE SCTLs are determined on a site-specific basis. SPLP analysis was performed on all the surface soil samples (Table 6-3). Aluminum, iron, and manganese, were detected above the FDEP GCTLs in all the leachate samples. Lead and vanadium were detected above the FDEP GCTLs in two samples (38D1101 and 38D1201) and one duplicate sample (38D01101D). The impact of surface soil leaching to groundwater will be addressed in the Site 40 RI Report.

6.2.2 Subsurface Soil Assessment

Ten subsurface soil samples (38D1011, 38D1111, 38D1211, 38D1310, and 38D1411 through 38D1911) and one duplicate sample (38D1811D) were collected at Site 38. The samples were analyzed for TCL VOCs, TCL SVOCs, TCL Pesticides, TCL PCBs, TRPH, TAL inorganics, and cyanide. Analytical results are summarized in Tables 6-4 and 6-5. SCTLs from Chapter 62-777, F.A.C., USEPA PRG values, and the BSLs are also included in Tables 6-4 and 6-5. SPLP analytical results are summarized in Table 6-6. Exceedences of FDEP SCTLs in subsurface soil are displayed in Figures 6-4 and 6-5.

Prior to beginning the subsurface soil assessment, interviews with base personnel were conducted to determine the location of the former building. According to base personnel, the building's foundation was left in-place; however, fill was placed on and around the former building's foundation. The depth of this additional fill is believed to be approximately 8 ft. During the subsurface soil assessment, DPT activities consistently met resistance at approximately 8 ft bls, further substantiating the base personnel's statements. As a result, the interval from 1 to 8 ft bls was not sampled.

VOCs

No VOCs were detected in the subsurface soil at Site 38.

SVOCs

No SVOCs were detected in the subsurface soil at Site 38.

Pesticides/PCBs

No pesticides/PCBs were detected in the subsurface soil at Site 38.

TRPH

No TRPH was detected in the subsurface soil at Site 38.

TABLE 6-4

ANALYTICAL SUMMARY FOR ORGANIC COMPOUNDS DETECTED IN SUBSURFACE SOIL SAMPLES - SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
Page 1 of 2

Sample No.	38D1011	38D1111	38D1211	38D1310	38D1411	38D1511
Sample Location	38SB10	38SB11	38SB12	38SB13	38SB14	38SB15
Collect Date	6/5/2000	6/5/2000	6/5/2000	6/5/2000	1/22/2001	1/22/2001
Sample Depth (bls)	9-11'	9-11'	9-11'	8-10'	9-11'	9-11'
DE1[1]/DE2[2]/LE[3]/PRGR[8]/PRGI[9] (mg/kg)						
Volatile [4] (mg/kg)						
	--	--	--	--	--	--
Semi-Volatile [5] (mg/kg)						
	--	--	--	--	--	--
Pesticides/PCBs [6] (mg/kg)						
no detects						
Total Recoverable						
Petroleum Hydrocarbons [7] (mg/kg)						
no detects						

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4] SW-846 8260B, [5] SW-846 8270C, [6] SW-846 8081A/8082, [7] FDEP FL-PRO
[8/9] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.

TABLE 6-4

ANALYTICAL SUMMARY FOR ORGANIC COMPOUNDS DETECTED IN SUBSURFACE SOIL SAMPLES - SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
Page 2 of 2

Sample No.		38D1611	38D1711	38D1811	38D1811D	38D1911
Sample Location		38SB16	38SB17	38SB18	38SB18	38SB19
Collect Date		1/22/2001	1/22/2001	1/22/2001	1/22/2001	1/22/2001
Sample Depth (bls)		9-11'	9-11'	9-11'	9-11'	9-11'
	DE1[1]/DE2[2]/LE[3]/PRGR[8]/PRGI[9] (mg/kg)					
Volatile [4] (mg/kg)						
		--	--	--	--	NA
Semi-Volatile [5] (mg/kg)						
		--	--	--	--	NA
Pesticides/PCBs [6] (mg/kg)						
no detects						
Total Recoverable Petroleum Hydrocarbons [7] (mg/kg)						
no detects						

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4] SW-846 8260B, [5] SW-846 8270C, [6] SW-846 8081A/8082, [7] FDEP FL-PRO
[8/9] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.

TABLE 6-5

ANALYTICAL SUMMARY FOR INORGANIC ANALYTES DETECTED IN SUBSURFACE SOIL SAMPLES - SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
PAGE 1 OF 2

Sample No.		38D1011	38D1111	38D1211	38D1310	38D1411	38D1511
Sample Location		38SB10	38SB11	38SB12	38SB13	38SB14	38SB15
Collect Date		6/5/2000	6/5/2000	6/5/2000	6/5/2000	1/22/2001	1/22/2001
Sample Depth (bls)		9-11'	9-11'	9-11'	8-10'	9-11'	9-11'
	DE1[1]/DE2[2]/LE[3]/BSL[6]/PRGR[7]/PRGI[8] (mg/kg)						
TAL Metals[4] (mg/kg)							
Aluminum	72000/*/***/**27834**/76000/100000	24300	7830	8150	26000	1100	1890
Arsenic	**0.8/3.7**/29/6.2/**0.39/2.7**	0.69	0.58	0.78	**4.6**	--	--
Barium	110**/87000/1600/**15.8**/5400/100000	20	16.8	20.4	**16**	4	4.3
Calcium	NA/NA/NA/444/NA/NA	202	109	120	145	--	104
Chromium	210/420/38/22.8/30/64	16.1	7.3	5.9	20.5	1.6	2.4
Cobalt	4700/110000/***/1.48/4700/100000	--	--	--	--	--	--
Copper	110**/76000/***/**8.8**/2900/76000	**9.5**	4.6	4.7	8.4	--	--
Iron	23000/480000/***/18110/23000/100000	6640	4710	4390	14300	714	1310
Lead	400/920/***/8.4/400/1000	5.7	2.7	2.9	5.3[J]	0.89	0.9
Magnesium	NA/NA/NA/272/NA/NA	232	153	195	230	--	16
Manganese	1600/22000/***/42.6/1800/32000	10.6	22.8	23.5	10.9	--	--
Mercury	3.4/26/2.1/NA/23/610	--	--	0.17	--	--	--
Nickel	110**/28000/130/5.0/1600/41000	3.2	2	2.5	3.4[J]	--	--
Potassium	NA/NA/NA/**181**/NA/NA	**213**	--	168	**259**	--	--
Sodium	NA/NA/NA/NA/NA/NA	108	87.3	79.8	106[J]	230	268
Vanadium	**15****/7400/980/45/550/14000	**23.3**	10.8	10.9	**42.5**	2.5	4.1
Zinc	3400/53000/19/15.6/23000/100000	10.7	9.5	12.6	8.8	3.2	3.8
Cyanide[5] (mg/kg)	30**/39000/40/**0.28**/1200/18000	**1.3[J]**	**0.8[J]**	--	**1.5[J]**	--	--

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4] SW-846 6010B and 7470A/7471A, [5] EPA 335.2
[6] Background screening value from Table 3-18, General Information Report,Remedial Investigation and Feasability Study, ABB, January 1998.
[7/8] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
* Contaminant is not a health concern for this default exposure scenario.
** Direct exposure value based on acute toxicity considerations.
*** Leachability values may be derived using the SPLP Test to calculate site-specific SCTLs or may be determined using TCLP in the event oily wastes are present.
Bold indicates the exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.
[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 6-5

ANALYTICAL SUMMARY FOR INORGANIC ANALYTES DETECTED IN SUBSURFACE SOIL SAMPLES - SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
PAGE 2 OF 2

Sample No.		38D1611	38D1711	38D1811	38D1911
Sample Location		38SB16	38SB17	38SB18	38SB19
Collect Date		1/22/2001	1/22/2001	1/22/2001	1/22/2001
Sample Depth (bls)		9-11'	9-11'	9-11'	9-11'
	DE1[1]/DE2[2]/LE[3]/BSL[6]/PRGR[7]/PRGI[8] (mg/kg)				
TAL Metals[4] (mg/kg)					
Aluminum	72000/*/***/27834/76000/100000	8720	18500	14700	6990
Arsenic	**0.8**/3.7/29/6.2/**0.39**/**2.7**	--	**3.3**	**2.6**	**3**
Barium	110**/87000/1600/15.8/5400/100000	5.6	9.4	13.6	11.6
Calcium	NA/NA/NA/444/NA/NA	70.8	118	184	148
Chromium	210/420/38/22.8/30/64	6.3	15.5	14.6	9
Cobalt	4700/110000/***/1.48/4700/100000	--	--	--	
Copper	110**/76000/***/8.8/2900/76000	2.2	4.1	4.4	3.4
Iron	23000/480000/***/**18110**/23000/100000	4330	15000	**19000**	6320
Lead	400/920/***/8.4/400/1000	2	4.2	3.7	6.9
Magnesium	NA/NA/NA/272/NA/NA	56.1	81.6	128	69.7
Manganese	1600/22000/***/42.6/1800/32000	7.3	32.4	3.7	12.7
Mercury	3.4/26/2.1/NA/23/610	--	--	--	0.06
Nickel	110**/28000/130/5.0/1600/41000	--	--	--	
Potassium	NA/NA/NA/181/NA/NA	--	--	--	
Sodium	NA/NA/NA/NA/NA/NA	212	275	351	343
Vanadium	**15****/7400/980/45/550/14000	12.5	**31.8**	**28.4**	**24.9**
Zinc	3400/53000/19/15.6/23000/100000	5.9	10.7	14.9	5.1
Cyanide[5] (mg/kg)	30**/39000/40/0.28/1200/18000	--			

[1] Direct Exposure limit for residential area from Chapter 62-777, F.A.C.
[2] Direct Exposure limit for industrial area from Chapter 62-777, F.A.C.
[3] Leachability for groundwater limit from Chapter 62-777, F.A.C.
[4] SW-846 6010B and 7470A/7471A, [5] EPA 335.2
[6] Background screening value from Table 3-18, General Information Report,Remedial Investigation and Feasability Study, ABB, January 1998.
[7/8] EPA Region 9 Superfund Preliminary Remediation Goals for residential/industrial.
* Contaminant is not a health concern for this default exposure scenario.
** Direct exposure value based on acute toxicity considerations.
*** Leachability values may be derived using the SPLP Test to calculate site-specific SCTLs or may be determined using TCLP in the event oily wastes are present.
Bold indicates the exceedance of limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.
[J] Indicates the presence of a chemical at an estimated concentration.

TABLE 6-6

SUMMARY OF ORGANIC COMPOUNDS AND INROGANIC ANALYTES DETECTED IN SUBSURFACE SOIL LEACHATE-SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA

Sample No.		38D1011	38D1111	38D1211	38D1310	38D00110
Sample Location		38SB10	38SB11	38SB12	38SB13	38SB01
Collect Date		6/5/2000	6/5/2000	6/5/2000	6/5/2000	5/31/2000
Sample Depth		9-11'	9-11'	9-11'	8-10'	8-10'
	Groundwater Criteria[1]/Primary[2]/ Secondary[3]					
Pesticides/PCBs [4] (ug/L)						
alpha-Chlordane	2/2/NA	--	--	--	--	NA
gamma-Chlordane	2/2/NA	--	--	--	--	NA
Heptachlor Epoxide	0.2/0.2/NA	--	--	--	--	NA
Total Recoverable Petroleum Hydrocarbons[5] (ug/L)	5000/NA/NA	NA	NA	NA	NA	--
Metals[6] (ug/L)						
Aluminum	**200**/NA/**50-200**	--	--	--	--	**15800[J]**
Arsenic	50/NA/NA	--	--	--	--	--
Barium	2000/2000/NA	--	--	--	--	19[J]
Calcium	NA/NA/NA	--	--	--	--	--
Chromium	100/100/NA	--	--	--	--	14
Copper	1000/NA/1000	--	--	--	--	--
Iron	**300**/NA/**300**	--	--	--	--	**8400[J]**
Lead	15/NA/NA	--	--	--	--	--
Magnesium	NA/NA/NA	--	--	--	--	630
Manganese	**50**/NA/**50**	--	--	--	--	**220[J]**
Mercury	2/2/NA	--	--	--	--	--
Nickel	100/NA/NA	--	--	--	--	--
Potassium	NA/NA/NA	92200	64900	50100	--	--
Vanadium	49/NA/NA	--	--	--	--	23
Zinc	5000/NA/5000	--	--	--	--	--

[1] Groundwater Clean-up Criteria as provided in Chapter 62-777,F.A.C.
[2] EPA 40 CFR Primary Drinking Water Standard
[3] EPA 40 CFR Secondary Drinking Water Standard
[4] SW-846 8081A/8082, [5] FL-PRO, [6] SW-846 6010B/7470
Bold indicates an exceedance of regulatory limits. **Bold** indicates which regulatory limit has been exceeded.
NA = not applicable -- = not detected
[J] Indicates the presence of a chemical at an estimated concentration.

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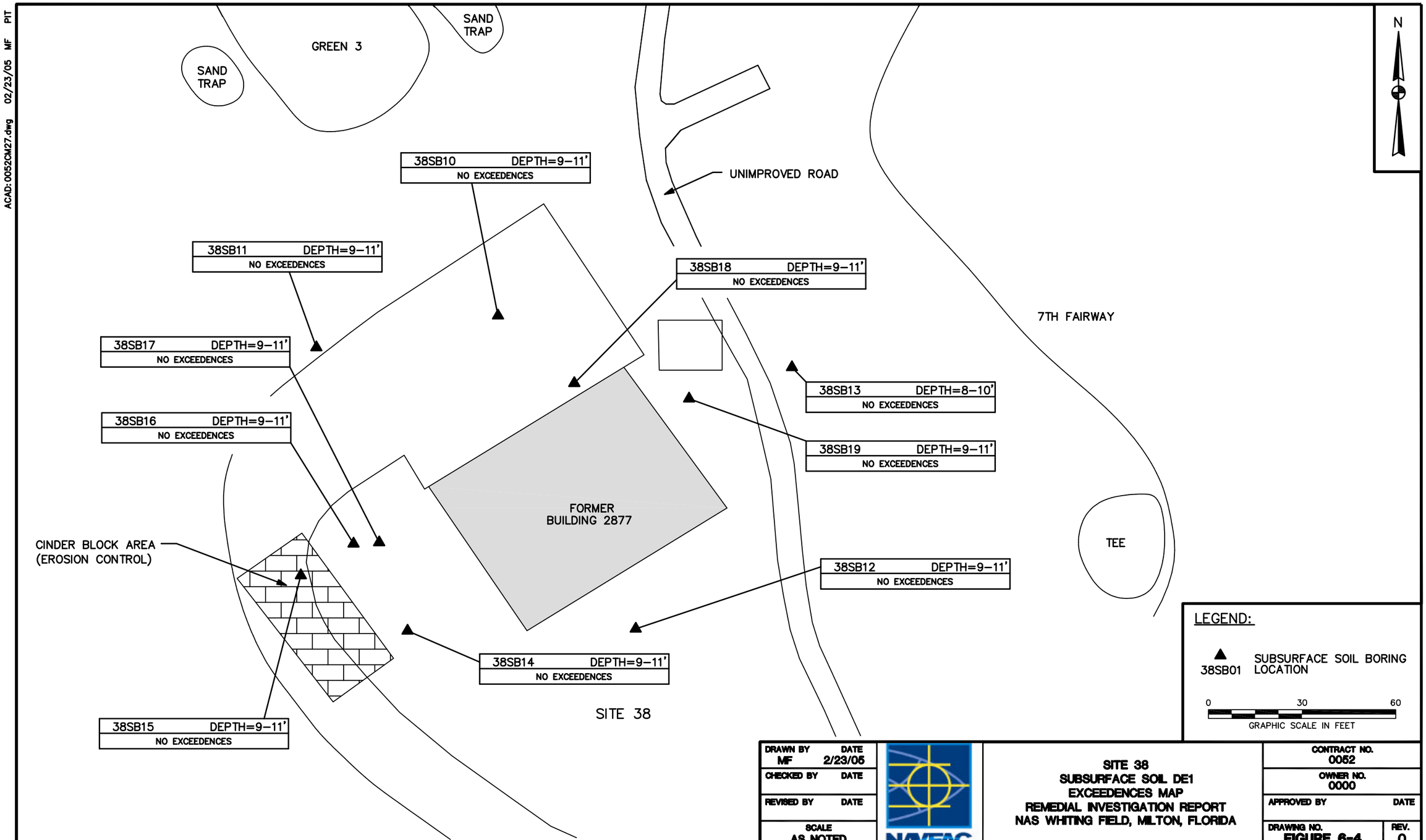

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CHECKED BY	DATE		OWNER NO. 0000
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SCALE AS NOTED			DRAWING NO. FIGURE 6-4 / REV. 0

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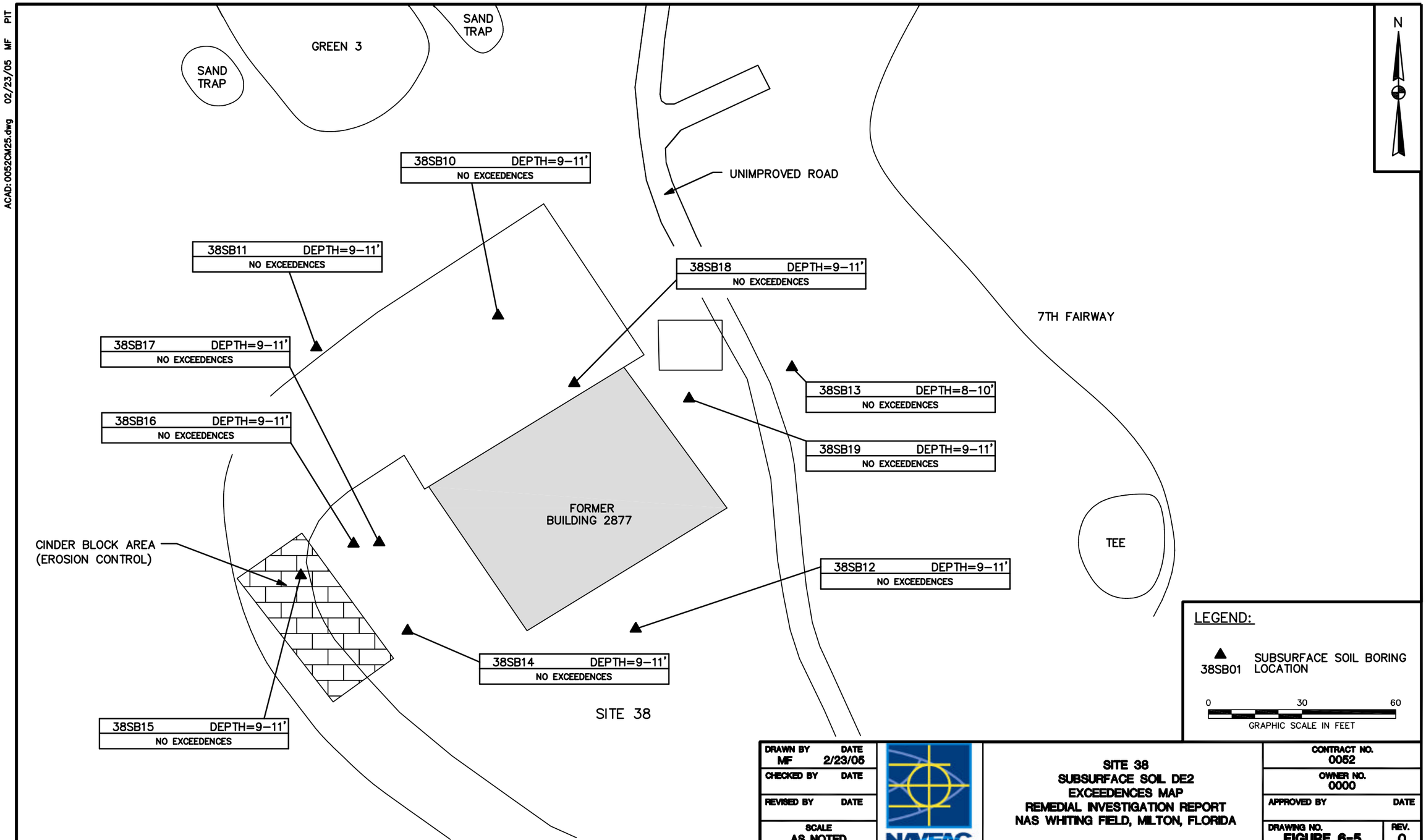

DRAWN BY MF	DATE 2/23/05	SITE 38 SUBSURFACE SOIL DE2 EXCEEDENCES MAP REMEDIAL INVESTIGATION REPORT NAS WHITING FIELD, MILTON, FLORIDA	CONTRACT NO. 0052
CHECKED BY	DATE		OWNER NO. 0000
REVISED BY	DATE		APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 6-5 / REV. 0

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Inorganics

Table 6-5 lists 17 analytes detected in the subsurface soil at Site 38. Fourteen analytes (aluminum, arsenic, barium, calcium, chromium, copper, iron, lead, magnesium, manganese, nickel, sodium, vanadium, and zinc) were detected in all of the samples. Potassium was detected in three samples (38D1011, 38D1211, and 38D1310). Cyanide was detected in three samples (38D1011, 38D1111, 38D1310). Mercury was detected in one sample (38D1211).

Eight analytes (aluminum, chromium, copper, cyanide, iron, mercury, potassium, and vanadium) were detected above the BSLs. Vanadium was detected above the FDEP DE1 SCTL (15 mg/kg) in two samples [38D1011 (23.3 mg/kg) and 38D1310 (42.5 mg/kg)].

Arsenic was detected above the USEPA Industrial PRG in one sample (38D1310). Although arsenic was detected above the regulatory limit, upon closer examination of all the data collected at NAS Whiting Field, arsenic has been determined to be a naturally occurring constituent in the soil at NAS Whiting Field. Therefore, arsenic will not be addressed as a COPC.

Several analytes (aluminum, copper, iron, lead, and manganese) detected in the subsurface soil do not have specific FDEP LE SCTLs for comparison. LE SCTLs are determined on a site-specific basis. SPLP analysis was performed on all the subsurface soil samples (Table 6-6). None of the analytes were detected in the SPLP leachates.

6.2.3 Soil Assessment Summary

Surface Soil

One VOC, 6 pesticides, TRPH, and 17 inorganics were detected in the surface soil. Alpha-chlordane and gamma-chlordane were detected above the FDEP DE1 SCTL and the USEPA Residential PRG. Heptachlor epoxide and TRPH were detected above the FDEP DE1 SCTLs. Mercury was detected above the FDEP LE1 SCTL, and above the FDEP GCTL in the SPLP leachate.

Subsurface Soil

Eighteen inorganics were detected in the subsurface soil. Vanadium was detected in two subsurface soil samples (38D01011 and 38D01310) above the FDEP DE1 SCTL for vanadium.

6.3 INTERIM REMOVAL ACTION

6.3.1 Additional Soil Sampling

Soil Assessment

CH2M Hill Constructors, Inc. (CCI) collected surface and subsurface soil samples to delineate the extent of the contamination. A total of seven surface soil samples were collected in the area of borings 38SS11 and 38SS12. The surface soil samples were collected from a 20-ft by 20-ft sampling grid with 10-ft centers around the original sample locations at a depth of 0 to 2 ft bls. Four subsurface soil samples were collected directly beneath soil borings 38SS11 and 38SS12 at a depth of 2 to 3 ft and 5 to 6 ft bls. Samples collected from the soil boring 38SS11 area were analyzed for pesticides and TRPH, while samples collected from the soil boring 38SS12 area were analyzed for pesticides only. (CCI, 2002)

Analytical Data Summary

Analysis of the surface and subsurface soil samples indicated no FDEP SCTL or USEPA Region IX PRG exceedances for pesticides or TRPH. However, dieldrin was detected above the USEPA Region IV RAGS in sample 38SS38, located in the sampling grid associated with soil boring 38SS12. (CCI, 2002)

6.3.2 Soil Removal Action

Based on the results from the RI investigation and the further delineation, CCI recommended one area measuring approximately 10 by 10 ft and 2 ft deep, and one irregularly shaped area measuring 10 by 10 ft on two sides and 7.5 by 7.5 ft on two sides and 2 ft deep, be excavated from the areas of soil borings 38SS11 and 38SS12. The total combined volume excavated from the two areas was approximately 15 cubic yards. No additional confirmation samples were collected from the sidewalls or bottom of the excavation because the extent of the excavation had been determined both vertically and horizontally. (CCI, 2002)

6.4 DATA EVALUATION

6.4.1 Data Validation

Refer to Appendix D (CD-ROM) of this report for the complete data validation report. This section summarizes the data validation remarks for Site 38 analytical data.

VOCs

The Relative Standard Deviation in the initial calibration for methylene chloride was outside of the method control limits. Due to this noncompliance, three samples (38D01011, 38D01111, and 38D01211) were qualified as estimated nondetects (UJ) because the results may be biased low.

The Percent Difference in the continuing calibration for 1,1,1-trichloroethane, 2-hexanone, bromomethane, carbon tetrachloride, and methylene chloride was outside the method control limits. Due to this noncompliance, three samples (38D01011, 38D01111, and 38D01211) were qualified as estimated nondetects (UJ) because the results may be biased low.

SVOCs

All the SVOC data associated with this site are acceptable.

Pesticides/PCBs

All the pesticide/PCB data associated with this site are acceptable.

TRPH

All the TRPH data associated with this site are acceptable.

Inorganics

In sample 38D01310 a known interfering analyte, iron was present at significant concentrations. Due to this analyte, reported concentrations for antimony, cadmium, lead, nickel, sodium, and thallium were qualified estimated (J). Nondetects were qualified estimated (UJ). Antimony, cadmium, lead, nickel, sodium, and thallium concentrations may be biased low due to the interfering affect of iron.

Several analytes in all the samples were qualified as nondetects (U) due to laboratory blank contamination. Metals contamination in laboratory blanks is common and therefore, analytes qualified for blank contamination in no way affects the quality of the data. The qualification simply filters out false-positive results.

Cyanide analysis was performed outside of the 14-day hold-time for samples 38D01011, 38D01111, 38D01211, and 38D01310. The results were qualified estimated (J or UJ). The results may be biased low.

6.4.2 Risk Assessment

6.4.2.1 Human Health Risk Assessment

A screening level HHRA has been conducted as part of the RI report for Site 38 at NAS Whiting Field. The purpose of the HHRA is to characterize the risks to humans associated with the potential exposures to chemicals in surface soil and subsurface soil. This HHRA was conducted in accordance with procedures as outlined in Section 1.4.3.

6.4.2.1.1 Selection of COPCs for Site 38

Surface Soil

Table 6-7 lists the candidate COPCs (those with at least one detection). The candidate COPCs included eight carcinogenic chemicals; therefore, the carcinogenic screening levels were divided by eight. No chemicals were identified as COPCs for surface soil at Site 38.

Subsurface Soil

Table 6-8 lists the candidate COPCs (those with at least one detection). The initial COPCs included two carcinogenic chemicals; therefore, the carcinogenic screening levels were divided by two. No chemicals were identified as COPCs for subsurface soil at Site 38.

6.4.2.1.2 Exposure Assessment

This exposure assessment was conducted to identify the human pathways of potential exposure, the magnitude of potential exposure, and the frequency and duration of exposure.

Exposure Setting Characterization

Section 1.2 describes the regional and site-specific environmental setting of Site 38. The site is non-residential and is expected to remain non-residential for the near future.

Identification of Potential Receptors and Exposure Pathways

The receptors to be evaluated were selected based on the current and realistic future use of the sites and surrounding areas.

For both current and future periods for the HHRA, three potential receptors were evaluated for NAS Whiting Field Site 05. These receptors are:

- A site occupational worker. The site occupational worker was assumed to be on site in a commercial/industrial scenario.
- A trespasser or visitor. These individuals may occasionally enter the site with or without proper authorization. Both an adult and an older child were considered.
- An on-site resident. The on-site resident is considered highly unlikely; however, this pathway was considered for purposes of completeness and conservatism.

TABLE 6-7
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN IN SURFACE SOIL
SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
1 OF1

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil/ Air
Exposure Point: Site 38

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits[4]	Concentration Used For Screening[1]	Background Value[2]	Region 9 PRG [3]	Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Organic Volatiles (mg/kg)																
67-64-1	Acetone	OV	0.0147	J	0.0871		38D00101	4/11	0.05-0.064	0.0871	Not Avail	160 - N	78	FL Residential	no	BSL
Pesticides (mg/kg)																
72-55-9	4,4'-DDE	PEST	0.0047		0.019		38D00401	4/19	0.0033-0.0037	0.019	Not Avail	0.21 - C	0.4125	FL Residential	no	BSL
50-29-3	4,4'-DDT	PEST	0.0014	J	0.0035	J	38D00901	5/19	0.0033-0.0037	0.0035	Not Avail	0.21 - C	0.4125	FL Residential	no	BSL
5103-71-9	alpha-Chlordane[6]	PEST	0.0035		0.028		38D01001	3/19	0.0033-0.0037	0.028	Not Avail	0.2 - C	0.3875	FL Residential	no	BSL
60-57-1	Dieldrin	PEST	0.001	J	0.0025	J	38D01001	3/19	0.0017-0.0018	0.0025	Not Avail	0.0038 - C	0.00875	FL Residential	no	BSL
5103-71-9	gamma-Chlordane[6]	PEST	0.0013	J	0.012		38D01001	3/19	0.0033-0.0037	0.012	Not Avail	0.2 - C	0.3875	FL Residential	no	BSL
1024-57-3	Heptachlor Epoxide	PEST	0.0025	J	0.0025	J	38D01001	1/19	0.0017-0.0018	0.0025	Not Avail	0.007 - C	0.0125	FL Residential	no	BSL
Metals (mg/kg)																
7429-90-5	Aluminum	M	4620		8140		38D00801	11/11	--	8140	15848	7600 - N	7200	FL Residential	no	BKG
7440-38-2	Arsenic	M	4.3		4.3		38D00101	1/11	0.59-2.4	4.3	3.2	0.049 - C	0.1	FL Residential	no	AS
7440-39-3	Barium	M	8.1		17.7		38D00801	11/11	--	17.7	23.2	540 - N	110(s)	FL Residential	no	BSL
7440-70-2	Calcium	M	145	J	373	J	38D00301D	11/11	--	373	396	NA	NA	--	no	NUT
7440-47-3	Chromium	M	4.8		8.7		38D00401	11/11	--	8.7	11	3.75 - C	26.3	FL Residential	no	BKG
7440-48-4	Cobalt	M	0.72		1.1		38D00801, 38D00301D	10/11	0.63	1.1	3	470 - N	470	FL Residential	no	BSL
7440-50-8	Copper	M	3.1		5		38D00801	11/11	--	5	9.4	290 - N	110(s)	FL Residential	no	BSL
7439-89-6	Iron	M	2850		5280		38D00801	11/11	--	5280	8832	2300 - N	2300	FL Residential	no	BKG
7439-92-1	Lead	M	2.6		9.2		38D00801	11/11	--	9.2	11.4	400	400	FL Residential	no	BSL
7439-95-4	Magnesium	M	94.9	J	181	J	38D00101	11/11	--	181	268	NA	NA	--	no	NUT
7439-96-5	Manganese	M	67		236		38D00801	11/11	--	236	392	180 - N	160	FL Residential	no	BKG
7439-97-6	Mercury	M	0.19		0.19		38D00101	1/11	0.01-0.11	0.19	0.12	2.3 - N	0.34	FL Residential	no	BSL
7440-02-0	Nickel	M	2.1		2.9		38D00801	3/11	1.7-3.3	2.9	7.2	160 - N	110(s)	FL Residential	no	BSL
7440-09-7	Potassium	M	176		176		38D01001	1/11	86.8-127	176	177	NA	NA	--	no	NUT
7440-62-2	Vanadium	M	7.4		13		38D00801	11/11	--	13	21.8	55 - N	15(s)	FL Residential	no	BSL
7440-66-6	Zinc	M	6.8	J	13.9	J	38D01001	11/11	--	13.9	15.4	2300 - N	340	FL Residential	no	BSL
TPH (mg/kg)																
	Total Petroleum Hydrocarbons	PET	11.7		30.2		38D00101	17/19	8.9-9	30.2	Not Avail	NA - N	340	FL Residential	no	BSL
Cyanide (mg/kg)																
57-12-5	Cyanide		0.6		1.8		38D00301	6/11	0.5-0.51	1.8	0.28	120 - N	30(s)	FL Residential	no	BSL

[1] Maximum concentration used as screening value
[2] The background screening value is twice the average of background concentrations for inorganic analytes.
[3] Based on Superfund Preliminary Remediation Goals, USEPA Region IX, Residential land use (Cancer benchmark value = 1E-06, Hazard Quotient = 0.1) (May 2000)
[4] FL Residential from Technical Report: Development of Soil Cleanup Levels for Chapter 62-777, F.A.C. (May 1999)(Cancer benchmark value = 1E-06, Hazard Quotient = 0.1)
[5] Rationale Codes

Selection Reason	Above Screening Levels (ASL)
	If one cPAH is selected as a COPC, all are selected (PAH)
Deletion Reason	Maximum detected concentration is below background screening level (BKG)
	Essential Nutrient (NUT)
	Below Screening Levels (BSL)
	Arsenic impact is considered background and not retained further in this risk evaluation (AS)

[6] Screening values for Chlordane used for alpha-chlordane and gamma chlordane

Definitions:
NA = Not Applicable
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
COPC = Chemical of Potential Concern
s = direct exposure based on acute toxicity
N = noncarcinogen
C = carcinogen

TABLE 6-8
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN IN SUBSURFACE SOIL
SITE 38
NAVAL AIR STATION WHITING FIELD, MILTON, FLORIDA
1 OF1

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil
Exposure Point: Site 38

CAS Number	Chemical	Fraction	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits[4]	Concentration Used For Screening[1]	Background Value[2]	Region 9 PRG [3]	Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Metals (mg/kg)																
7429-90-5	Aluminum	M	7830		26000		38D01310	4/4	--	26000	27834	7600 - N	7200	FL Residential	no	BKG
7440-38-2	Arsenic	M	0.58		4.6		38D01310	4/4	--	4.6	6.2	0.195 - C	0.4	FL Residential	no	AS
7440-39-3	Barium	M	16		20.4		38D01211	4/4	--	20.4	15.8	540 - N	110(s)	FL Residential	no	BSL
7440-70-2	Calcium	M	109		202		38D01011	4/4	--	202	444	NA	NA	--	no	NUT
7440-47-3	Chromium	M	5.9		20.5		38D01310	4/4	--	20.5	22.8	15 - C	105	FL Residential	no	BKG
7440-50-8	Copper	M	4.6		9.5		38D01011	4/4	--	9.5	8.8	290 - N	110(s)	FL Residential	no	BSL
7439-89-6	Iron	M	4390		14300		38D01310	4/4	--	14300	18110	2300 - N	2300	FL Residential	no	BKG
7439-92-1	Lead	M	2.7		5.7		38D01011	4/4	--	5.7	8.4	400	400	FL Residential	no	BSL
7439-95-4	Magnesium	M	153		232		38D01011	4/4	--	232	272	NA	NA	--	no	NUT
7439-96-5	Manganese	M	10.6		23.5		38D01211	4/4	--	23.5	42.6	180 - N	160	FL Residential	no	BSL
7439-97-6	Mercury	M	0.17		0.17		38D01211	1/4	0.04-0.11	0.17	NA	2.3 - N	0.34	FL Residential	no	BSL
7440-02-0	Nickel	M	2		3.4	J	38D01310	4/4	--	3.4	5	160 - N	110(s)	FL Residential	no	BSL
7440-09-7	Potassium	M	168		259		38D01310	3/4	137	259	181	NA	NA	--	no	NUT
7440-23-5	Sodium	M	79.8		108		38D01011	4/4	--	108	NA	NA	NA	--	no	NUT
7440-62-2	Vanadium	M	10.8		42.5		38D01310	4/4	--	42.5	45	55 - N	15(s)	FL Residential	no	BKG
7440-66-6	Zinc	M	8.8		12.6		38D01211	4/4	--	12.6	15.6	2300 - N	340	FL Residential	no	BSL
Cyanide (mg/kg)																
57-12-5	Cyanide		0.8	J	1.5	J	38D01310	3/4	0.55	1.5	0.28	120 - N	30(s)	FL Residential	no	BSL

[1] Maximum concentration used as screening value
[2] The background screening value is twice the average of background concentrations for inorganic analytes.
[3] Based on Superfund Preliminary Remediation Goals, USEPA Region IX, Residential land use (Cancer benchmark value = 1E-06, Hazard Quotient = 0.1) (May 2000)
[4] FL Residential from Technical Report: Development of Soil Cleanup Levels for Chapter 62-777, F.A.C. (May 1999)(Cancer benchmark value = 1E-06, Hazard Quotient = 0.1)
[5] Rationale Codes

Selection Reason	Above Screening Levels (ASL)
	If one cPAH is selected as a COPC, all are selected (PAH)
Deletion Reason	Maximum detected concentration is below background screening level (BKG)
	Essential Nutrient (NUT)
	Below Screening Levels (BSL)
	Arsenic impact is considered background and not retained further in this risk evaluation (AS)

[6] Screening values for Chlordane used for alpha-chlordane and gamma chlordane

Definitions:
NA = Not Applicable
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
COPC = Chemical of Potential Concern
s = direct exposure based on acute toxicity
N = noncarcinogen
C = carcinogen

As described in Section 1.4.3.2, exposure assessment parameters used in this RA are those used to derive the Florida SCTLs and represent only the on-site resident and the site occupational worker.

6.4.2.1.3 Toxicity Assessment

Because there are no COPCs for Site 38, no toxicity parameters were used in the RA of Site 38.
6.4.2.1.4

6.4.2.1.5 Risk Characterization

Because there are no COPCs for Site 38, no risk characterization was performed for Site 38.

6.4.2.1.6 Uncertainty

The general uncertainties associated with the HHRA are presented in section 1.4.2.1.5.

Uncertainty in COPC Selection

The maximum detected concentration of each COPC was used to select COPCs. As a result of using the maximum concentration, COPC selection is not likely to be underestimated.

6.4.2.2 Ecological Risk Assessment

This section presents the results of the SERA for Site 38. Section 1.4.2.2 of this RI presents the methodology of the ERA.

6.4.2.2.1 Habitat Description

Section 1.2 of this RI report presents the site background, site layout, and a general site description. Site 38, the former golf course maintenance building is located immediately west of the 7th hole fairway of the golf course and includes a grass-covered area, a dirt (unimproved) roadway, and decorative deciduous trees, sparsely distributed.

6.4.2.2.2 Potential Ecological Receptors and Exposure Pathways

Based on the habitat description above, ecological receptors (i.e., plants and soil invertebrates) could be directly exposed to chemicals in the surface soil. Invertebrates, such as earthworms, are exposed to chemicals as they move through the soil, and ingest soil particles while searching for food. Plants are exposed to chemicals via direct contact as chemicals are absorbed through the roots. These chemicals may then translocate to different parts of the plants (i.e., leaves, seeds). Because of the limited size of the contaminated area (0.76 acres), it is unlikely upper trophic level species, such as small mammals and

birds, would obtain a significant portion of their diet from the site. As a result, ecological receptors would not be exposed to chemicals in the surface soil through the ingestion of contaminated prey/food items. Therefore, only plants and soil invertebrates were selected as assessment endpoints for exposure risks to potential site contaminants by direct contact.

6.4.2.2.3 Screening Results

This section contains the ecological risk screening evaluation conducted for the chemicals detected in the surface soil at Site 38. Twelve samples were collected in May 2000 (38SS01 through 38SS12) and analyzed for VOCs and SVOCs, pesticides/PCBs, TRPH, and inorganics. An additional seven samples were collected in January 2001 and were analyzed for pesticide/PCBs and TRPHs based on the results of samples collected in 2000. Samples 38D01101 and 38D01201 were remediated in 2002 and therefore, original sample results for these locations are not included in the ecological screening.

Table 6-9 is the ecological screening table for plants and invertebrates exposed to chemicals detected in the surface soil samples. In summary, one VOC (acetone), five pesticides (4,4'-DDE, 4,4'-DDT, dieldrin, gamma-chlordane, and heptachlor epoxide), and three inorganic chemicals (chromium, cyanide, and mercury) were selected as ecological COPCs in surface soil because their maximum detected concentrations exceeded the Region IV screening values or because a Region IV screening value was not available for comparison (see Table 6-9). In addition to the summary statistics (i.e., frequency of detection), the table also includes soil background/anthropogenic values, two times the average. Base-specific soil background values (ABB-ES, 1996). The background values were presented for reference and use in the Step 3a refinement; they were not used for selecting COPCs.

6.4.2.2.4 Step 3a Discussion

Food Chain Modeling

Region IV USEPA (2000) suggests food chain modeling should be done as part of the COPC refinement for screening level COPCs known to bioaccumulate or biomagnify. However, terrestrial food chain modeling at Site 38 appears to be inappropriate for several reasons. Site 38 covers a sampled area approximately 180 ft^2 (approximately 0.76 acres). This area is large enough to comprise the home range of a small mammal (i.e., 0.0659 acres for a meadow vole and 0.9699 acres for a short-tailed shrew). However, there is a lack of diverse habitat at the site would likely support such species. Additionally, maximum concentrations of bioaccumulative chemicals (pesticides, chromium, and mercury) are relatively low, below background, or detected infrequently.

TABLE 6-9

ECOLOGICAL RISK SCREENING - SURFACE SOIL
SITE 38
NAS WHITING FIELD, MILTON, FLORIDA
PAGE 1 OF 1

Chemical	Frequency of Detections[1]	Range of Detections	Location of Maximum Detection	Average of Positive Detections	Concentration Used for Screening[2]	Base-Specific Soil Background/ Anthropogenic Value[3]	Region IV Surface Soil Screening Value	Ecological Effects Quotient	COPC Flag	Rationale for Contaminant Deletion or Selection
Volatiles										
Acetone	4/10	0.0147-0.0871	38D00101	0.03648	0.0871	--	NA	NA	YES	NTX
Pesticides/PCBs										
4,4'-DDE	4/17	0.0047-0.019	38D00401	0.01065	0.019	--	0.0025	7.6	YES	ASL
4,4'-DDT	5/17	0.0014-0.0035	38D00901	0.00254	0.0035	--	0.0025	1.4	YES	ASL
Dieldrin	3/17	0.001-0.0025	38D01001	0.00167	0.0025	--	0.0005	5	YES	ASL
gamma-Chlordane	3/17	0.0013-0.012	38D01001	0.0153	0.012	--	NA	NA	YES	NTX
Heptachlor Epoxide	1/17	0.0025	38D01001	0.0025	0.0025	--	NA	NA	YES	NTX
Inorganics										
Aluminum	10/10	4620-8140	38D00801	5953	8140	15848	50	162.8	NO	AS
Arsenic	1/10	4.3	38D01001	4.3	4.3	3.2	10	0.43	NO	BSL
Barium	10/10	8.1-17.7	38D00801	11.715	17.7	23.2	165	0.1073	NO	BSL
Calcium	10/10	145-373	38D00301D	236.35	373	396	NA	NA	NO	NT
Chromium	10/10	4.8-8.7	38D00401	6.34	8.7	11	0.4	21.75	YES	ASL
Cobalt	9/10	0.72-1.1	38D00301D/38D00801	0.889	1.1	3	20	0.055	NO	BSL
Copper	10/10	3.1-5.0	38D00801	3.76	5	9.4	40	0.125	NO	BSL
Cyanide	6/10	0.6-1.8	38D00301	1.135	1.8	0.28	0.9	2	YES	ASL
Iron	10/10	2850-5250	38D00801	3787.5	5250	8832	200	26.25	NO	AS
Lead	10/10	2.6-9.2	38D00801	4.94	9.2	11.4	50	0.184	NO	BSL
Magnesium	10/10	94.9-181	38D01001	133.19	181	268	NA	NA	NO	NT
Manganese	10/10	67-236	38D00801	136.34	236	392	100	2.36	NO	AS
Mercury	1/10	0.19	38D01001	0.19	0.19	0.12	0.1	1.9	YES	ASL
Nickel	3/10	2.1-2.9	38D00801	2.433	2.9	7.2	30	0.0967	NO	BSL
Potassium	1/10	176	38D01001	176	176	177	NA	NA	NO	NT
Vanadium	10/10	7.4-13.0	38D00801	9.525	13	21.8	2	6.5	NO	AS
Zinc	10/10	6.8-13.9	38D01001	9.635	13.9	15.4	50	0.278	NO	BSL

Footnotes:
[1]Original and duplicate samples were averaged for the COPC screening; however, were only counted as one sample in the calculation of the frequency of detection.
[2]The maximum detected concentration was used for screening purposes.
[3]The value presented is 2x the average Base-specific background value for troup loamy soil [General Information Report (GIR) Remedial Investigaiton and Feasibility Study (ABB-ES, 1996)].

Definitions:
COPC = Chemical of Potential Concern
NA = Not Applicable/Not Available

Notes:
Shading indicates that the chemical was retained as a COPC, the background concentration was greater than the concentration used for screening, a nd/or the ecological effects quotient was greater than 1.0. All concentrations are in mg/kg.

The following samples were included in the selection of the COPCs:

38D00101	38D01001
38D00201	38D01301
38D00301	38D01301D
38D00301D	38D01401
38D00401	38D01501
38D00501	38D01601
38D00601	38D01701
38D00701	38D01801
38D00801	38D01901
38D00901	

For Selection as a COPC:
ASL = Above Screening Level
NTX = No Toxicity Information Available
For Deletion as a COPC:
BSL = Below Screening Level
NT = Nontoxic
AS = Aluminum, arsenic, iron, manganese, and vanadium are determined by the FDEP to be un-related to site activities.

4,4'-DDE and 4,4'-DDT were detected primarily in samples 38D00401, 38D00801, 38D00901, and 38D01001. These samples are closer to the golf course than the former Building 2877 and detections are likely attributable to topical applications (see Figure 1-6). Similarly, the maximum detected concentration of dieldrin, gamma-chlordane and heptachlor epoxide occurred in sample 38D01001, south of Green 3 and is likely attributable to spot applications. Overall, pesticides were detected infrequently at concentrations typically seen in areas maintained by their normal usage.

Chromium was detected in all ten samples collected but wasn't retained as a COPC in surface soil (see Section 6.1, above). Although chromium is a bioaccumulative chemical in terrestrial wildlife and could pose risks at elevated concentrations, the maximum detected concentration is below the background/anthropogenic value of 11 mg/kg. Mercury was detected in only 1 of 10 surface soil samples collected at location 38D010. The maximum detection of 0.19 mg/kg is similar to the background/anthropogenic value of 0.12 mg/kg.

In summary, food chain modeling is not warranted at Site 38 for the above reasons. Instead the ERA has been focused on assessment endpoints tend to yield the highest risks. This accounts for endpoints having lower risks, including terrestrial wildlife.

This step consists of a refinement of the COPCs using less conservative screening values and site-specific data (where available) to more realistically estimate potential risks to ecological receptors (i.e., plants and invertebrates). This evaluation includes - but is not necessarily limited to - a consideration of the magnitude of criterion exceedance, frequency of detection and contaminant spatial distribution, contaminant bioavailability, habitat, and alternate benchmarks. Section 1.4.2.2.5 of this RI presents a general overview of the Step 3a refinement.

Soil Plants and Invertebrates

Acetone

Acetone was retained as a COPC because a Region IV screening value is not available. Acetone was detected in 4 of the 10 samples collected with a maximum concentration of 0.0871 mg/kg in sample 28D00101. Due to the volatility of the chemical, acetone is unlikely to be seen in environmental samples. In addition, acetone is a common laboratory contaminant. For these reasons, acetone detections are not likely present at elevated concentrations in Site 38 samples and acetone is not retained as a COPC at Site 38.

4,4-DDE and 4,4'-DDT

4,4'-DDE and 4,4'-DDT were retained as COPCs because their maximum detected concentrations in samples 38D00401 (0.019 mg/kg) and 38D00901 (0.0035 mg/kg), respectively, exceeded the Region IV

screening value of 0.0025 mg/kg. This is the conservative Dutch Target Value for the total concentration of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT. However, the maximum cumulative concentration of 0.0212 mg/kg in sample 38D00401 is well below the Dutch Intermediate Value of 2.0 mg/kg. Based on recent discussion of the Dutch Values in Swartjes (1999), a concentration greater than the Target Value, but less than the Intermediate Value, suggests the soil may be slightly contaminated, but requires no further investigation. Maximum concentrations of 4,4'-DDE and 4,4'-DDT are also below the Region IV screening value for individual and total organochlorines. The maximum total concentration of organochlorines was found in sample 38D01001 at 0.0304 mg/kg. Additionally, 4,4'-DDE and 4,4'-DDT were detected primarily in samples 38D00401, 38D00801, 38D00901, and 38D01001. These samples are closer to the golf course than the former Building 2877 and detections are likely attributable to topical applications (see Figure 1-6). Therefore, 4,4'-DDE and 4,4'-DDT are not considered to pose unacceptable risks to potential ecological receptors and are not retained as COPCs at Site 38.

Dieldrin

Dieldrin was retained as a COPC because the maximum detected concentration (0.0025 mg/kg) in sample 38D01001 exceeded the Region IV screening value of 0.0005 mg/kg. This matches the conservative Dutch Target Value. Dieldrin was encountered in 3 of 17 samples and exceeded the conservative screening value in all detected samples. The maximum dieldrin concentration can be compared to the Dutch Intermediate Value of 2.0 mg/kg. This value is based on the total concentration of aldrin, endrin, and dieldrin, although aldrin and endrin were not detected in Site 38 samples. Similarly to 4,4'-DDE and 4,4'-DDT, an aldrin/endrin/dieldrin cumulative concentration greater than the Dutch Target Value but less than the Intermediate Value suggests soil may be slightly contaminated, but does not require further investigation. The maximum concentration of dieldrin is also below the Region IV screening value for individual and total organochlorines. The maximum total concentration of organochlorines was found in sample 38D01001 at 0.0304 mg/kg. Additionally, the maximum detected concentration of dieldrin occurred in sample 38D01001, south of Green 3 and is likely attributable to spot applications. Therefore, dieldrin is not considered to pose unacceptable risks to ecological receptors and is not retained as a COPC at Site 38.

Gamma-chlordane and Heptachlor epoxide

Gamma-chlordane and heptachlor epoxide were retained as COPCs because Region IV screening values for these pesticides are not available. Maximum concentrations of these pesticides (0.012 mg/kg and 0.0025 mg/kg, respectively) were both detected at location 38D01001. Sample location 38D01001 is located northwest of the former unimproved parking and wash area (see Figure 6-1) and south of Green 3. Similar to the DDT compounds and dieldrin, detections of gamma-chlordane and heptachlor epoxide are likely attributable to topical applications during maintenance of the green. In order to further evaluate gamma-chlordane and heptachlor epoxide, alternate toxicity information was researched.

Alternate toxicity information for gamma-chlordane and heptachlor epoxide is unavailable. However, additional information and studies were located utilizing chlordane and heptachlor. These two chemicals are considered comparable in toxicity. In particular:

- Region IV surface soil value for individual and total organochlorines is 0.1 mg/kg. The maximum total concentration of organochlorines was found in sample 38D01001 at 0.0304 mg/kg.

- Intermediate Value for chlordane is 2.0 mg/kg. This was calculated as the average of the Target Value (0.00003 mg/kg, used in developing the Region IV screening value) and the Intervention Value (4 mg/kg) (MHSPE, 2000). As discussed in Swartjes (1999), a concentration greater than the Target Value, but less than the Intermediate Value, suggests the soil may be slightly contaminated, but requires no further investigation.

- A LD_{50} of 0.89 mg/kg of chlordane to the first-instar nymphs of the common field cricket, *Gryllus pennsylvanicus*, when the insecticide is applied to the soil (Harris and Mazurek, 1964).

- A LD_{50} of 0.22 mg/kg of heptachlor to the first-instar nymphs of the common field cricket, *Gryllus pennsylvanicus*, when heptachlor is applied to the soil (Harris and Mazurek, 1964).

Maximum concentrations of gamma-chlordane and heptachlor epoxide are well below the alternate information above. Additionally, if releases associated with the activities of the former Building 2877 had occurred, concentrations would be much greater. Instead, the sparse (3 out of 17 and 1 out of 17) and sporadic detections are more likely attributable to topical applications. Therefore, gamma-chlordane and heptachlor epoxide are not considered to pose unacceptable risks to ecological receptors and are not retained as COPCs at Site 38.

Chromium

Chromium was retained as a COPC because the maximum detected concentrations exceeded the Region IV screening values (see Table 6-9) However, maximum concentrations of chromium are below two times the base-specific background values. Chromium was detected in all 10 samples collected with maximum concentrations in varying samples.

Chromium was retained as a COPC because the maximum detected concentration (8.7 mg/kg) exceeded the Region IV screening level of 0.4 mg/kg. This was based on an earthworm study where potassium dichromate [Cr(IV)] was added to the soil as a solution (Efroymson et al., 1997a). However, chromium typically occurs in soil as Cr(III) (ATSDR, 1987), a stable state in most soil types (CCME, 1997), and generally considered to be nontoxic (Eisler, 1986). It is likely most, if not all, of the chromium detected in

soil samples at Site 38 was Cr(III). Additionally, the maximum concentration of chromium is significantly lower than the Dutch Target Value (100 mg/kg), the Canadian Soil Quality Guideline (64 mg/kg), and the toxicity studies detailed in Appendix A of this RI.

In summary, chromium is not considered to pose unacceptable risks to ecological receptors for several reasons. The screening levels are conservative, in part, because they are based on studies where the chemical is more bioavailable than in soils at Site 38. For this reason, less conservative, alternate benchmarks were considered more appropriate for assessing potential risks. In most cases, maximum concentrations were less than available alternate benchmarks. Additionally, maximum concentrations were detected in varying samples, indicating no clear pattern of metals contamination. If a release at the former Building 2877 had occurred, metals concentrations are expected to be largely concentrated in one area, and they are not. Lastly, maximum concentrations of aluminum, chromium, iron, manganese, and vanadium are below two times the background concentrations. This adds support to the idea of naturally-occurring metals concentrations at the site. For these reasons and those discussed above, chromium is not retained as COPCs at Site 38.

Cyanide and Mercury

Cyanide and mercury were retained as COPCs because the maximum detected concentrations of 1.8 mg/kg and 0.19 mg/kg, respectively, exceeded the Region IV screening values (see Table 6-9). Additionally, the maximum concentrations of these inorganics exceed two times the base-specific background values of 0.28 mg/kg and 0.12 mg/kg, respectively.

The maximum concentration of cyanide in sample 38D00301 was two times the Region IV screening value. However, the Region IV screening value is based on free cyanide. It is unlikely all the cyanide present in surface soil is available as free cyanide; rather a portion of the cyanide likely exists in the complex form. The Region IV surface soil value for complex cyanide is 5 mg/kg. Cyanide was detected in six of the 10 samples collected. Cyanides may be adsorbed by several soil materials, including different types of clay and biological solids, however, existing data indicate adsorption of hydrogen and metal cyanides in soil is relatively insignificant when compared with the rates of volatilization and biodegradation (ATSDR, 1991). Alternate toxicity data for soil microbes and invertebrates is nearly non-existent. In two unpublished studies by Environment Canada, the effects of cyanide (applied as potassium cyanide [KCN]) on *Eisenia fetida* were recorded. The average no-observable-effect concentration (NOEC), low-observable-effect concentration (LOEC), 25% lethal concentration (LC_{25}), and 50% lethal concentration (LC_{50}) values were 8, 15, 9, and 12 mg/kg, respectively (EC 1995 a, b). Cyanide detections at Site 38 are well below these values, as well as the Region IV screening value for complex cyanide. Therefore, when evaluating toxicity test information for the site assessment endpoint,

cyanide is not considered to pose unacceptable risks to ecological receptors at Site 38 and is not retained as a COPC at Site 38.

Mercury was detected infrequently at the site in only 1 of 10 samples collected. The single detected concentration in sample 38D00101 exceeded the Region IV screening value of 0.1 mg/kg by nearly two times. The value of 0.1 mg/kg was based on potential impacts to earthworms (Efroymson et al., 1997a). The study used to develop the screening value evaluated a mercury solution. The solution was expected to be more bioavailable than mercury in other chemical state naturally occurring in soil. The mercury detection is well below the Dutch Target Value of 0.3 mg/kg. This was based primarily on background concentrations for metals (MHSPE, 2000). The CCME have set the Soil Quality Guideline for inorganic mercury at 10 mg/kg (CCME, 1997). This is much higher than concentrations of mercury detected in site soils. In addition, the mercury detection is well below all researched toxicity studies using earthworms and plants, presented in Appendix A of this RI report. For these reasons, mercury is not considered to pose unacceptable risks to ecological receptors and is not retained as a COPC at Site 38.

6.4.2.2.5 Step 3A Summary and Conclusions

In summary, a SERA was performed for Site 38, the former golf course maintenance building. Several chemicals, including acetone, pesticides, and inorganics were retained as COPCs after the initial screening of surface soil. The results of the Step 3a refinement indicate chemicals in the surface soil do not pose unacceptable risks to ecological receptors and should not be evaluated further.

6.5 CONCLUSION AND RECOMMENDATION

6.5.1 Conclusion

Surface soil samples were collected and analyzed for VOC, SVOC, pesticides/PCBs, TRPH, and inorganics. One VOC, 6 pesticides, TRPH, and 17 inorganics were detected in the surface soil. Alpha-chlordane and gamma-chlordane were detected above the FDEP DE1 SCTL and the USEPA Residential PRGs. Heptachlor epoxide and TRPH were detected above the FDEP DE1 SCTLs. Mercury was detected above the FDEP LE1 SCTL, and above the FDEP GCTL in the SPLP leachate analysis. Although contaminants were detected at elevated levels, the IRA removed all soil associated with this contamination. As a result of this IRA, initial elevated levels of contaminants are no longer present in the surface soil. An HHRA conducted on the surface soil samples resulted in no COCs being selected. This further supports the IRA. The SERA conducted for Site 38 also indicated no unacceptable ecological risks are present in the surface soil.

Subsurface soil samples were collected and analyzed for VOCs, SVOCs, pesticides/PCBs, TRPH, and inorganics. Eighteen inorganics were detected in the subsurface soil. As with the HHRA conducted on the surface soil, no COCs were selected for the subsurface soil.

6.5.2 Recommendation

Based on the comparison of the detected levels of surface and subsurface soil contamination with the SCTLs listed in Chapter 62-777, F.A.C., the USEPA PRGs and RAGS; the IRA conducted; and the RAs performed, there is no risk associated with the surface or subsurface soil. An NFA is recommended for Site 38.

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APPENDICES

APPENDIX A

ECOLOGICAL RISK ASSESSMENT

Alternate Soil Benchmarks

Chemicals, retained as COPCs after the initial screening, were evaluated as part of the SERA to determine if their concentrations in surface soil warrant further evaluation of Sites 05A, 07, 29, and PSC 1485C. Risks to terrestrial plants and invertebrates, resulting from exposure to these chemicals, were evaluated by comparing the chemical concentrations in the surface soil to alternate benchmarks and/or toxicity data and are contained in this appendix. The following primary sources were used for this evaluation (additional details explaining the origin and basis for the benchmarks are provided in the remainder of this section):

- Dutch Intervention Values and Target Values – Soil Quality Standards [Ministry of Housing, Spatial Planning and Environment (MHSPE), 1994].
- Canadian Soil Quality Guidelines [Canadian Council of Ministers of the Environment (CME), 1997].
- ORNL Toxicological Benchmarks for Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process: 1997 Revision (Efroymson et al., 1997a).
- ORNL Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision (Efroymson et al., 1997b).

Dutch Intervention, Intermediate, and Target Values

The Intervention, Intermediate, and Target Values as published in Intervention Values and Target Values – Soil Quality Standards were developed by the Netherlands MHSPE, Department of Soil Protection, and are typically referred to as the Dutch Values (MHSPE, 1994). The Dutch Values for surface soil consist of Target Values and Intervention Values. The Target Values are the soil quality levels ultimately desired (MHSPE, 1994). The values for heavy metals, arsenic, and fluoride were derived from analysis of field data from relatively pollution-free rural areas, and as such, are similar to background levels. The Intervention Values indicate the "concentration levels of the contaminants in the soil above which the functionality of the soil for human, plant, or animal life is seriously impaired or threatened" (MHSPE, 1994). The "ecotoxicological effects are quantified in terms of the concentrations in the soil at which 50 percent of the species actually (or potentially) occurring may undergo adverse effects" (MHSPE, 1994). The Dutch Intermediate Value is the concentration typically used in a preliminary investigation to determine the need for further, more extensive investigation, and it is calculated using the following equation (MHSPE, 1994):

Intermediate Value = (Intervention Value + Target Value)/2

A more recent discussion of the Dutch Values is presented in Swartjes (1999). This document defines four action levels, as follows:

- Concentration < Target Value: This indicates the soil is clean and requires no restrictions.
- Concentration > Target Value and < Intermediate Value: This indicates the soil is slightly contaminated, but requires no further investigation; minor restrictions can be imposed on soil use.
- Concentration > Intermediate value and < Intervention Value: This indicates the soil should be further evaluated; restrictions may be imposed on soil use.
- Average Soil Concentration of at least 25 m^3 > Intervention Value: This indicates the soil is seriously contaminated and principal remediation will be necessary.

Canadian Soil Quality Guidelines

The Canadian Soil Quality Guidelines were developed by the CCME (1997). They are derived using toxicological data to determine the threshold level for key receptors (CCME, 1997). The values are calculated for four land uses: agricultural, residential/parkland, commercial, and industrial. Exposure from direct soil contact is used to derive guidelines for the residential/parkland, commercial, and industrial land uses (CCME, 1997). However, the soil guidelines for the agricultural land use are based on direct soil contact, as well as soil and food ingestion (CCME, 1997). A more detailed discussion of the derivation of the soil quality guidelines is presented in A Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines (CCME, 1996).

ORNL Toxicological Benchmarks for Invertebrates and Plants

The Toxicological Benchmarks for Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process: 1997 Revision (Efroymson et al., 1997a) and the Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision (Efroymson et al., 1997b) were developed by the ORNL. These benchmarks were intended to be used as screening levels, and as such, may be overly conservative. They are based on a 20 percent reduction in growth, reproduction, or activity (for invertebrates), or growth and yield (for plants) as the threshold for significant effects (Efroymson et al., 1997a, b).

Chemical-Specific Soil Benchmarks / Toxicity Data

The following sections contain chemical-specific benchmarks and toxicity data for each chemical retained as a COPC after the initial screening (where available).

4,4'-DDD, 4,4'-DDE, and 4,4'-DDT

The USEPA Region 4 soil screening level for the total concentration of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT is 0.0025 mg/kg, is the Dutch Target Value. The Dutch Intervention Value for the total concentration of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT is 4.0 mg/kg (MHSPE, 1994). The Dutch Intermediate Value (defined as the [Intervention Value + Target Value]/2) is 2.0 mg/kg for the total concentration of DDT and its breakdown products. This value was further divided by 2 (the number of DDT compounds detected at each site) to obtain an Intermediate Value of 1.0 for each individual DDT compound (e.g. 4,4'-DDD,

4,4'-DDE, or 4,4'-DDT). However, if only one of these pesticides had been detected, then the Intermediate Value would have been 2.0 mg/kg.

Aldrin, Dieldrin, and Endrin

The USEPA Region 4 soil screening levels for aldrin, dieldrin, and endrin are based on the Dutch Target Values of 0.0025, 0.0005, and 0.001 mg/kg. The Intermediate Value for each of these pesticides is defined as the (Intervention Value + Target Value)/2 (MHSPE, 1994). Using the Intervention Value for the total concentration of aldrin, dieldrin, and endrin (4 mg/kg), the Intermediate Value for dieldrin is 2.00025 mg/kg (where aldrin and endrin were not detected).

Alpha- and Gamma-Chlordane

USEPA Region 4 does not have a soil screening level for alpha- and gamma-chlordane. The only screening level available for the chlordanes is an USEPA Region III BTAG screening level of 0.1 mg/kg, based on the 96-hour LC_{50} for the sowbug, *Asellus brevicaudus* (USEPA, 1995a).

PAHs

The USEPA Region 4 soil screening levels for the PAHs are based on the Dutch Target Value of 1.0 mg/kg, divided by 10 (the total number of PAHs) to obtain a screening level of 0.1 mg/kg for each individual PAH. The Dutch Intervention Value for total PAHs is 40 mg/kg (MHSPE, 1994). The Intermediate Value for total PAHs, defined as the (Intervention Value + Target Value)/2, is 20.5 mg/kg; the Intermediate Value for individual PAHs is 2.05 mg/kg (assuming 10 PAHs are detected at a site). The following bullets present some alternate benchmarks and toxicity data for PAHs:

- ORNL benchmark for plants is 20 mg/kg for total PAHs. This value is based on the soil phytotoxicity value for acenaphthalene (Efroymson et al., 1997b).
- Fish and Wildlife Service benchmarks for total PAHs for plants and invertebrates of 3.1 and 20.8 mg/kg, respectively (Lingenfelser, 2000).
- 500 mg/kg of fluorene in soil had no effect on *Eisenia fetida.*
- 750 mg/kg resulted in a 49 percent reduction in cocoon production of *Eisenia fetida* (Neuhauser and Callahan, 1990).
- 170 mg/kg of fluorene in soil was an LC_{50} for earthworms (Neuhauser et al., 1986).
- After soil treatment, total PAHs in soils were reduced from 1,710 mg/kg to 98 mg/kg, and earthworm mortality decreased from 100 percent before treatment to 0 percent after treatment (USEPA, 1995b).
- After soil treatment, total PAHs in soils were reduced from 1,442 mg/kg to 36 mg/kg, and earthworm mortality decreased from 100 percent before treatment to 0 percent after treatment in a 28-day test (EC, 1994).

PCBs

The USEPA Region 4 soil screening level for PCBs is based on the Dutch Target Value of 0.02 mg/kg for total PCBs. The Dutch Intervention Value for total PCBs is 1.0 mg/kg. The Intermediate Value for total PCBs, defined as the (Intervention Value + Target Value)/2, is 0.51 mg/kg (MHSPE, 1994). The following bullets present some alternate benchmarks and toxicity data for PCBs:

- Canadian Soil Quality Guideline of 1.3 mg/kg (total PCBs) for residential / parkland areas (CCME, 1999).
- ORNL soil phytotoxicity value of 40 mg/kg for total PCBs (Efroymson et al., 1997b).

Phthalates

The USEPA Region 4 soil screening level for the total concentration of phthalates is 0.1 mg/kg, the Dutch Target Value. The Dutch Intervention Value for the total concentration of phthalates is 60 mg/kg (MHSPE, 1994). The Dutch Intermediate Value [defined as the (Intervention Value + Target Value)/2] is 30 mg/kg for total phthalates. This value was further divided by 3 (the number of individual phthalates detected per site) to obtain an Intermediate Value of 10.0 for each individual phthalate (e.g. bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, or di-n-butyl phthalate). However, if only one of these phthalates had been detected, then the Intermediate Value would be 30 mg/kg for the individual phthalate.

Aluminum

The USEPA Region 4 soil screening level for aluminum of 50 mg/kg was based on one plant study where the establishment of white clover in a silt loam (pH 5.0) was reduced by approximately 30 percent by the addition of 50 ppm of aluminum sulfate (Efroymson et al., 1997b). The aluminum applied to the soil in this study would most likely be more available than aluminum in soil at the site because it is unlikely the aluminum at the site was disposed of as an aluminum salt. Therefore, the screening level is very conservative. No other toxicity data for aluminum in soil were located.

Cadmium

The USEPA Region 4 soil screening level for cadmium (1.6 mg/kg) was the Dutch Maximum Permissible Concentration (Crommenttuijn, 1997). The following bullets present some other benchmarks and toxicity data for cadmium:

- Canadian Soil Quality Guideline of 3.8 mg/kg set to protect mammalian and avian species through the food chain pathway (CCME, 1997). The Canadian Soil Quality Guideline set to protect plants and invertebrates through soil contact was 10 mg/kg (CCME, 1997).

- Dutch Target Value of 0.08 mg/kg, based primarily on background concentrations for metals, and the Dutch Ecological Intervention Value of 12 mg/kg (Swartjes, 1999).
- ORNL benchmark for earthworms of 20 mg/kg (Efroymson et al., 1997a). This value was based on 18 available concentrations so confidence in the benchmark is moderate (Efroymson et al., 1997a). However, most of the studies consisted of adding a cadmium solution to soil.
- ORNL benchmark for plants of 4 mg/kg (Efroymson et al., 1997b). This value was based on 74 available concentrations so confidence in the benchmark is high (Efroymson et al., 1997b). However, most of the studies consisted of adding a cadmium solution to soil.

Chromium

The USEPA Region 4 soil screening level for chromium (0.4 mg/kg) was based on an earthworm study in where potassium dichromate [Cr(IV)] was added to the soil as a solution (Efroymson et al., 1997a). The result was a 75 percent decrease in earthworms at the 2 ppm concentration, divided by 5 to obtain the benchmark of 0.4 mg/kg (Efroymson et al., 1997a). Reportedly, chromium in soil typically occurs as Cr(III) (ASTDR, 1987), stable in most soils (CCME, 1997). Therefore, it was likely most, if not all, of the chromium detected in the soil samples at the site was Cr(III). The following bullets present other benchmarks and toxicity data for chromium:

- Canadian Soil Quality Guideline of 64 mg/kg, based on nutrient and energy cycling (CCME, 1997).
- Dutch Target Value of 100 mg/kg, based primarily on background concentrations for metals, and the Dutch Ecological Intervention Value of 230 mg/kg (Swartjes, 1999).
- 1000 mg/kg total chromium decreased growth and cocoon production (CCME, 1997).
- 671 to 1400 mg/kg was the LC_{50} (lethal concentration when 50 percent of the test organisms die) for earthworms (CCME, 1997).
- 21 and 31 mg/kg decreased yields by 50 percent in tomatoes and oats, respectively (CCME, 1997).
- 81 to 397 mg/kg reduced germination by 50 percent in radish and lettuce (CCME, 1997).
- 32 ppm chromium nitrate added to soil reduced growth of earthworms by 30 percent, while the cocoons/worm/week, the percentage of fertile cocoons, and juveniles/worm/week were reduced by 28 percent, 22 percent, and 51 percent, respectively, with 100 ppm chromium nitrate added to the soil (Efroymson et al., 1997a).
- 625 ppm of potassium chromium sulfate added to soil reduced the number of cocoons and hatchlings by 55 percent. Also, the mass gain of juveniles was reduced by 34 percent by 2,500 ppm Cr(III), but not by 625 ppm Cr(III) (Efroymson et al., 1997a).

Cyanide

The USEPA Region 4 soil screening level for cyanide (0.9 mg/kg) is the Canadian Soil Quality Guideline set to protect plants and invertebrates through soil contact (CCME, 1997). The Dutch Target Value,

based primarily on background concentrations for metals, is 1.0 mg/kg, and the Dutch Ecological Intervention Value is 20 mg/kg (MHSPE, 1994).

Lead

The USEPA Region 4 soil screening level for lead was the ORNL benchmark for plants of 50 mg/kg (Efroymson et al., 1997b). All of the studies used to develop the screening level consisted of adding lead chloride as a solution to the soil. The lead in the solution would be more bioavailable than the lead in the soil at the sites. The following bullets present some alternate benchmarks and toxicity data for lead:

- Canadian Soil Quality Guideline of 70 mg/kg set to protect mammalian and avian species through the food chain pathway (CCME, 1997).
- Canadian Soil Quality Guideline of 250 mg/kg for soil contact (for plants and invertebrates) (CCME, 1997).
- Dutch Target Value of 85 mg/kg, based primarily on background concentrations for metals, and the Dutch Ecological Intervention Value of 290 mg/kg (Swartjes, 1999).
- ORNL benchmark for earthworms of 500 mg/kg (Efroymson et al., 1997a).
- For earthworms, the NOEC (mortality) was 2190 mg/kg, the OEC (cocoon production) was 1810 mg/kg, the LC50 was 3760 mg/kg, and the EC50 (cocoon production) was 1940 mg/kg (Spurgeon et al., 1994).
- NOEC for reproduction of 500 mg/kg (Ma, 1983 as cited in Spurgeon et al., 1994).
- NOEC for reproduction of 200 mg/kg (Bengtsson et al., 1986 as cited in Spurgeon et al., 1994).
- 100 mg/kg had no effects on plants (CCME, 1997).
- 50 to 500 mg/kg caused various reductions in weight, yield, root elongation in various plants (CCME, 1997).
- For radish and lettuce, the NOEC was 416-421 mg/kg, the LOEC was 740-974 mg/kg, the EC50 (seedling emergence) was 876-1236 mg/kg, and the EC25 was 667-833 mg/kg (CCME, 1997)
- 150 mg/kg caused a 38-45 percent reduction in shoot dry weight and height of a red spruce (CCME, 1997).
- 1179 mg/kg caused reduction in root dry weight and height of a loblolly pine (CCME, 1997).

Manganese

The USEPA Region 4 soil screening level for manganese (100 mg/kg) was the ORNL benchmark for soil microorganisms and microbial processes (Efroymson et al., 1997a). The ORNL benchmark for plants (500 mg/kg) is based on a plant study of when manganese sulfate was added to the soil as a solution (Efroymson et al., 1997b). The result was a 29 percent decrease in stem weight (Efroymson et al., 1997b). Manganese may bind tightly to soil, depending upon the soil type, and would likely be less

bioavailable than the manganese sulfate in the study. No toxicity studies on soil invertebrates were located.

Mercury

The USEPA Region 4 soil screening value of 0.1 mg/kg was based on potential impacts to earthworms (Efroymson et al., 1997a). The study used to develop the screening value evaluated mercury added to the soil as a solution, expected to be more bioavailable than mercury in soil. The following bullets present some alternate benchmarks and toxicity data for mercury:

- Dutch Target Value of 0.3 mg/kg, based primarily on background concentrations for metals, and the Dutch Ecological Intervention Value of 10 mg/kg (Swartjes, 1999).
- For earthworms, 25 mg/kg (methylmercury) was fatal in 12 weeks; at 5 mg/kg (methylmercury), 21 percent died; at 0.79 mg/kg (inorganic mercury), 50 percent died; at 5 mg/kg (inorganic mercury), 100 percent died (Eisler, 1987).
- For earthworms, at 130-250 mg/kg, 25 percent died; at 60-700 mg/kg, 50 percent died (CCME, 1997)
- Mixture of mercury (10 mg/kg) and cobalt (20 mg/kg) caused a slight check in increase of body weight and development to maturity for earthworms, and a reduction of about 65 percent in rate of cocoon production (Lee, 1985).
- For earthworms, 0.5 ppm (added as solution) caused a 65 percent decrease in survival and a 40 percent decrease in cocoon production; 12.5 mg/kg (methylmercury - added as solution) caused a 21 percent decrease in survival; 2.5 mg/kg (methylmercury - added as solution) had no effect (Efroymson et al., 1997a).
- For plants, 7 to 8 mg/kg caused a 50 percent reduction in bloom, decrease in growth; 7 to 1000 mg/kg cause a 50 percent decrease in a variety of growth endpoints (CCME, 1997).
- For plants, 0.3 ppm (added as a solution) caused an unspecified toxic response; 34.9 ppm was a NOEC; 64 ppm caused a 19 percent decrease in seedling height; 103 ppm caused a 20 percent decrease in germination (Efroymson et al., 1997b).

Selenium

The USEPA Region 4 soil screening level for selenium (0.81 mg/kg) was the Dutch Maximum Permissible Concentration (Crommenttuijn, 1997). The following bullets present some other benchmarks for selenium:

- ORNL benchmark for plants of 1.0 mg/kg is based on a plant study of when sodium selenate was added to the soil as a solution (Efroymson et al., 1997b). The results were various reductions in shoot weights (Efroymson et al., 1997b).
- ORNL benchmark for earthworms of 70 mg/kg (Efroymson et al., 1997a).

- ORNL benchmark for microorganisms and microbial processes of 100 mg/kg (Efroymson et al., 1997a).
- Dutch Target value of 0.7 mg/kg, based primarily on background concentrations for metals, and the Dutch Ecological Intervention Value of 5 mg/kg (Swartjes, 1999).

Vanadium

The USEPA Region 4 soil screening level for vanadium of 2.0 mg/kg was the ORNL benchmark for plants (Efroymson et al., 1997b). The following bullets present some other benchmarks and toxicity data for vanadium:

- ORNL benchmark of 20 mg/kg for microorganisms and microbial processes (Efroymson et al., 1997a).
- Canadian Soil Quality Guideline of 130 mg/kg for soil contact (of plants and invertebrates) (CCME, 1997).
- Dutch Maximum Permissible Concentration of 43 mg/kg (Crommenttuijn, 1997).

Zinc

The USEPA Region 4 soil screening level for zinc (50 mg/kg) was the ORNL benchmark for plants. All of the studies used to develop the benchmark consisted of adding zinc as a solution to the soil. Zinc as a solution would be more bioavailable than the zinc in the soil at the sites (Efroymson et al., 1997b). The following bullets present some other benchmarks and toxicity data for zinc:

- Canadian Soil Quality Guideline of 200 was set to protect plants, invertebrates, mammalian, and avian species through the food chain pathway (CCME, 1997). It was also the same value as the ORNL benchmark for earthworms (Efroymson et al., 1997a).
- Dutch Target Value of 140 mg/kg, based primarily on background concentrations for metals, and the Dutch Ecological Intervention Value of 720 mg/kg (Swartjes, 1999).
- For earthworms, the NOEC (mortality) was 289 mg/kg, the NOEC (cocoon production) was 199 mg/kg, the LC_{50} was 745 mg/kg, the EC50 (cocoon production) was 276 mg/kg (Spurgeon et al., 1994).
- EC_{10} and EC_{50} (reproduction) of 136 to 1059 mg/kg, and 261 to 2178 mg/kg, respectively (depending on soil type) for springtails (Smit and Van Gestel, 1998).
- 1100 mg/kg caused a 50 percent reduction in body weight, a cessation of cocoon production, inhibition of development, and decreased growth rate for earthworms (Lee, 1985).
- No worms were found in soil with 470 mg/kg of zinc; a LC50 of 662 mg/kg was calculated for earthworms (Eisler, 1993).
- LC_{50} of 80 mg/kg for earthworms (CCME, 1997).

- 50 mg/kg caused a 50 percent decrease in seed yield for turnips (CCME, 1997).
- 10 mg kg had no effect of seeds produced, and 115 mg/kg had no effect on leaf weight (Efroymson et al., 1997b).
- 25 mg/kg to 1000 mg/kg caused various percentages of decreased plant, leaf, and/or root weight (Efroymson et al., 1997b).

APPENDIX B

POSITION PAPERS ON ALUMINUM, ARSENIC, IRON, MANGANESE, AND VANADIUM AT NAS WHITING FIELD

Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

April 11, 2001

Mr. James Holland
NAS Whiting Field
7151 USS Wasp Street
Milton, Florida 32570-6159

file: arsenic2.doc

RE: Analysis of Soil for Arsenic at Outlying Landing Fields

Dear Mr. Holland:

I have reviewed the above document dated April 3, 2001 (received April 9, 2001). The document describes soil sampling locations and analytical results for arsenic at four outlying landing fields associated with, but not adjacent to, NAS Whiting Field. Those facilities are Pace Field, Spencer Field, Santa Rosa Field and Harold Field. There are no known contaminated sites at those fields. Utilizing the information furnished in the document and in comparison with similar data from NAS Whiting Field, the Navy has requested a determination that arsenic levels observed at NAS Whiting Field are comparable with those seen at the outlying landing fields and that they are in naturally occurring concentrations.

Based on my review of those data, I have concluded that arsenic levels observed in soils at NAS Whiting Field are within the range of concentrations observed at the outlying fields and that they therefore are in naturally occurring concentrations. This determination may be applied only to arsenic in the soil for sites at NAS Whiting Field for which sufficient data presently exist. Please be aware that this finding does not preclude a future determination of a release of arsenic at any particular site if information and data warrant that conclusion.

If you have questions or need further clarification please contact me at (850) 921-4230.

Sincerely,

James H. Cason, P.G.
Remedial Project Manager

cc: Mollie Palmer, Office of the Secretary
Linda Martin, Southern Division, North Charleston
Amy Twitty, CH2M Hill, Navarre

TJB JJC ESN for

Jeb Bush
Governor

Department of Environmental Protection

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

Colleen M. Castille
Secretary

April 30, 2004

Ms. Linda Martin
Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive, PO Box 190010
North Charleston, South Carolina 29419-9010

file: 30FSadd1.doc

RE: Response to FDEP Comment Dated February 20, 2004, Site 40, Basewide Groundwater, NAS Whiting Field

Dear Ms. Martin:

I have reviewed the above document dated April 29, 2004 (received April 30, 2004). I have previously reviewed several components of the draft response. I have made a number of minor comments (page numbering, punctuation, etc.) that I have relayed to the contractor. When they have been addressed, the response will be acceptable and, barring any significant changes, I will utilize the information, if appropriate, when reviewing other information and reports for other sites. If other information warrants, or I believe that the use of the material presented in the response is not applicable, I reserve the right not to utilize it. In general, however, the information in the response is good.

If you need additional information or further clarification, please feel free to call me at 850-245-8999.

Sincerely,

James H. Cason, P.G.
Remedial Project Manager

CC: Craig Benedikt, US EPA Region IV, Atlanta
Jim Holland, NAS Whiting Field
Terry Hansen, Tetra Tech, Tallahassee

ESN ESN JJC JJC

INORGANICS IN SOIL AT NAS WHITING FIELD

Introduction

Soil and groundwater concentrations of aluminum, iron, manganese, and vanadium (Al, Fe, Mn, and V) exceed regulatory criteria [Florida Department of Environmental Protection (FDEP) Soil Cleanup Target Levels (SCTLs) and Groundwater Cleanup Target Levels (GCTLs)] at Naval Air Station (NAS) Whiting Field. For brevity inorganics refers to Al, Fe, Mn, and V in this paper. This paper describes the regional and local depositional history and how this depositional history accounts for the observed concentrations of inorganics in soil at NAS Whiting Field. Additionally, site specific data are graphically presented illustrating the ubiquitous even distribution of inorganic constituents in soil and groundwater.

Regional Setting

Soils

Soils of the Florida panhandle, including Whiting Field, are a product of the erosion of mountains to the north. Randazzo (1997) states "...siliclastic sediments shed from the Appalachians, the Piedmont, and inner Coastal Plain flooded into the carbonate-producing environments of southeastern North America". As a result, "the sand and gravel aquifer consists mostly of quartz, which is relatively insoluble; therefore, water in the aquifer is soft and not highly mineralized." However, "excessive iron concentrations are present locally in water from the surficial aquifer system, the sand and gravel aquifer.... Dissolved-iron concentrations locally reach objectionable levels." Please refer to Table 1 "Common Minerals in Florida Aquifer Systems and Confining Beds".

The facility stratigraphy at NAS Whiting Field is within the four county area and is described by Schmidt as consisting of alluvium of quaternary age overlying the Miocene Citronelle. The alluvium is derived in part from the Citronelle. Both alluvium and Citronelle formation are rich in Fe or limonite as described by Schmidt (1978).

> The Citronelle formation blankets the upland areas of the four-county region. It consists of quartz sand and gravel, which are commonly well sorted but may also be poorly sorted. Common secondary lithologies in the Citronelle include lenses and beds of relatively pure clay and thin beds of limonite usually overlying a clay bed.
>
> The distribution and character of the Citronelle sediments suggest that they are coalescent deposits of several early rivers that emptied into the Gulf of Mexico. For this reason, a few outcrops can be correlated as most clay lenses and gravel beds are discontinuous. Most often, some amount of silt and clay are present as a matrix in a sand unit. The varying amount of clay is gradational and difficult to predict. Uncertainties such as these make a clayey sand lithology versus a sandy clay lithology difficult to project into inaccessible areas because of this irregular distribution. (Schmidt, 1978).

Table 1

Table 13.6. Common minerals in Florida aquifer systems and confining beds

Mineral fraction	Surficial aquifer system	Intermediate aquifer system	Floridan aquifer system
silicate	**quartz** **potassium feldspar** **potassium mica** kaolinite chlorite smectite	**quartz** **potassium feldspar** **potassium mica** **palygorskite** **sepiolite** **smectite** kaolinite	quartz
carbonate	**calcite** **aragonite**	**dolomite** calcite	**calcite** **dolomite** aragonite (?)
oxyhydroxides, sulfides	**ferric hydroxide** **Goethite** Gibbsite, boehmite, diaspore, pyrite	**pyrite** ferric hydroxide Goethite	pyrite ferric hydroxide Goethite
other	**humic substancesa**	**carbonate-fluorapatite** **carbonate-hydroxylapatite** opal-A opal-CT gypsum	**gypsum** **anhydrite**

Source: Upchurch 1992.

Note: See table 13.5 for mineral compositions and weathering products. Volumetrically or chemically important minerals indicated in bold.

[a]Refers to particulate organics, including organics concentrated in peats and mucks, and disseminated in other sediments.

Groundwater

As reported in the Geology of Florida, "A major factor that affects groundwater is the chemical composition (of) rainfall. Natural rainfall is affected by reactions with atmospheric gases and particulates". Table 2 contains a summary of the chemical composition of selected sites in Florida. The pH column indicates the pH state-wide ranges from 3.0 to 7.3, but is primarily in the acidic range. "Water that has passed through the soil is characteristically acidic" (Randazzo, 1997).

> Reactions of acidic meteoric water with potassium feldspar result in the formation of common soil clay mineral kaolinite. Weathering of clay releases iron, magnesium and silica and produces kaolinite as a residue. Iron and aluminum oxyhydroxides, sulfide and sulfate minerals, and a few other minerals are weathered by different processes, which are discussed in Upchurch et al. (1992). Clay minerals and some the other oxyhydroxides are also important sites for ion exchange, which may also affect groundwater quality (Randazzo, 1997).

The NAS Whiting Field area is a recharge zone for the surficial aquifer. Typically the pH of groundwater in recharge zones remains stable, in this case acidic, because the water has not made contact with any carbonate minerals to moderate the pH (Table 3). This acidic rain water reacts with minerals and subsequently carries weathered dissolved material as it infiltrates to the groundwater table. Table 4 "Common minerals in Florida and their dissolved weathering products" (Upchurch et al., 1992) provides a list of common minerals subjected to this process and the resultant Al, Fe, Mn, and V ions leached from these minerals.

Schmidt (1978) also describes the visible result of Fe leaching in the area.

> Another notable trend readily observed in northern Escambia and Santa Rosa counties is a typical gravel-limonite-clay sequence repeated often in the Citronelle. Many hills are capped by gravel and sand, underlain by a thin bed limonite, underlain by a massive sandy clay. The limonite is post-depositional resulting from ground water migration through the sand layers. Precipitation from iron rich solutions occurs as the water migrates downward to the impermeable clay layers. Limonite, although common, is not found everywhere, but when it is present it is usually obvious. Many hillsides are littered with broken limonite because the slope of the land cuts across the local dip of the limonite beds (Schmidt, 1978).

Limonite was found frequently during installation of monitoring wells at NAS Whiting Field typically above clay or sandy clay units. Thickness varied from about 1 centimeter to 40 centimeters in thickness (TtNUS, 2003). Drilling through the thicker limonite units required considerable time and wear on drilling equipment (Appendix A, Boring Logs). Limonite is also found in several outcroppings on the facility most notably in a borrow pit adjacent to Site 2 and in a commercial borrow pit located adjacent to the west side of NAS Whiting Field.

In summary, the Sand and Gravel Aquifer consists primarily of quartz with high concentrations of Fe in both local and regional soils. Regionally acidic meteoric waters are available to weather limonite and

Table 2

Table 13.4. Summary of the chemical composition of precipitation from selected sites in Florida

Stat.	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Na (mg/L)	NH_4 (mg/L)	NO_3 (mg/L)	Cl (mg/L)	SO_4 (mg/L)	PO_4 (mg/L)	pH (field)	Conductivity (field)	Na/Cl (mole ratio)	Ratio dev. seawater
Quincy, Gadsden County													
x	0.14	0.07	0.06	0.44	0.15	1.05	0.75	1.77	0.02	4.68	17.7	0.90	0.05
s	0.17	0.08	0.18	0.53	0.24	1.05	0.89	1.84	0.09	0.41	15.9	0.22	0.22
n	179	179	179	179	179	179	179	179	179	160	162	179	179
Min.	0.01	0.01	0.00	0.03	0.00	0.00	0.06	0.10	0.00	3.57	4.0	0.40	−0.45
Max.	1.15	0.53	2.12	3.23	1.53	6.19	5.58	12.78	0.78	5.90	132.5	2.90	2.05
Austin-Cary Forest, Alachua County													
x	0.28	0.09	0.09	0.78	0.15	1.00	0.96	2.03	0.00	4.79	17.87	1.39	0.54
s	0.28	0.07	0.16	0.85	0.85	0.88	0.99	1.47	0.00	0.53	12.09	1.01	1.01
n	92	92	92	92	92	92	92	92	92	89	92	92	92
Min.	0.02	0.00	0.00	0.02	0.02	0.07	0.10	0.10	0.00	3.49	3.70	0.13	−0.73
Max.	1.33	0.39	0.95	4.87	4.87	4.70	8.88	8.88	0.00	6.70	66.70	6.04	5.19
Bradford Forest, Bradford County													
x	0.26	0.11	0.07	0.80	0.16	1.04	1.19	1.96	0.01	4.70	16.77	1.05	0.20
s	0.44	0.26	0.22	2.13	0.24	0.95	3.16	2.13	0.07	0.46	12.82	0.64	0.64
n	367	367	367	367	367	367	367	367	367	340	337	366	366
Min.	0.01	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	3.22	2.20	0.31	−0.54
Max.	5.40	4.31	3.81	29.30	1.92	6.60	52.62	22.80	1.19	6.60	99.00	6.17	5.32
Kennedy Space Center, Brevard County													
x	0.28	0.20	0.09	1.58	0.10	1.05	2.81	1.93	0.02	4.92	23.15	0.87	0.02
s	0.34	0.25	0.10	2.03	0.17	1.13	3.64	1.71	0.07	0.37	14.99	0.14	0.14
n	229	229	229	229	229	229	229	229	229	208	201–0.80	229	229
Min.	0.01	0.00	0.00	0.09	0.00	0.00	0.15	0.20	0.00	3.73	85.80	0.37	−0.48
Max.	3.28	1.70	0.80	13.82	1.18	10.12	12.81	12.81	0.58	5.72		1.91	1.06
Verna Well Field, Sarasota County													
x	0.31	0.14	0.23	0.81	0.21	1.00	1.39	1.53	0.05	4.85	15.02	0.90	0.05
s	0.42	0.25	1.40	1.50	0.63	1.15	2.62	1.47	0.39	0.54	10.70	0.22	0.22
n	202	202	202	202	202	202	202	202	202	159	177	202	202
Min.	0.02	0.01	0.00	0.07	0.00	0.00	0.14	0.15	0.00	3.39	3.00	0.51	−0.34
Max.	3.49	1.93	17.40	13.31	7.30	10.32	24.53	13.64	4.98	7.30	85.30	2.31	1.46
Everglades National Park, Dade County													
x	0.36	0.20	0.20	13.2	0.22	0.73	2.31	1.41	0.07	4.98	15.98	0.88	0.03
s	0.73	0.31	1.03	1.89	1.12	0.85	3.21	1.62	0.63	0.57	13.90	0.13	0.13
n	304	304	304	304	304	304	304	304	304	2.61	269	304	304
Min.	0.01	0.01	0.00	0.05	0.00	0.00	0.12	0.00	0.00	3.00	3.50	0.56	−0.30
Max.	7.68	2.66	12.80	15.91	17.12	8.37	26.89	15.42	9.98	7.27	141.50	2.22	1.37
Statewide													
x	0.28	0.14	0.13	1.00	0.17	0.97	1.66	1.75	0.03	4.77	17.58	0.96	0.11
s	0.48	0.25	0.74	1.80	0.61	1.01	2.98	1.80	0.34	0.50	13.80	0.47	0.47
n	1373	1373	1373	1373	1373	1373	1373	1373	1373	1217	1231	1373	1372
Min.	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	3.0	0.80	0.13	−0.73
Max.	7.68	4.31	17.4	29.3	17.2	10.32	52.62	22.8	9.98	7.3	141.5	6.17	5.32

Source: From Upchurch 1992 and based on data from the National Atmospheric Deposition Program, National Trends Network.
Note: x = arithmetic median; s = standard deviation; n = number of samples.

Table 3

Table 36. - Some possible criteria for identification of aquifer flow system components. Assumes that water comes in contact with carbonate minerals along the flow path.

Analyte	Recharge Areas	Discharge Areas
Temperature	Locally variable, relatively cool	Low variability, relatively warm
pH	Generally acidic, locally variable	Slightly basic, low variability
Calcium, magnesium, bicarbonate	Concentrations relatively low, highly variable	Concentrations relatively high, low variability
Iron	Concentrations relatively high	Concentrations may be low
Nitrate	May be present	Normally absent
Phosphate	May be present	Normally absent
Synthetic organics, pesticides	May be present	Normally absent
Sulfate	Low in most areas, possibly high near wetlands	High when deep flow system waters discharge in coastal areas
Sodium:chloride ratio	Near that of sea water	May differ greatly from sea water
Total organic carbon	Concentrations often high	Concentrations often low

other minerals. This weathering provides a source for dissolved Fe and other ions to groundwater. Both alluvium and the Citronelle formation are rich in Fe or limonite.

The Natural Derivation of Fe, Mn, V

The source of the NAS Whiting Field soils are the "...siliclastic sediments shed from the Appalachians" (Randazzo, 1997). The Fe present in and leaching from these soils is a product of heavy mineral suites found within these soils. These minerals would reflect naturally occurring ratios of elements combining to form these minerals. The presences of Mn and V in the regional soils and at NAS Whiting Field are the result of substitution of these ions in the formation of various Fe rich minerals. These minerals formed in the provenance area prior to weathering and transport from the source area to the coastal plain. Acidic rains caused subsequent chemical weathering and leaching.

Fe rich minerals are frequently accompanied by elements of similar size and charge. In the provenance area, ionic substitutions and element ratios are determined during mineral development. The growing crystal lattice will capture ions based on relative ionic size, charge, and availability of the substituting ion. V. M. Goldschmidt (1954) provided a set of empirical rules explaining substitution: 1) ionic radii must differ by less than 1 percent, 2) ionic charges must be nearly the same, and 3) all things being equal, the smaller ionic radius with a matching charge is preferred.

For trivalent ions, the order of preferences is Cr > V > Mn > Ti > Fe. For minerals with positions for 3+ ions Cr, V, Mn and Ti would have preference. Substitution of ions would be based on availability of the specific ion. All else being equal, a greater percentage of a particular ion would result in a higher percentage of these metal's ions being associated with Fe rich minerals (Table 5).

Table 5 shows the oxidation state and ionic radius are similar for Fe(III), Mn(III), and V(III), their charge to radius ratios (a *rough* surface charge measure) are also similar. This type of substitution is best shown in the pyromorphic series of the apatite group. Pyromorphite, $Pb_5(PO_4)_3Cl$, mimetite, $Pb_5(AsO_4)_3Cl$, and vanadinite, $Pb_5(VO_4)_3Cl$ (Dana, 1977).

Table 5

Ion	Ox. State	Crystal Radius	Ionic Radius
Cr +3	3	0.755	0.615
Fe +3	3	0.785	0.645
Mn +3	3	0.785	0.645
V +3	3	0.78	0.64

Several minerals having a range of compositions based on substitutions of ions are shown below. Soils or sediments rich in Fe have a higher probability of having elevated levels Mn and V in the soil as a result of the substitution process at the time of mineral formation presorting favorably for these elements. Subsequent weathering of the materials in the provenance area or in the coastal plain would allow distribution of these elements in various media.

This presence of post-depositional limonite is indicative of long-term leaching of Fe. The Fe leaching is associated with the leaching of Al, Mn, and V, also found in the local surface soil and groundwater. An analysis of base-wide soil data, surface and subsurface, for the presence of inorganics shows for the most part these elements are ubiquitous at NAS Whiting Field and therefore, not directly attributable to site related activities. Leachate data indicates leaching of inorganics from surface soils [0 to 5 feet (ft) below land surface (bls)]. An analysis of base-wide groundwater data for inorganics reveals the presence of these elements in a majority of the monitoring wells, many at concentrations exceeding GCTLs.

In summary, heavy mineral suites reflecting natural conditions of the area from where these minerals originated release a suite of ions. These ions reflect a preset ratio based on the minerals original composition. Table 1 lists common minerals found in the surficial aquifer system of Florida. A comparison of Tables 1 and 2 provides a list of many common minerals with resultant ions produced during chemical weathering. Fe is a primary constituent of the weathering process. It can be assumed in many cases Mn and V have been substituted in the mineral lattice in place of Fe.

Fe, Mn, and V have similar ionic characteristics allowing substitutions during mineral formation. Natural processes distribute these elements evenly or in concentrated patterns in soil and groundwater depending on local conditions. As an example, at NAS Whiting Field, a relatively even distribution of Fe occurs in sandy soils, but Fe is frequently concentrated as limonite in layers immediately above clays. This natural uneven distribution is reflected in the data presented in this report. Conversely, no natural process concentrates Al and so it is evenly distributed across NAS Whiting Field.

Inorganics in NAS Whiting Field Soils

Aluminum and Iron

Al and Fe are ubiquitous in soils across the facility. Concentration values of these constituents range from 37 to 59,000 milligrams per kilogram (mg/kg) and 30 to 146,000 mg/kg respectively. Concentrations in soil are not depth dependant indicating their presence is a result of natural occurrences (see NAS Whiting Field Specific Data Charts for Al in the body of this report and Soil Chart Series for Fe, Mn, and V in Appendix B). The same is true of groundwater. Table 4 lists common minerals and their dissolved weathering products.

Many of the common minerals listed in Table 4 weather producing Al and Fe ions. No soil "hotspots" (areas where the distribution of the element is higher than typically found) related to facility activities have been found for these elements indicating the occurrence of random elevated detections are natural.

Manganese

Mn in the tenth most abundant element in the earth's crust and second only to Fe as the most common heavy metal; on average, crustal rocks contain about 0.1 percent Mn. Geochemically, Mn behaves like Fe partitioning into minerals forming in the early stages of magmatic crystallization. Concentrations of Mn detected in NAS Whiting Field soils range from 0.21 to 898 mg/kg within the range of averaged values for heavy metals in soil Table 6 (Alloway, 1990).

Table 6

Metal Concentrations in Soil

Element	Range	Average value
Ag	0.01 - 8	0.005
As	0.1 - 50	1 – 20
Au	0.001 – 0.02	-
Cd	0.01 – 2.4	0.2 – 1
Co	1 - 40	10
Cr	5 – 1500	70 – 100
Cu	2 – 250	20 -30
Hg	0.01 – 0.3	0.03 – 0.06
Mn	20 – 10000	1000
Mo	0.2 – 5	1 – 2
Ni	2 – 1000	50
Pb	2 – 300	10 – 30 rural 30 – 100 urban
Sb	0.05 – 260	2
Sc	0.01 – 2	0.5
Sn	1 – 200	4
Ti	0.03 – 10	-
U	0.7 – 9	<2
V	3 – 500	90
W	0.5 – 83	1.5
Zn	10 - 300	50

From *Heavy Metals in Soil* (Alloway 1990)
Concentrations of heavy metals in soils (mg/kg)
Data from Bowen (1979) and Mathews (1984)

Additional guidance on the range of concentrations typically found in various soil types for four elements is found in the attached Table 7 from "EPA-Naturally Occurring Background Concentrations of Inorganic Elements in Surface Soils in the United States" (USEPA, 1995). A review of the USGS chemical analyses methods indicate they are comparable or equivalent to current USEPA methods, and therefore, relatively equivalent data.

The soil type corresponding to conditions at NAS Whiting Field is alluvial. The concentration range for Mn in alluvial soils is 150 to 1500 mg/kg with a mean of 405 mg/kg. Only three soil samples from NAS Whiting Field exceed the mean and the highest concentration of Mn in soil is 898 mg/kg, within the reported range and below the average Mn value. The average Mn detection for all soil samples for the facility is 52 mg/kg, well below the average. This data may indicate Mn found in NAS Whiting Field soil is within the naturally occurring range as illustrated in Table 6. The distribution of Mn is not depth-dependant and "hotspots" are not apparent.

Table 7

EPA-NATURALLY OCCURRING BACKGROUND CONCENTRATIONS OF INORGANIC ELEMENTS IN SURFACE SOILS IN THE UNITED STATES

SOIL TYPE	CHEMICAL(a)							
	Arsenic		Copper		Manganese		Lead	
	Range	Mean	Range	Mean	Range	Mean	Range	Mean
Sandy Soils And Lithosols On Sandstones	<0.1-30.0	5.1	1-70	14	7-2000	345	<10-70	17
Light Loamy Soils	0.4-31.0	7.3	3-70	25	50-1000	480	<10-50	20
Loess And Soils On Silt Deposits	1.9-16.0	6.6	7-100	25	50-1500	525	10-30	19
Clay And Clay Loamy Soils	1.7-27.0	7.7	7-70	29	50-2000	580	10-70	22
Alluvial Soils	2.1-22.0	8.2	5-50	27	150-1500	405	10-30	18
Soils Over Granites And Gneisses	0.7-15.0	3.6	7-70	24	150-1000	540	10-50	21
Soil Over Volcanic Rocks	2.1-11.0	5.9	10-150	41	300-3000	840	10-70	20
Soils Over Limestones And Calcareous Rocks	1.5-21.0	7.8	7-70	21	70-2000	470	10-50	22
Soils On Glacial Till And Drift	2.1-12.0	6.7	15-50	21(b)	200-700	475	1 0-30	17(b)
Light Desert Soils	1.2-18.0	6.4	5-100	24	150-1000	360	10-70	23
Silty Prairie Soils	2.0-12.0	5.6	10-50	20(b)	200-1000	430	10-30	21(b)
Chernozems And Dark Prairie Soils	1.9-23.0	8.8	10-70	27	100-2000	600	10-70	19
Organic Light Soils	<0.1-48.0	5.0	1-100	15	7-1500	260	10-50	24
Forest Soils	1.5-16.0	6.5	7-150	17(b)	150-1500	645	10-50	20(b)
Various Soils	<1.0-93.2	7.0	3-300	26	20-3000	490	<10-70	26

(a) In mg/kg

(b) Data For Whole Soil Profile

Table adapted from EPA 1995. *Determination Of Background Concentrations Of Inorganics In Soils And Sediments At Hazardous Waste Sites.* EPA/540/S-96/500. December 1995.

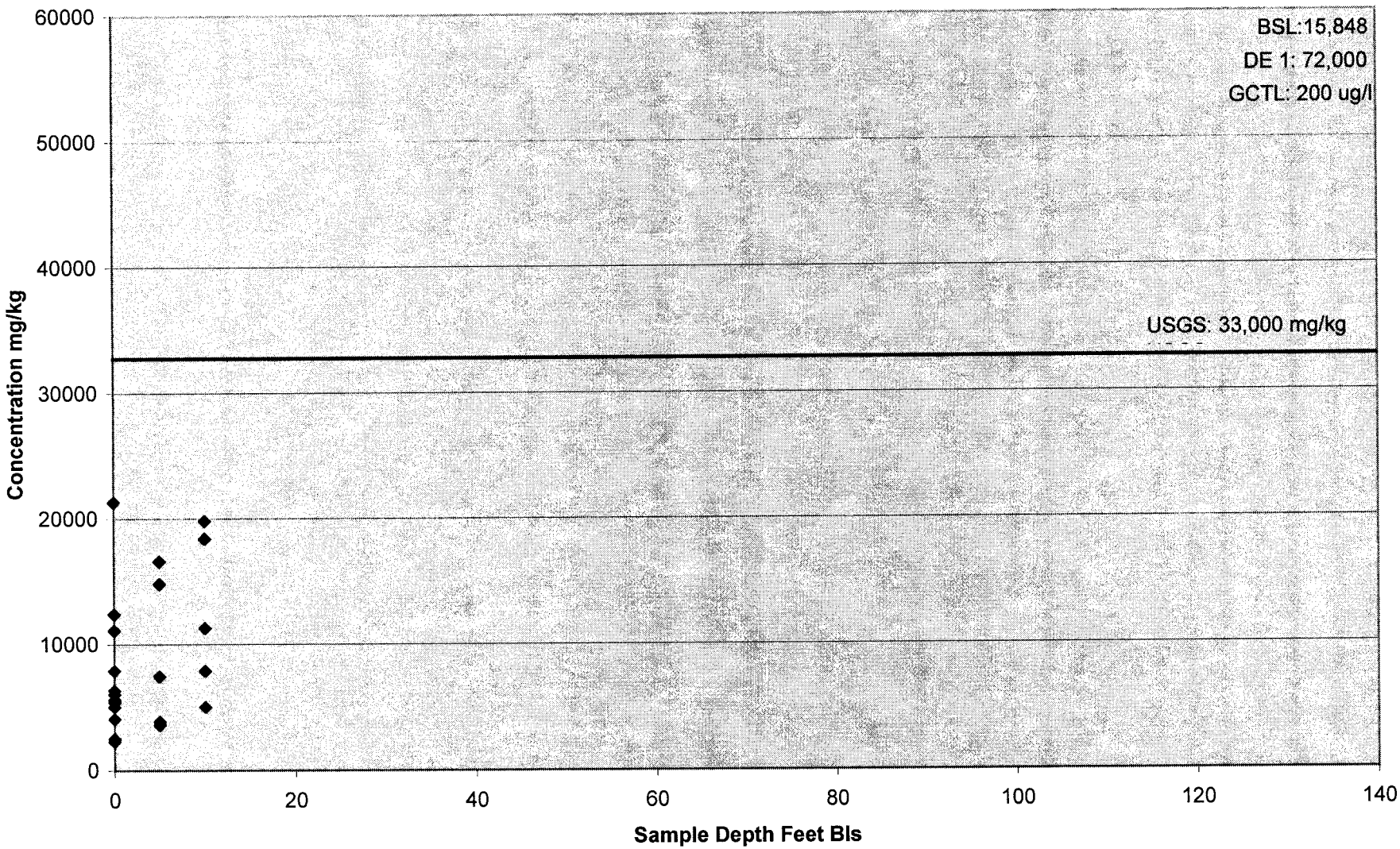
Vanadium

V values shown in Table 6 are within the range of V values found in soils at NAS Whiting Field. The highest V concentration detected at NAS Whiting Field was in a subsurface soil sample WHF-29-SB-05 at 513 mg/kg. This concentration slightly exceeds the 3 to 500 mg/kg range and the average concentration of 90 mg/kg; however, this is the highest detection of V and was collected from the 10 to 12 ft bls interval. The next highest detection was 77 mg/kg in sample WHF-03-SB-02 collected from the 5 to 7 ft bls interval, within the Table 6 range and below the average. The average V detection for all soil samples for the facility is 19 mg/kg.

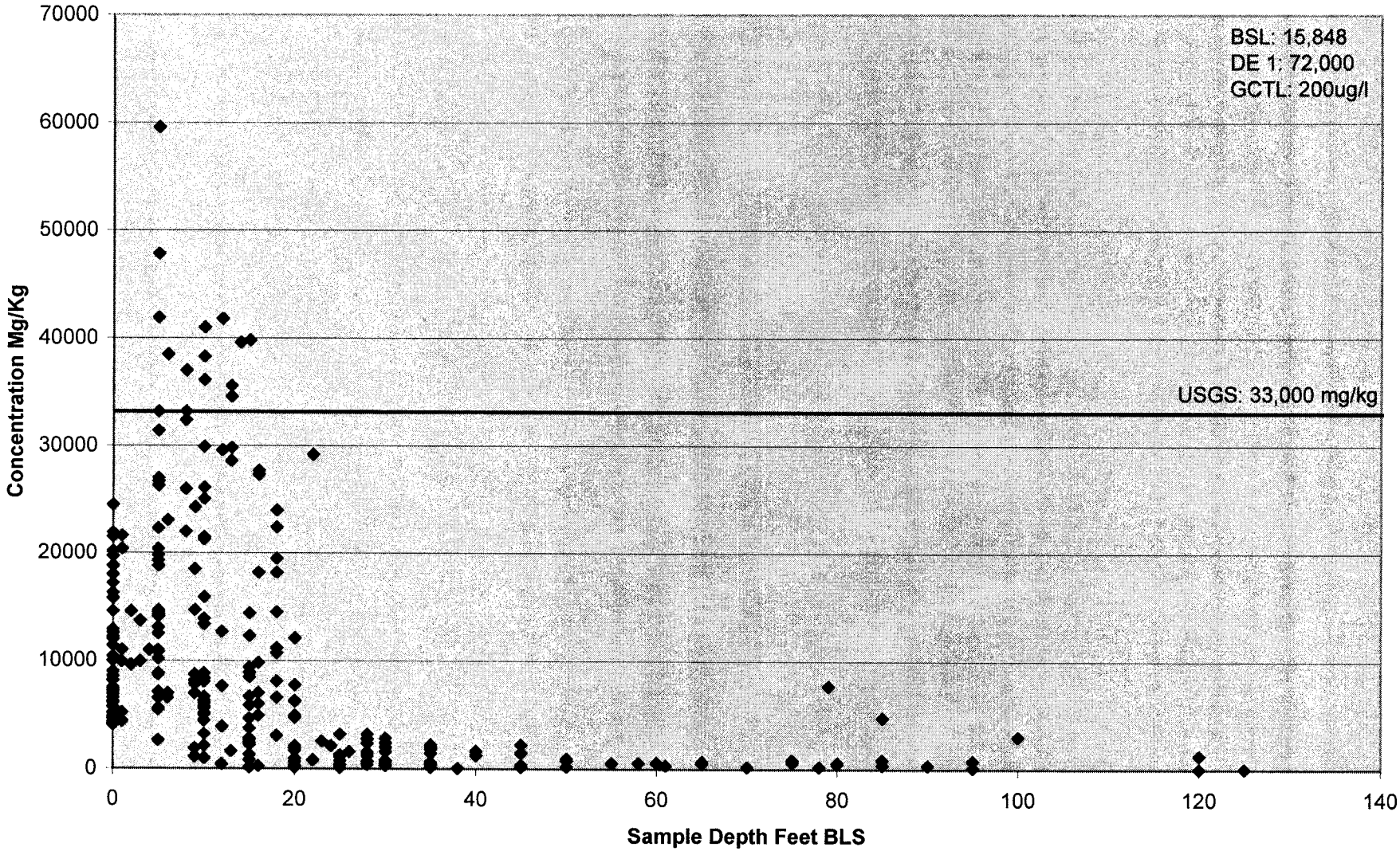
V is ubiquitous across the facility and the observed distributions are not depth-dependant. "Hotspots" are not evident. The argument V is present in soil as a product of V use in high tech engine parts, such as chrome-V steel, is unlikely. When used in steel as a strengthener V is typically at 0.01 percent by weight. This would not be a significant source for V in the facility's soil.

The observance of Al, Fe, Mn, and V indicate the elements are: ubiquitous in NAS Whiting Field soils, generally fall within regional values, and appear evenly distributed without obvious "hotspots". These observations are consistent with naturally occurring conditions for these inorganics.

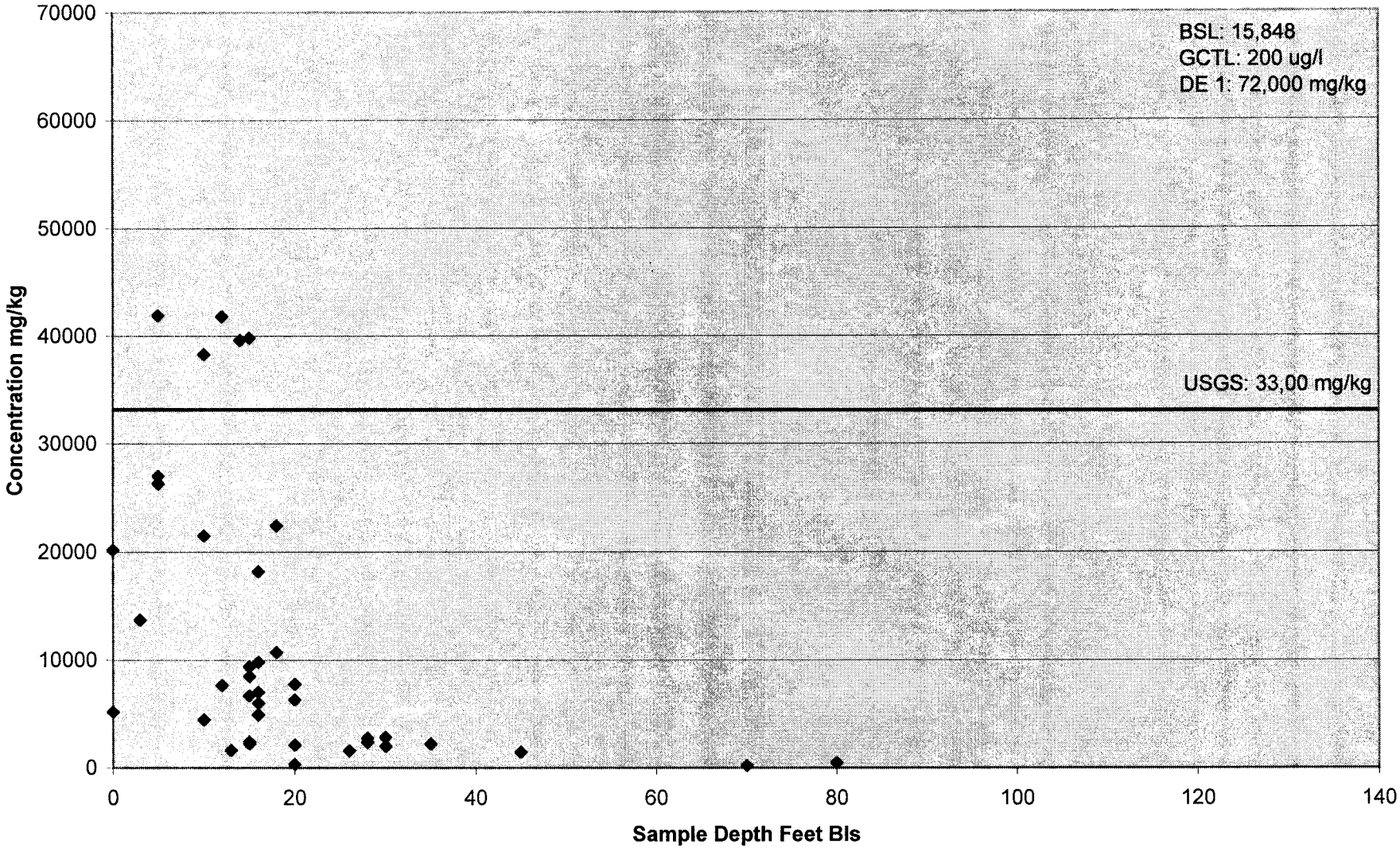
Soil 1: Aluminum Background



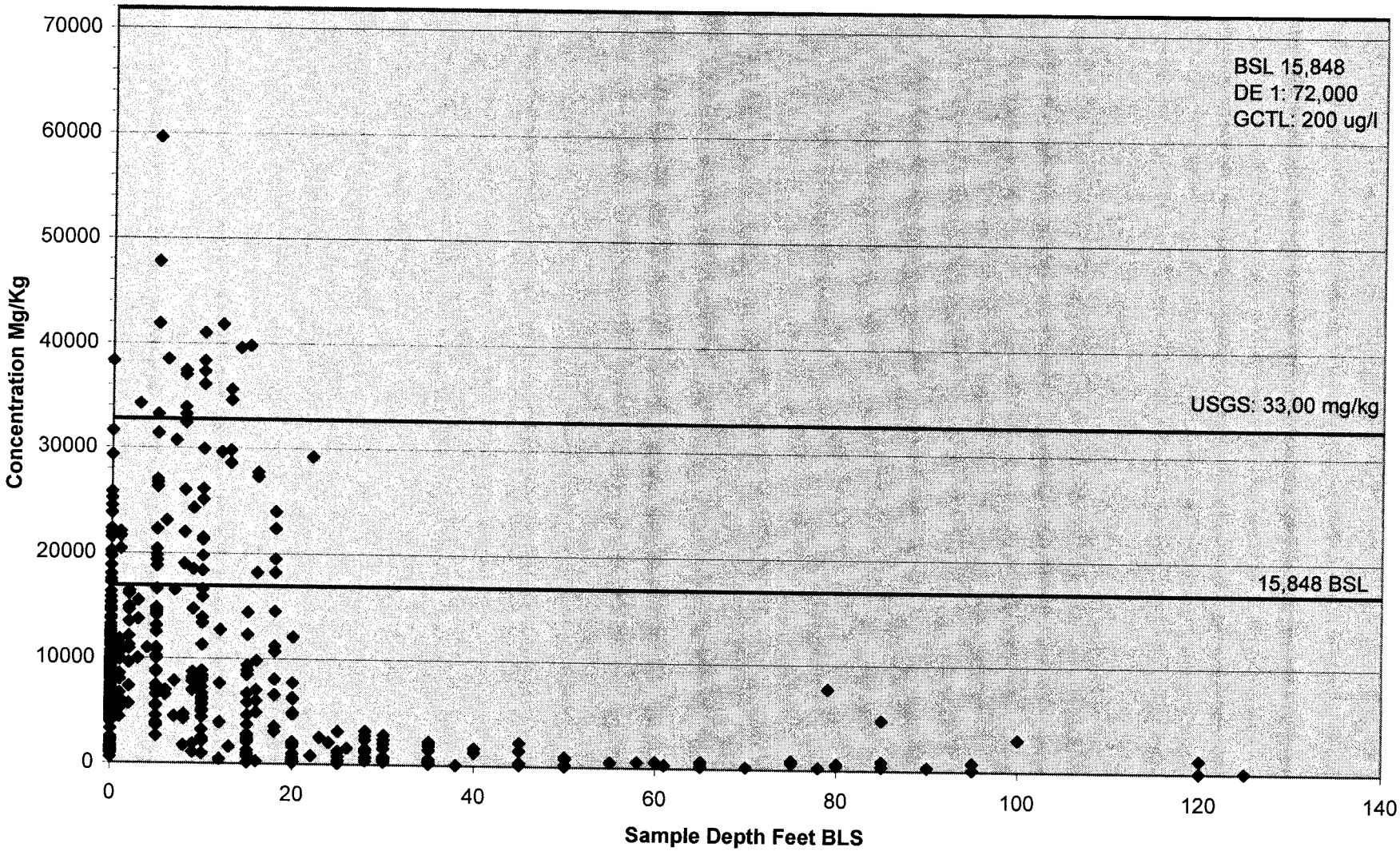
Soil 2: Aluminum Specific Sites



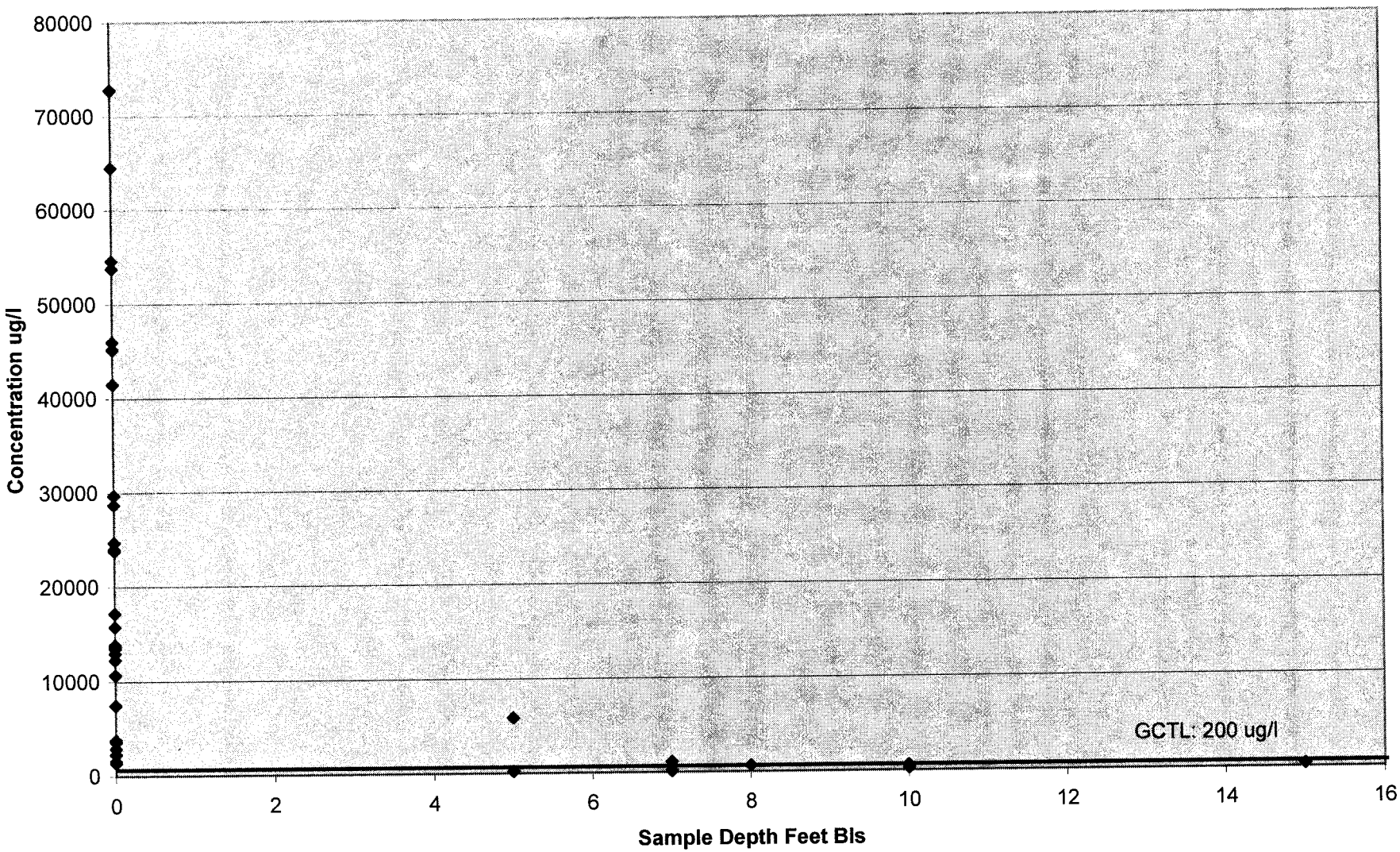
Soil 3: Aluminum Detected in Clean Samples



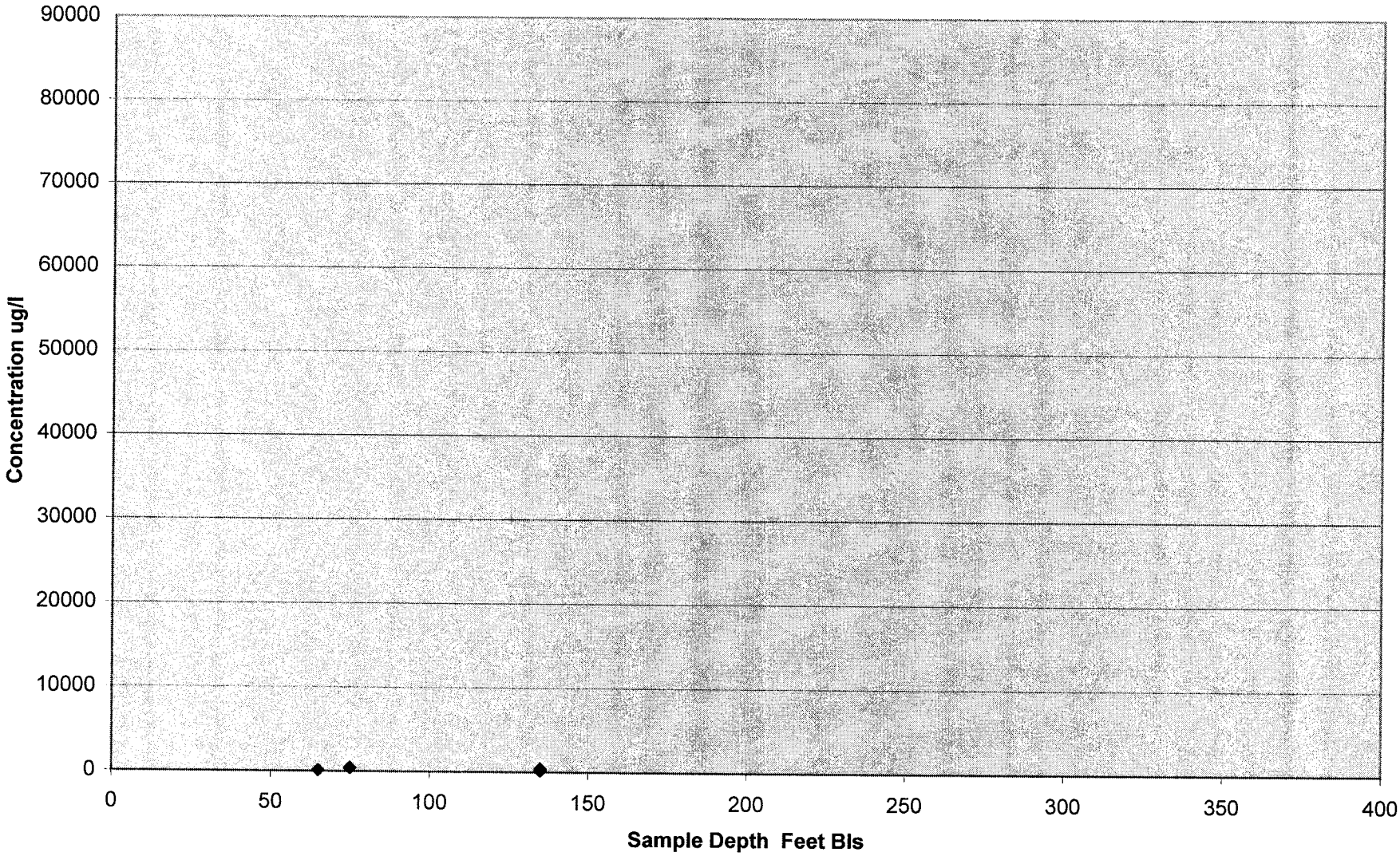
Soil 4: Basewide Aluminum



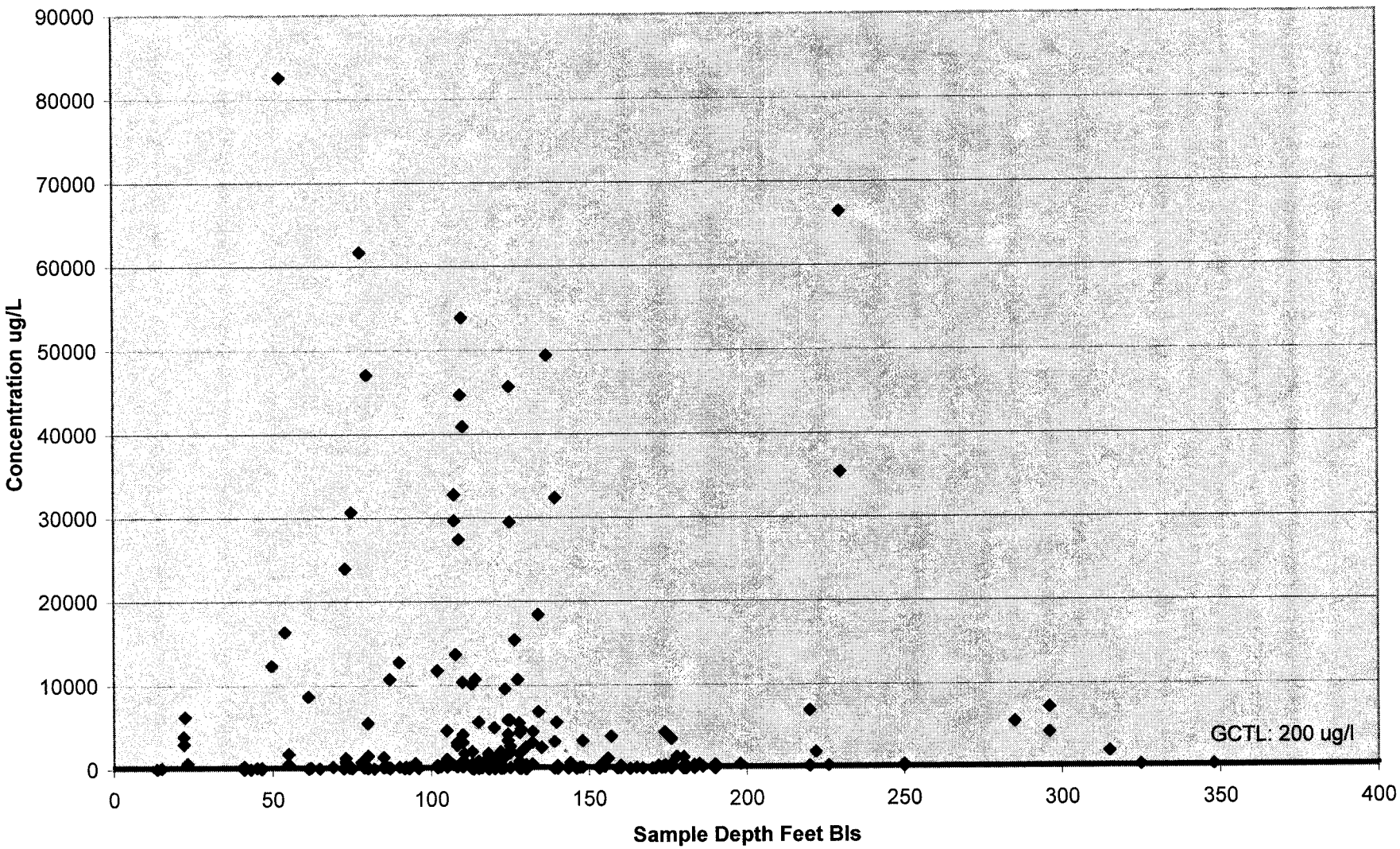
Leachate 1: Aluminum



Groundwater 1: Aluminum in Background Groundwater



Groundwater 2: Aluminum in Groundwater Basewide



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APPENDIX A

BORING LOGS

TETRA TECH NUS, INC.
1401 Oven Park Drive • Suite 102 • Tallahassee, FL 32312
(850) 385-9899 • FAX (850) 385-9860 • www.tetratech.com

Monitoring Well No.	WHF-15-MW-8D3
Project No.:	N0052
Facility: NAS Whiting Field	Site No.: 15
Contractor: Kelly Environmental Drilling	Date Started: 6/18/00
Logged By: Gary Davis	Method: Mud-Rotary
Well Development Date: 7/28/00	Total Depth (ft bls): 130'
Protection Level: D / Monitor Instru.: FID	Depth to Water (ft bls): 44.56'
Casing Diam. (in): NA / TOC Elev.: 78.38'	Screened Interval: 120'-130'
Riser Diam. (in) 4"	Page 1 of 2

Depth (ft)	Well Column	Lithologic Symbol	Lithologic Description	USCS	Recovery	FID (ppm) Borehole	FID (ppm) Sample
0			CLAYEY SAND: Reddish brown silty clayey sand, fine- to medium grained, loose to medium dense, sub-rounded to sub-angular, ~20-30%	SC		NA	NA
10							
20							
30							
40							
50							
60			SAND: Light brown fine- to medium-grained sand, some gravel, some clay lenses	SW			
70							
80							

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Monitoring Well No. WHF-15-MW-8D3

Project No.: N0052

Depth (ft)	Well Column	Lithologic Symbol		USCS	Recovery	FID Borehole	FID Sample
-80							
-90							
-100			SILTY SAND: Light brown fine- to medium-grained silty sand w/ occasional streak of silty sandy clay	SM			
-110							
-120					24"/ 24"		
-130			FERRUGINOUS CEMENTED SANDSTONE: Dark reddish brown ferruginous cemented sand, very hard, iron concretion, or hard pan iron-cemented sandstone	CL			
			CLAY: Dark gray plastic clay with trace muscovite				

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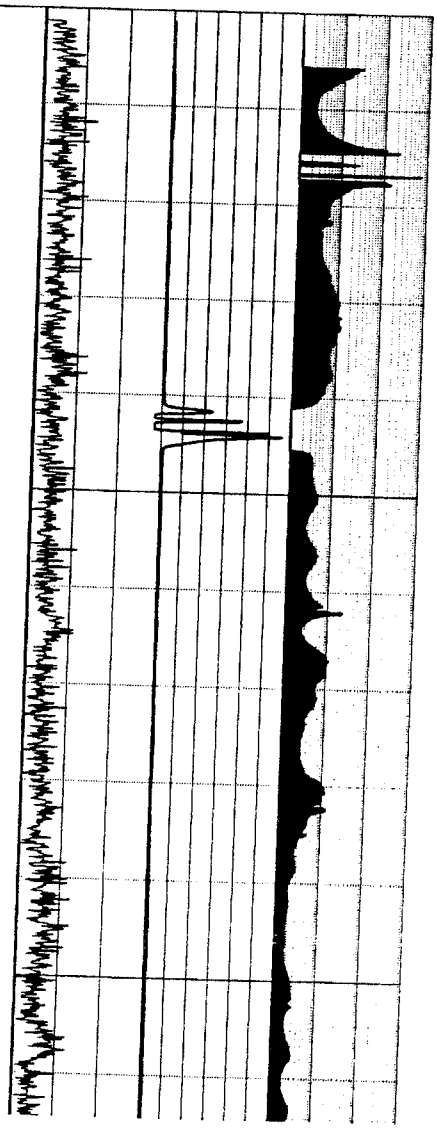
Monitoring Well No. WHF-1466-B25D4	
Project No.: N0052	
Facility: NAS Whiting Field	Site No.: 1466
Contractor: Kelly Environmental Drilling	Date Started: 6/28/00
Logged By: Garry Davis	Method: Mud-Rotary
Well Development Date: No Well Installed	Total Depth (ft bls): 338
Protection Level: D / Monitor Instru.: FID	Depth to Water (ft bls): NA
Casing Diam. (in): 8 / TOC Elev.: ~ 135	Screened Interval: not screened
Riser Diam. (in) 4	Page 1 of 3

Depth (ft)	Well Column	Lithologic Symbol	USCS	Site Map / Lithologic Description	Natural Gamma 0 150	Conductivity -500 -7,000	Resistivity 1.0 10,000
0			SC	SILTY CLAYEY SAND: 20 to 30% Silty Clay, Fine to Coarse quartz grains with lithic and feldspathic fragments and/or pea gravel, ocher grading to light grey			
10							
20							
30							
40							
50			SC				
60							
70							
80							
90							
100							
110			SC				



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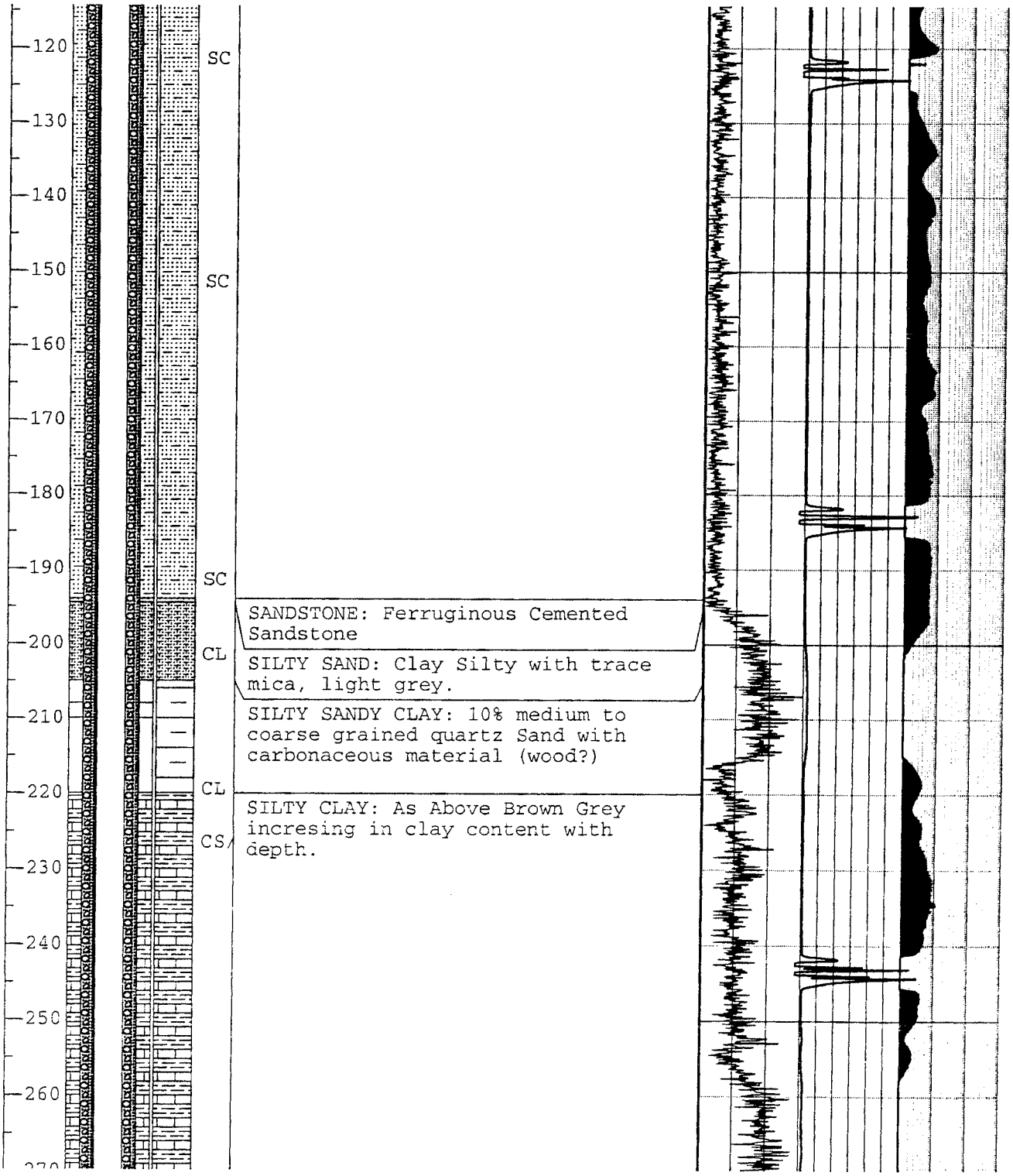
Monitoring Well No. WHF-1466-B25D4

Project No.: N0052

Depth (ft)	Well Column	Lithologic Symbol	USCS	Site Map / Lithologic Description	Natural Gamma 0 150	Conductivity -50 5,000	Resistivity 10 10,000



SANDSTONE: Ferruginous Cemented Sandstone

SILTY SAND: Clay Silty with trace mica, light grey.

SILTY SANDY CLAY: 10% medium to coarse grained quartz Sand with carbonaceous material (wood?)

SILTY CLAY: As Above Brown Grey incresing in clay content with depth.

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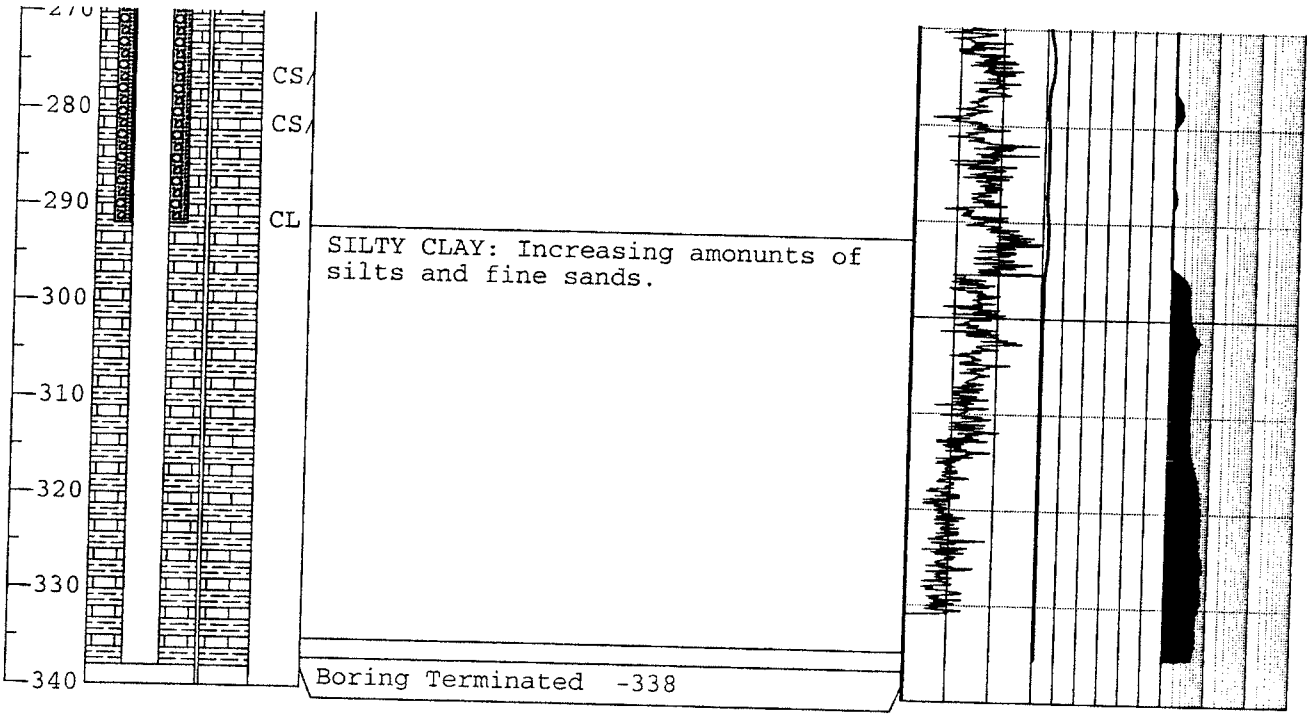
Monitoring Well No. WHF-1466-B25D4

Project No.: N0052

Depth (ft)	Well Column	Lithologic Symbol	USCS	Site Map / Lithologic Description	Natural Gamma 0 – 150	Conductivity -50 – 5,000	Resistivity 10 – 10,000



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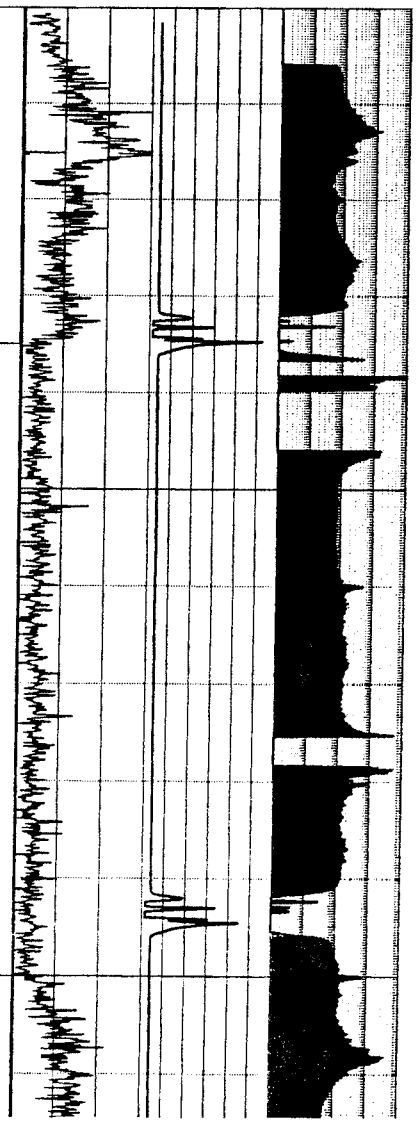
Monitoring Well No.	WHF-1467-MW-14D3
Project No.: N0052	
Facility: NAS Whiting Field	Site No.: 1467
Contractor: Kelly Environmental Drilling	Date Started: 8/16/00
Logged By: Louis Knight/Bill Olson	Method: Mud-Rotary
Well Development Date: 10/27/00	Total Depth (ft bls): 255'
Protection Level: D / Monitor Instru.: FID	Depth to Water (ft bls): 93'
Casing Diam. (in): 8 / TOC Elev.: 180	Screened Interval: 235' to 250'
Riser Diam. (in) 4	Page 1 of 2

Depth (ft)	Well Column	Lithologic Symbol	USCS	Site Map / Lithologic Description	Natural Gamma 0 150	Conductivity -500 -7,000	Resistivity 1.0 10,000
0			SC	SILTY CLAYEY SAND: Fine to medium grain sand in various percentages in silty clay ocher to white.			
10							
			SC/CL				
20							
30							
40			SP	SAND: Fine to medium grained ocher to pink to white.			
50							
60							
70							
80							
90							
			SP				
100				CLAYEY SAND: Fine to medium grain sand in various percentages in silty clay ocher to white.			
			CL				
110							



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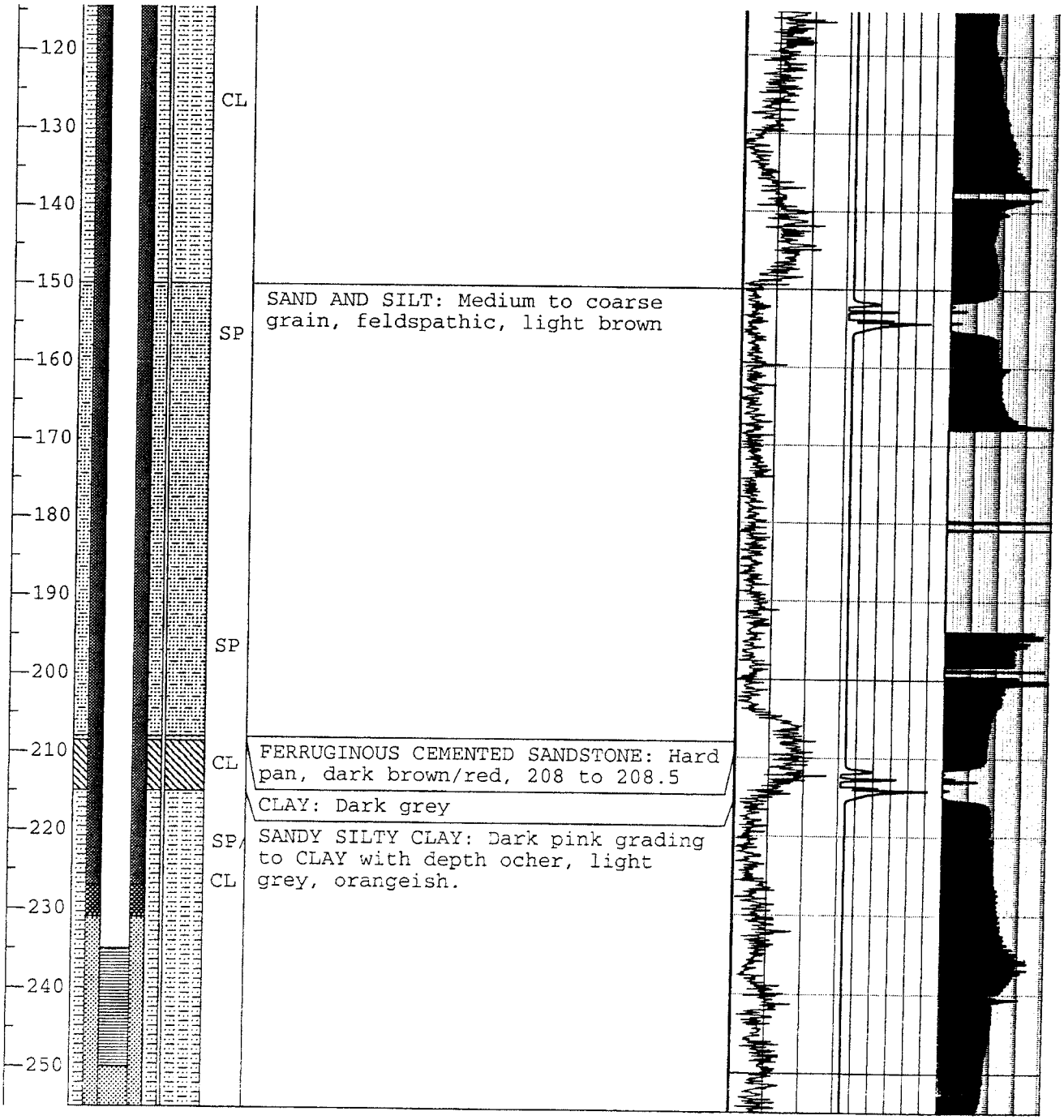
Monitoring Well No. WHF-1467-MW-14D3

Project No.: N0052

Depth (ft)	Well Column	Lithologic Symbol	USCS	Site Map / Lithologic Description	Natural Gamma (0 – 150)	Conductivity (-500 – 7,000)	Resistivity (1.0 – 10,000)



APPENDIX B

SOIL CHART SERIES Al, Fe, Mn, AND V

Soil Chart Series Al, Fe, Mn, and V

A review of available Fe, Mn, and V data is presented in a graphical form in the following chart series. Charted Al data is presented in the body of the report. The data is from the current comprehensive NAS Whiting Field EGIS's database except where noted. Relevant reference information has been provided for comparison.

Soil 1: Soil Background; Figures Soil 1 Series

The Soil 1 series shows concentrations of Al, Fe, Mn, and V detected in eleven background soil samples collected on the surface, and at 5 and 10 foot intervals below land surface (bls).

Soil 2: Soil from Selected Non-Landfill Sites; Figures Soil 2 Series

The Soil 2 series shows concentrations of Al, Fe, Mn, and V detected in soil samples from sites where activities and process would not contribute these inorganics to soil. These Sites are: 3, 4, 6, 7, 29, 30, 32, 33, 35 and 38.

Interpretation: The majority of soil analytical results are collected from the 0 to 20 foot depth interval, however, the samples collected below 20 feet also show exceedences. All Al detections exceeding the background screening level are in the 0 to 20 foot zone. Only Fe exceeds DE 1 above 20 ft bls.

Soil 3: Select Basewide Soil; Figures Soil 3 Series

The Soil 3 series shows concentrations of Al, Fe, Mn, and V detected in soil samples basewide from sample locations where no VOCs, SVOCs, pesticides or TRPH were detected in association with the inorganic detections.

Soil 4: Basewide Soil; Figures Soil 4 Series

The Soil 4 series shows concentrations from all sites of Al, Fe, Mn, and V detected in soil samples basewide. DE 1, DE 2, and the back ground screening levels are shown as values and heavy lines for reference. The GCTL is noted.

Interpretation: The majority of soil analytical results are collected from the 0 to 20 foot depth interval, however, the samples collected below 20 feet also show exceedences. All Al detections exceeding the background screening level are in the 0 to 20 foot zone. Only Fe exceeds DE 1 above 20 ft bls.

Interpretation: Again the majority of soil samples have been collected from the 0 to 20 foot depth interval. The pattern in the Case 3 plot is very nearly a replication of the plot of all samples – Case2 - albeit with fewer samples plotted due to the smaller selected population. The similarity of these patterns

would indicate there is no site specific impact on near surface soils at the facility but rather there is a ubiquitous distribution of these elements. Forty percent of the aluminum detected in soil unassociated with non-inorganic contaminants exceeds the background screening level (bls).

Conclusion: The distribution of inorganics in the charts is similar in each selected set with the exception of density of population. The select set from site where no activities or processes would be thought to cause contamination matches the sample set selected where no other organic contaminants are present. Both of these sets match the basewide all inclusive set.

Leachate 1: **Basewide SPLP and TCLP Leachate; Figures Leachate 1 Series**

The leachate 1 series shows concentrations of Al, Fe, Mn, and V detected in leachate from all basewide soil SPLP and TCLP leachate samples. The chart shows the majority of soil samples have been collected from the 0 to 1 foot depth interval. The pattern in the chart shows all elevated leachate detections are confined to surface samples. A horizontal bar indicating the GCTL on the Al figure is noted showing most soil samples are leaching Al in exceedance of GCTLs.

Interpretation: The highest leachate values are found in the 0 to 1 foot bls surficial soils. This results in high concentrations of elements in leachate infiltrating to the groundwater. Removal of surface soils basewide to 1 bls would eliminate most if not all inorganic leaching to groundwater. Note the X-axis maximum value is 16 feet bls for this data set.

The few examples are provided below illustrate the relationship of inorganics detection in surface soils with accompanying SPLP and TCLP leachate exceedences coupled with groundwater concentrations exceeding GCTLs from monitoring wells located hydraulically downgradient of the location of the surface soil exceedences.

Surface Soils	**Leachate (SPLP & TCLP)**	**Groundwater**
WHF-38-SS-01 through 10		
Aluminum (range) 3,600 to 46,000 mg/kg	4,820 to 8,140 ug/l	821 to 11,800 ug/l
Iron (range) 1,900 to 22,500 mg/kg	2,960 to 5,250 ug/l	607 to 32,400 ug/l
WHF-29-SS-1 through 6		
Aluminum (range) 13,700 to 29,700	6,910 to 17,200	3,320 to 49,400
Iron (range) 6,900 to 13,000	4,880 to 12,000	4,130 to 104,000

Groundwater 1: **Groundwater Background; Figures Groundwater 1 Series**

These charts present concentrations of Al, Fe, Mn, and V detected in seven background groundwater samples collected in the surficial aquifer, at various intervals bls as shown on the X-axis. Samples obtained in 1993 were collected using bailers, a process typically causing high sample turbidity typically resulting in falsely elevated inorganic concentrations. Therefore, these samples were not included in the dataset. Note all X-axis have a maximum value of 400 feet bls.

Groundwater 2: **Basewide Groundwater; Figures Groundwater 2 Series**

These charts present concentrations of Al, Fe, Mn, and V detected in groundwater samples basewide - all sites and/or monitoring wells with no exceptions, all available data is presented. The GCTLs values are noted with heavy lines for reference.

Interpretation: The majority of the high concentrations detections are clustered around the 80 to 150 foot interval with a string of higher concentrations at the 110 to 130 foot interval both corresponding to the shallow surficial aquifer. A second string of high detections corresponds with the screened interval at approximately 225 feet bls where wells were installed to monitor the bottom of the surficial aquifer or the top of the Pensacola Clay typically found around 230 to 240 feet bls.

It should be noted the patterns are biased by screened interval locations. Aside from this restriction, the concentrations are balanced in distribution relative to elevation. The minor cluster pattern found in the deep aquifer (225 feet bls) is the result of increase concentrations of Al, Fe, and Mg just above the Pensacola Clay. This corresponds to the zone where iron cementation has historically occurred and likely occurs now.

The Site 40 report describes lateral distribution of iron exceedences in shallow groundwater in relation to exceedences of trichloroethene and BETX concentrations. The presence of elevated levels of dissolved iron in these defined plumes in the north and south field area are the result of natural attenuation processes. These levels will return to normal background levels after natural attenuation processes are complete.

The GCTL is exceeded in almost all instances of Al, Fe, Mg, and V detections.

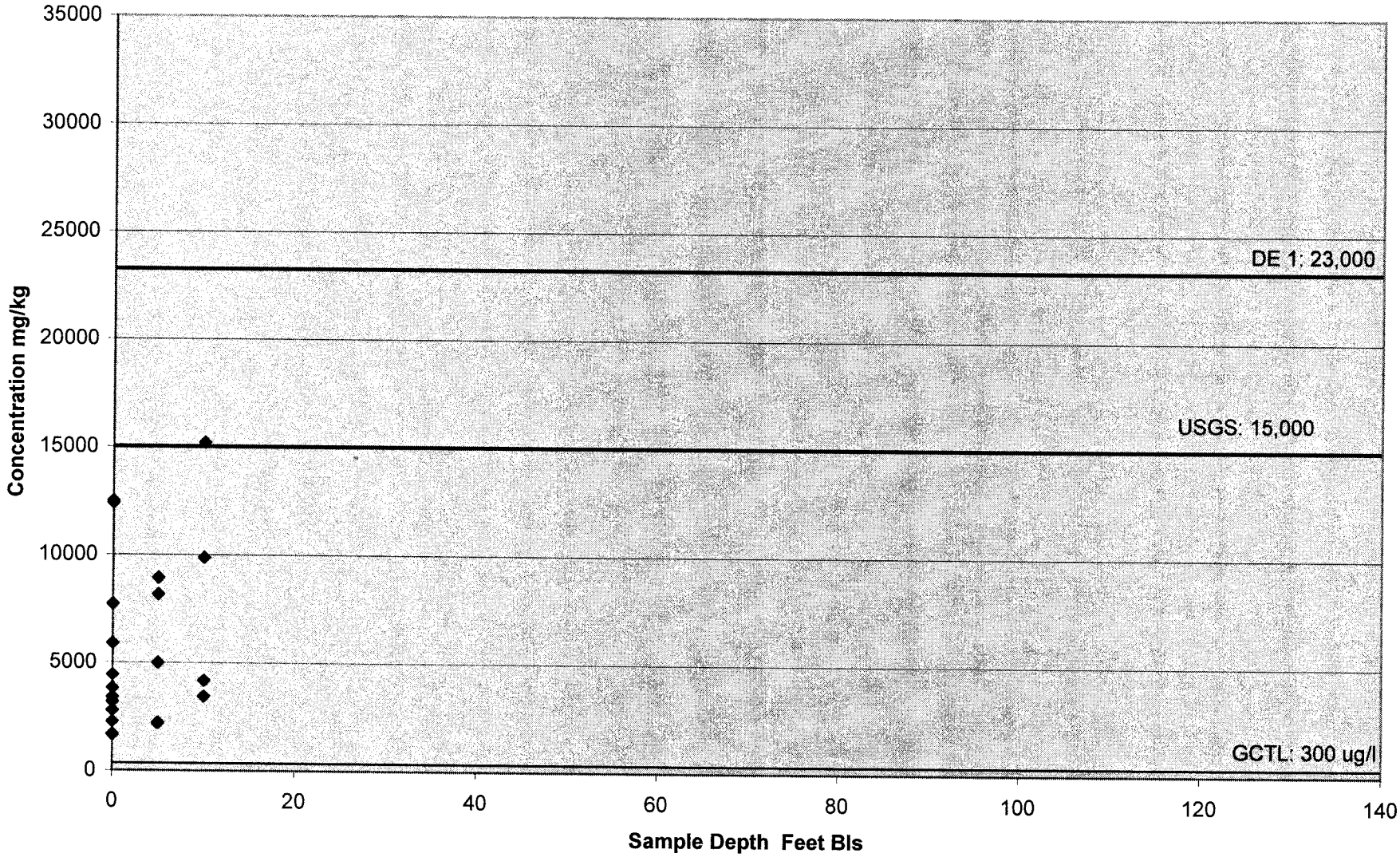
Summary

In summary, Al, Fe, Mn, and V are evenly distributed in facility soils typically below generally accepted regional values. Hot spots where anthropogenic effects should be apparent they are not found.

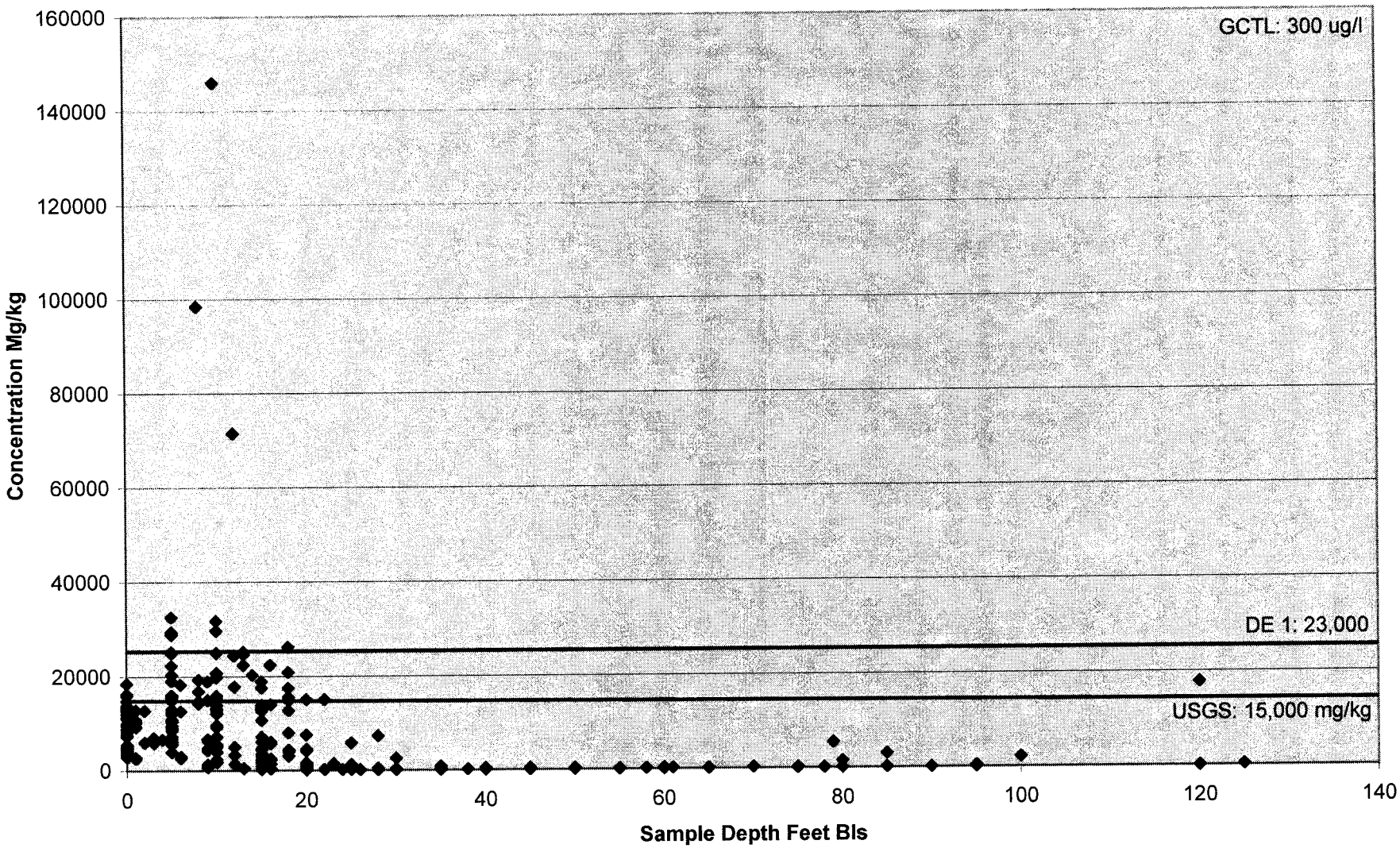
Leaching of Al, Fe, Mn, and V from soils at greater than GCTLs is apparent. However, as stated previously these elements are not found in hot spots but are rather evenly distributed. There is no background leachate data available, but leachate data from many sites was collected from non-disturbed locations and is "background equivalent".

Al, Fe, Mn, and V are evenly distributed in facility groundwater except where Fe is impacted by organic contaminants in the north and south plume areas. These elements are detected in groundwater at typical concentrations due to leaching and natural processes.

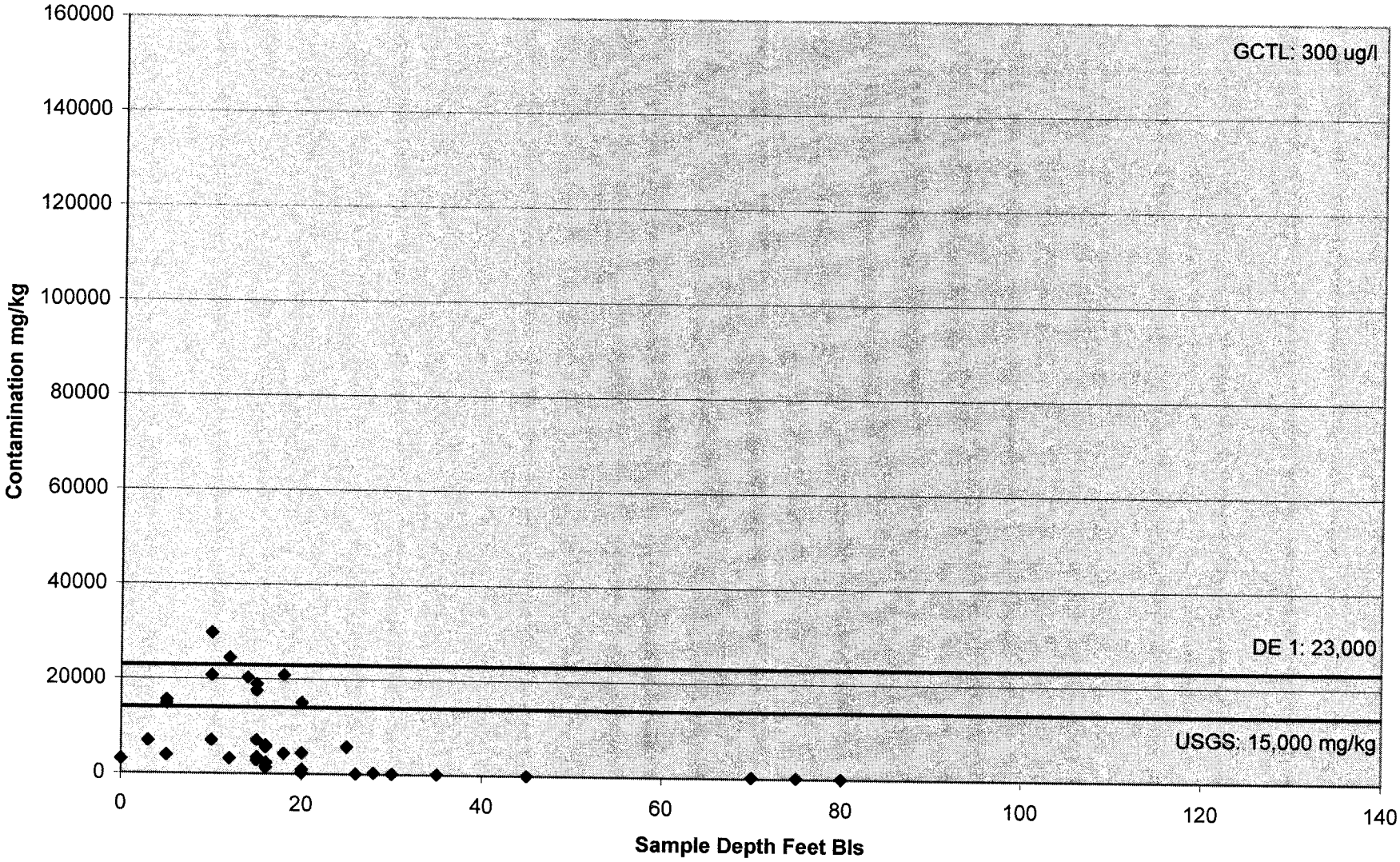
Soil 1: Iron Background



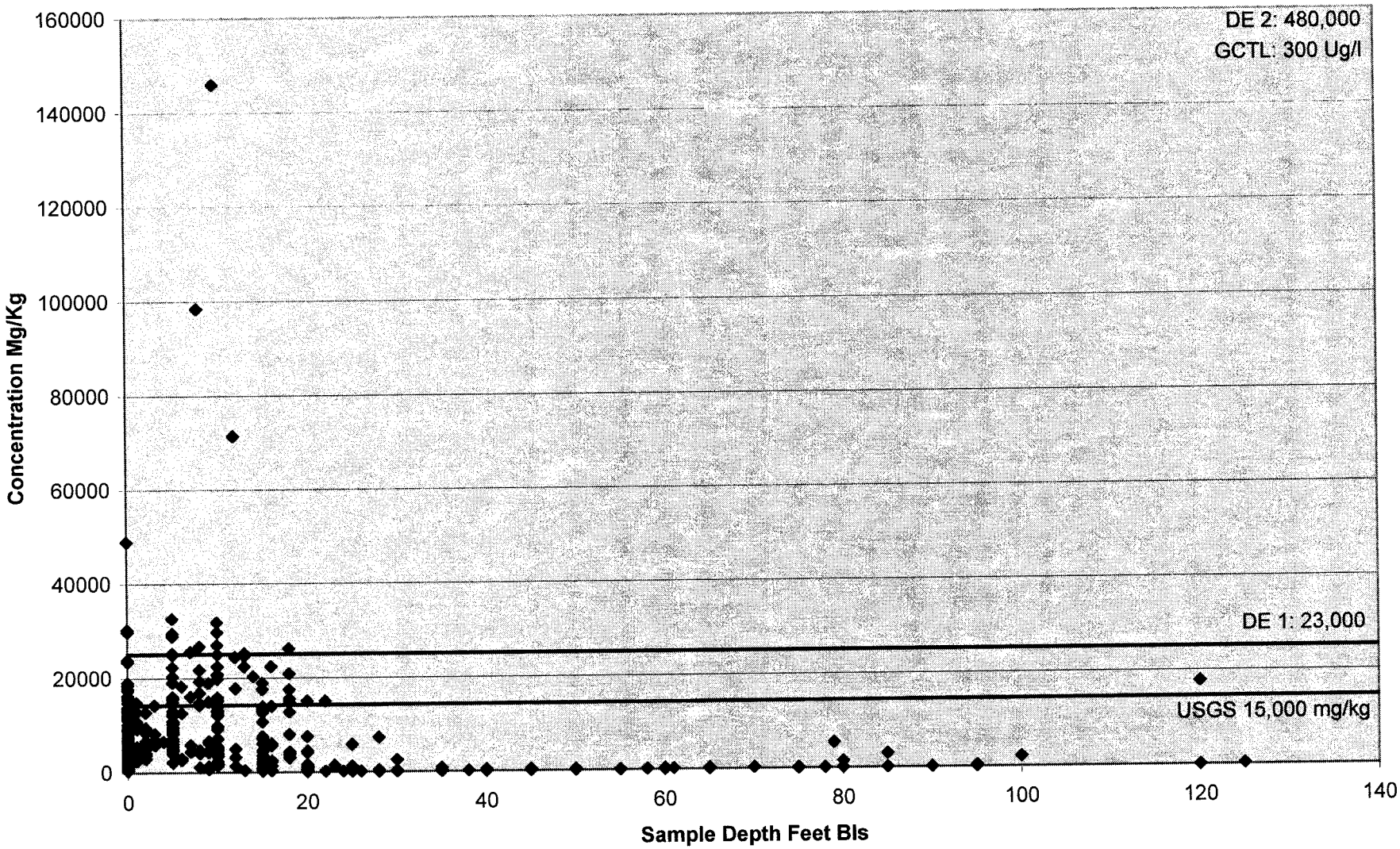
Soil 2: Iron Specific Sites

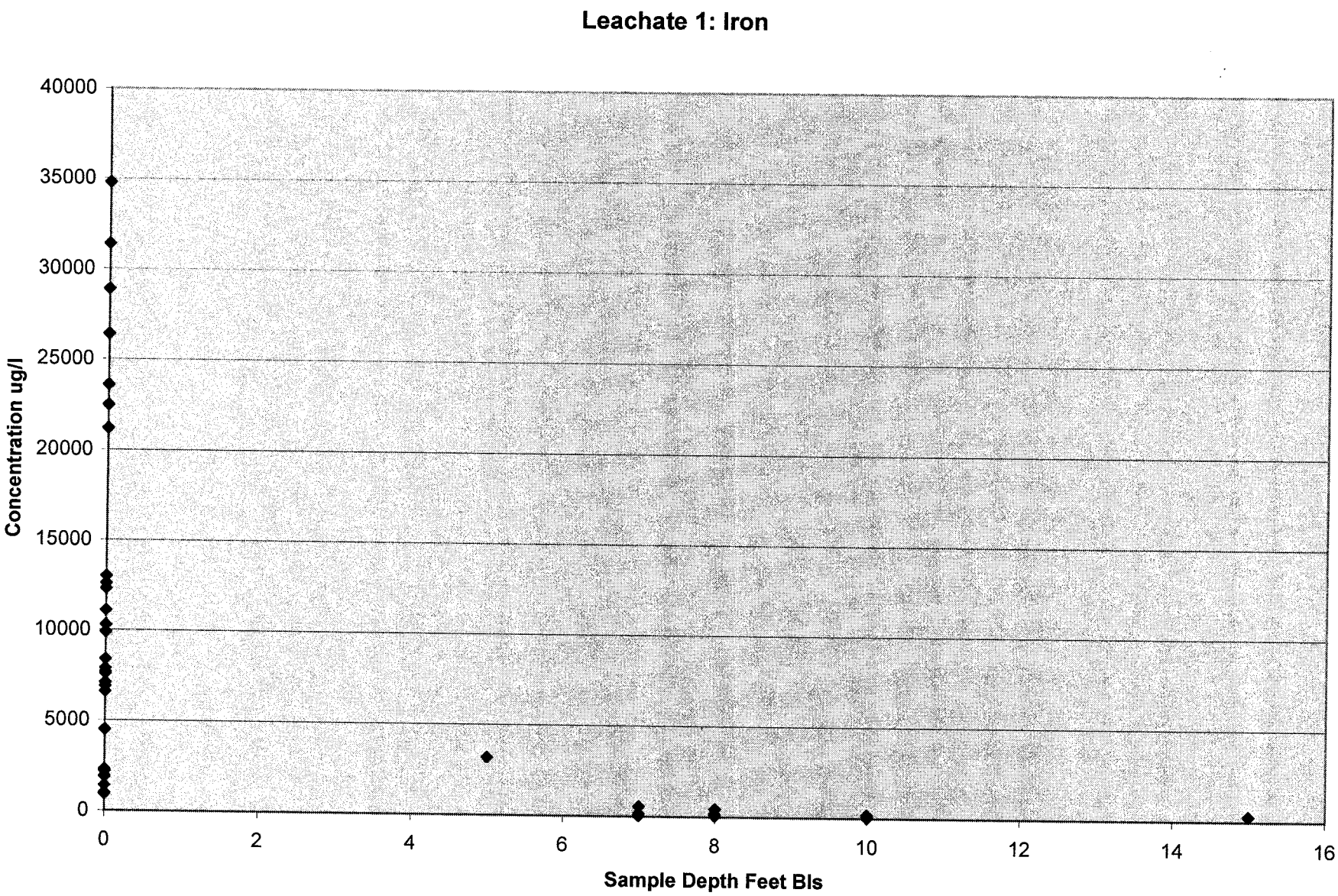


Soil 3: Iron Detected in Clean Samples

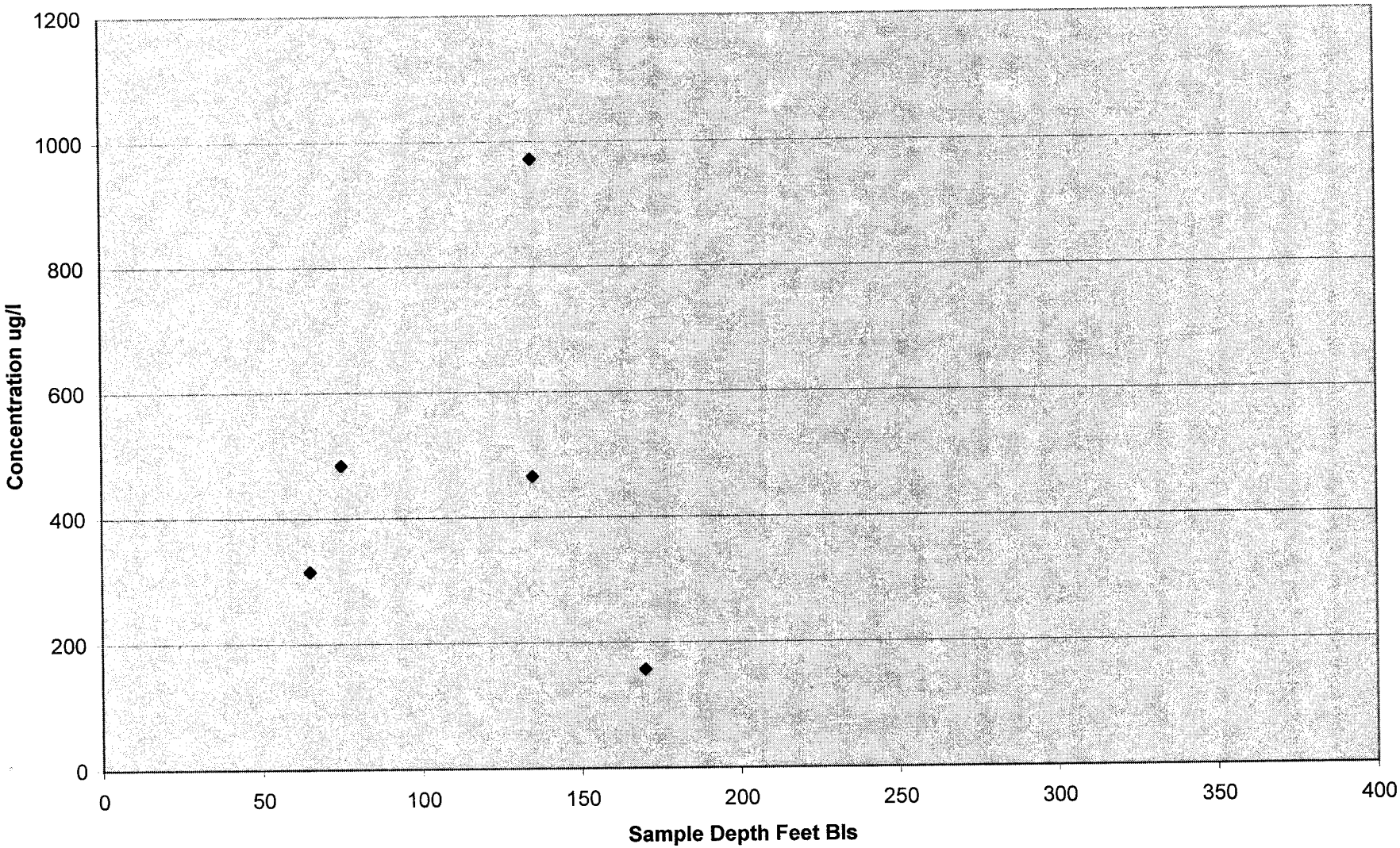


Soil 4: Basewide Iron

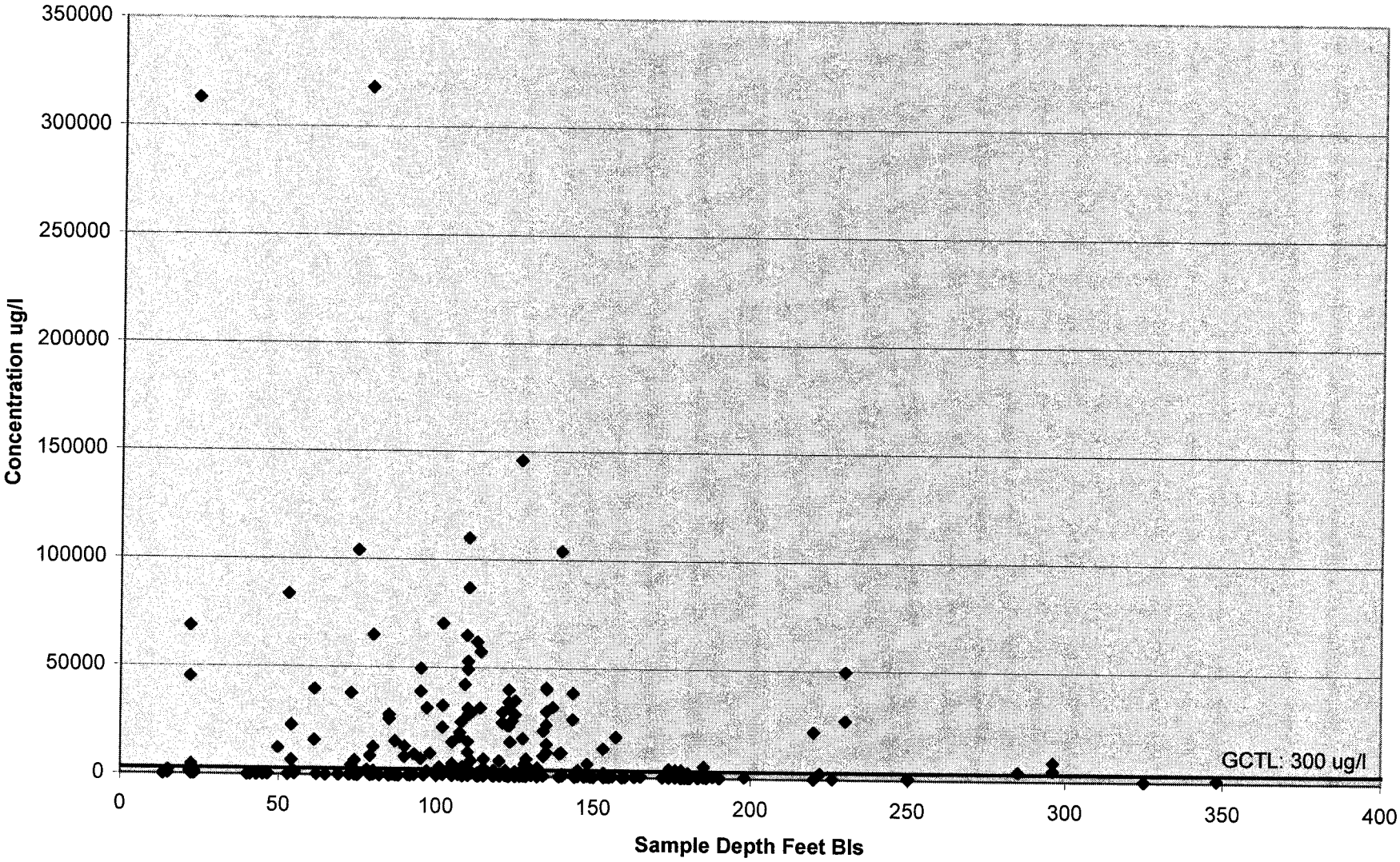



Leachate 1: Iron
Concentration ug/l
40000
35000
30000
25000
20000
15000
10000
5000
0
0
2
4
6
8
10
12
14
16
Sample Depth Feet Bls

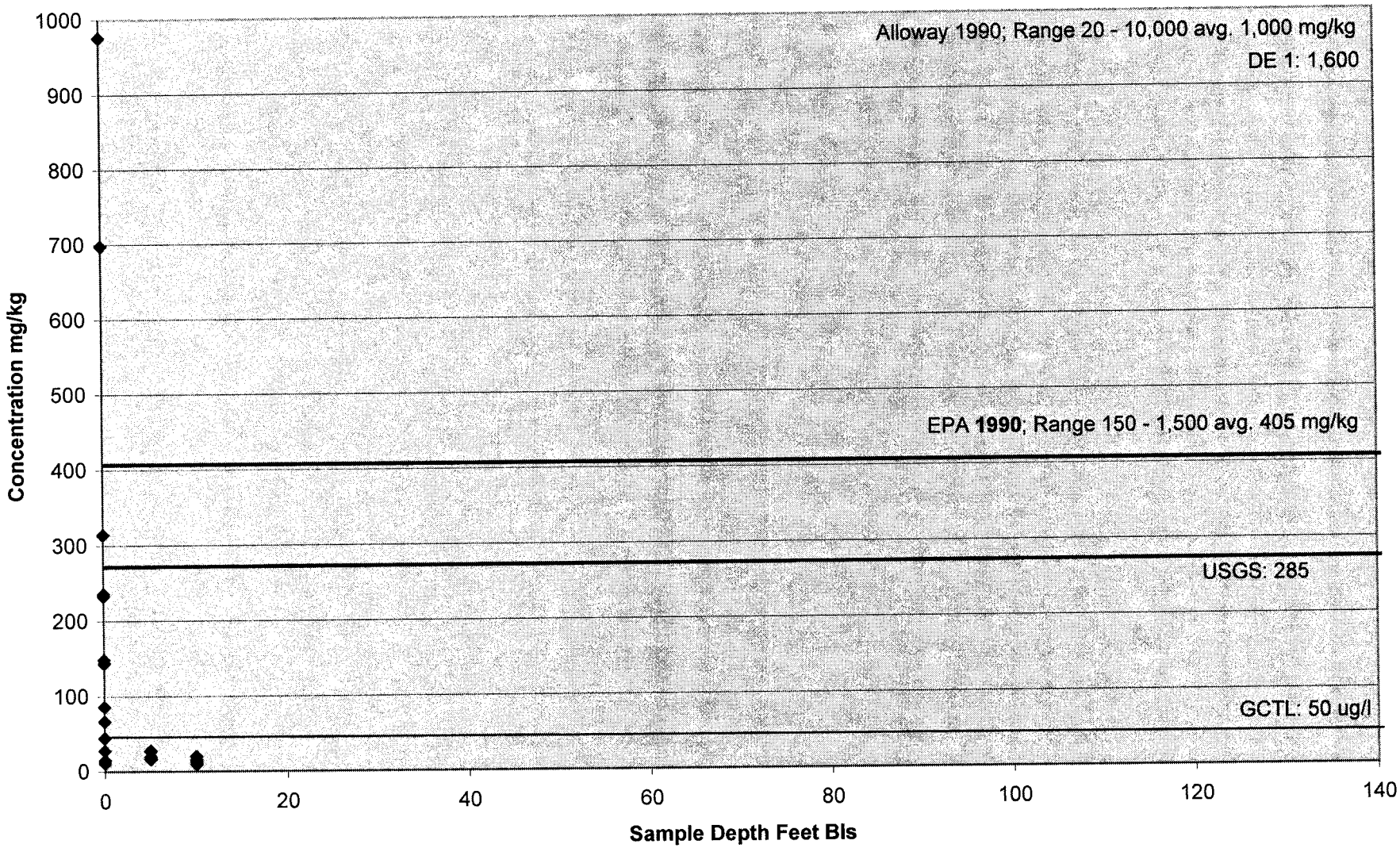
Groundwater 1: Iron in Background Groundwater



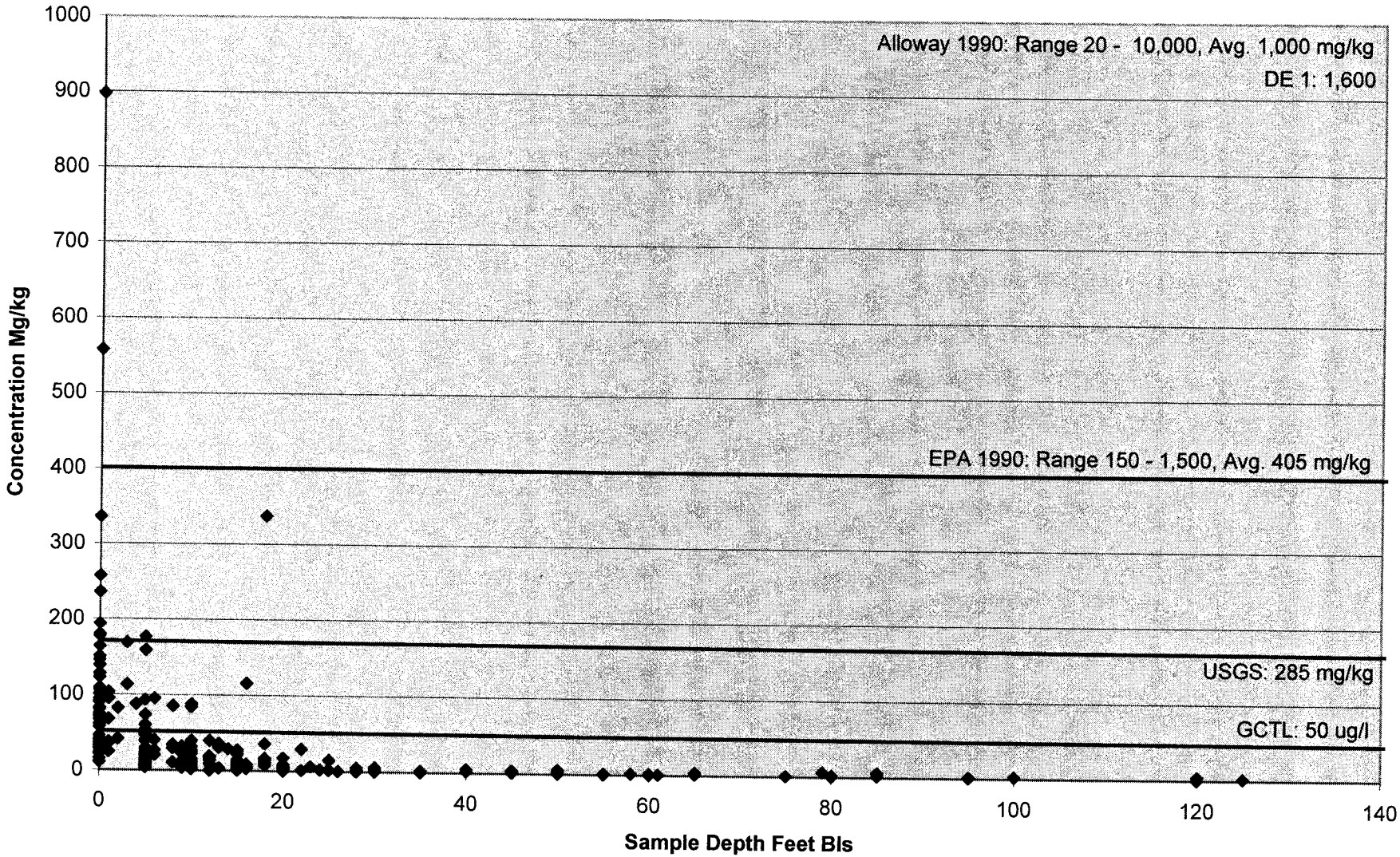
Groundwater 2: Iron in Groundwater Basewide



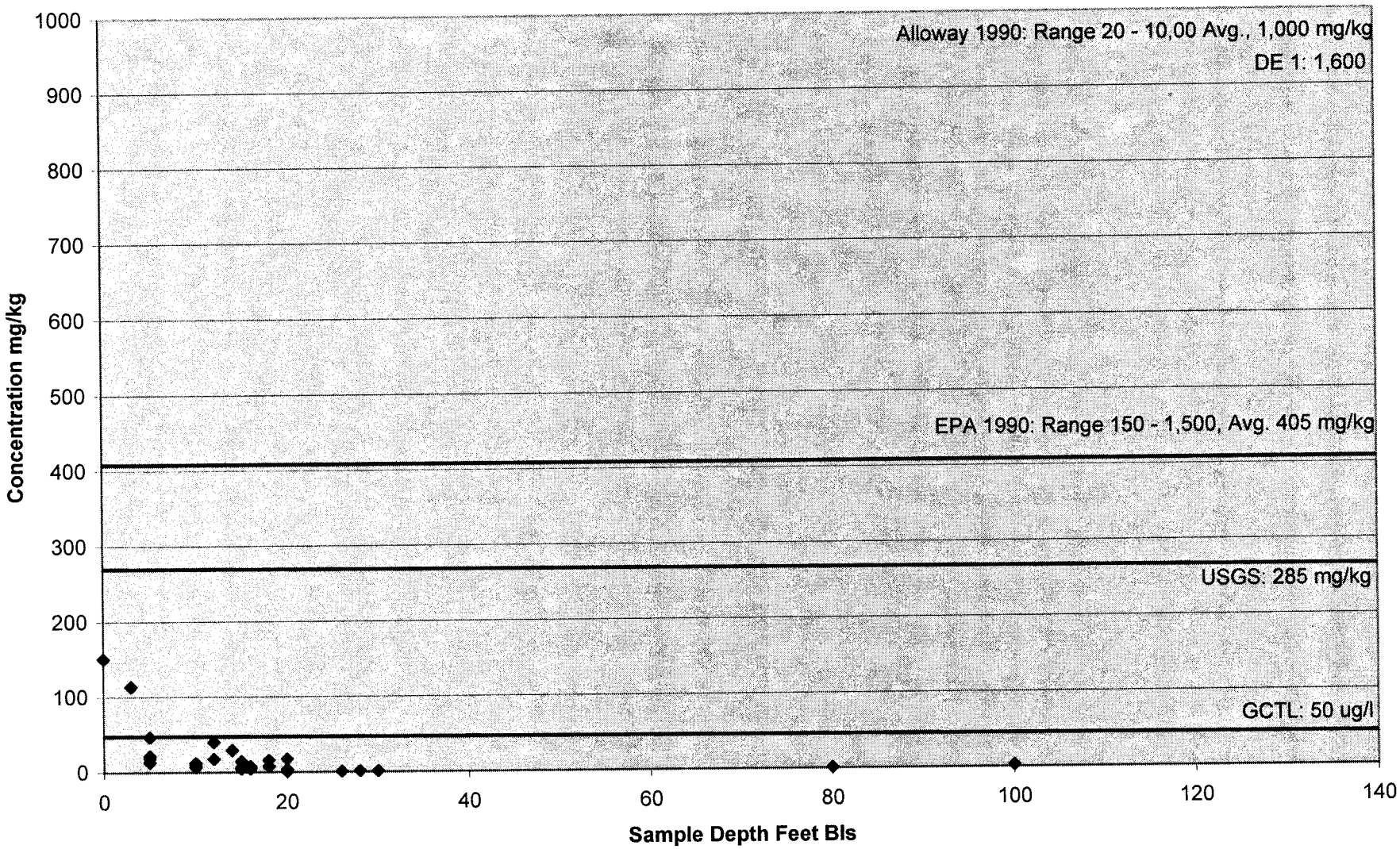
Soil 1: Manganese Background



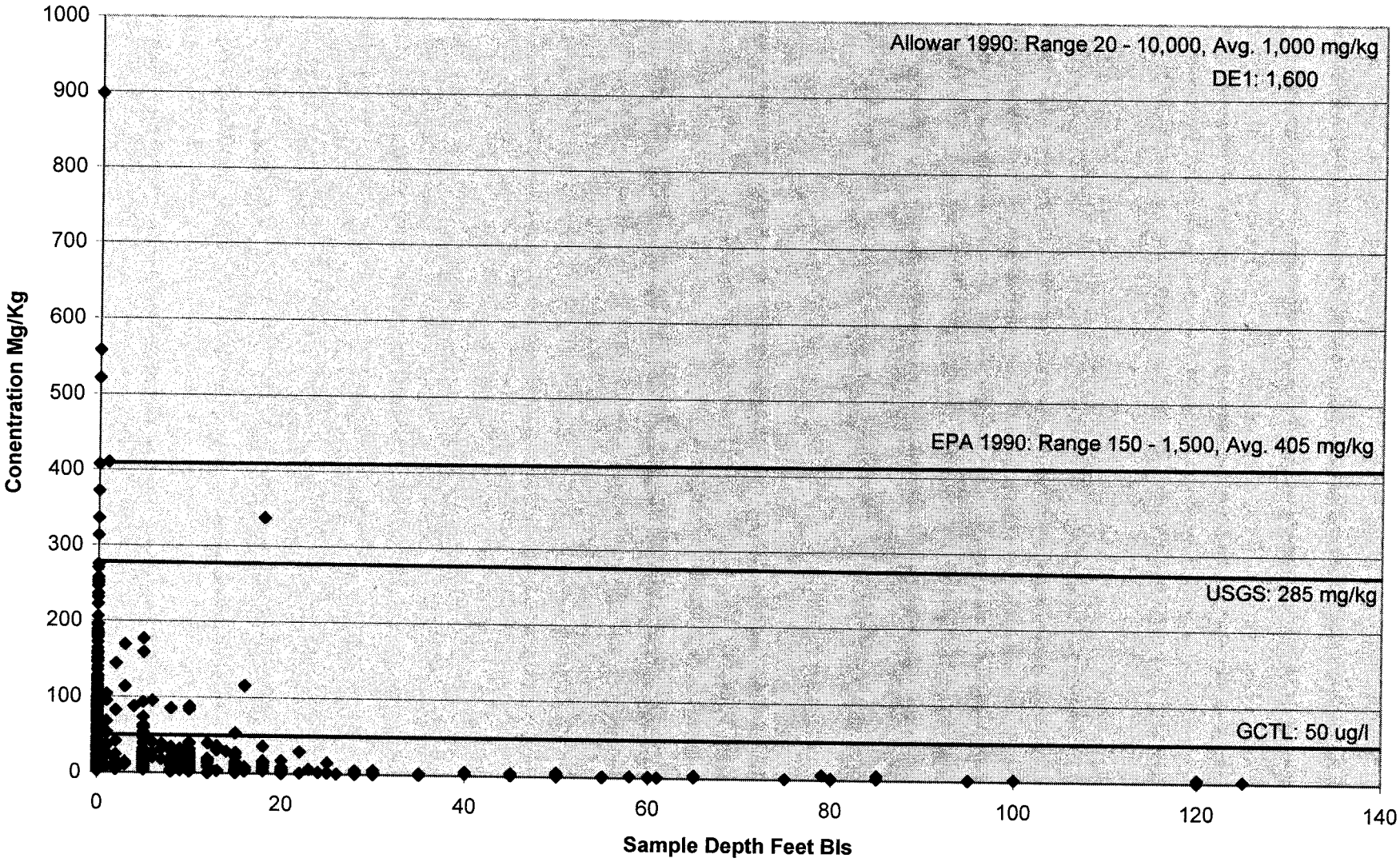
Soil 2: Manganese Specific Sites



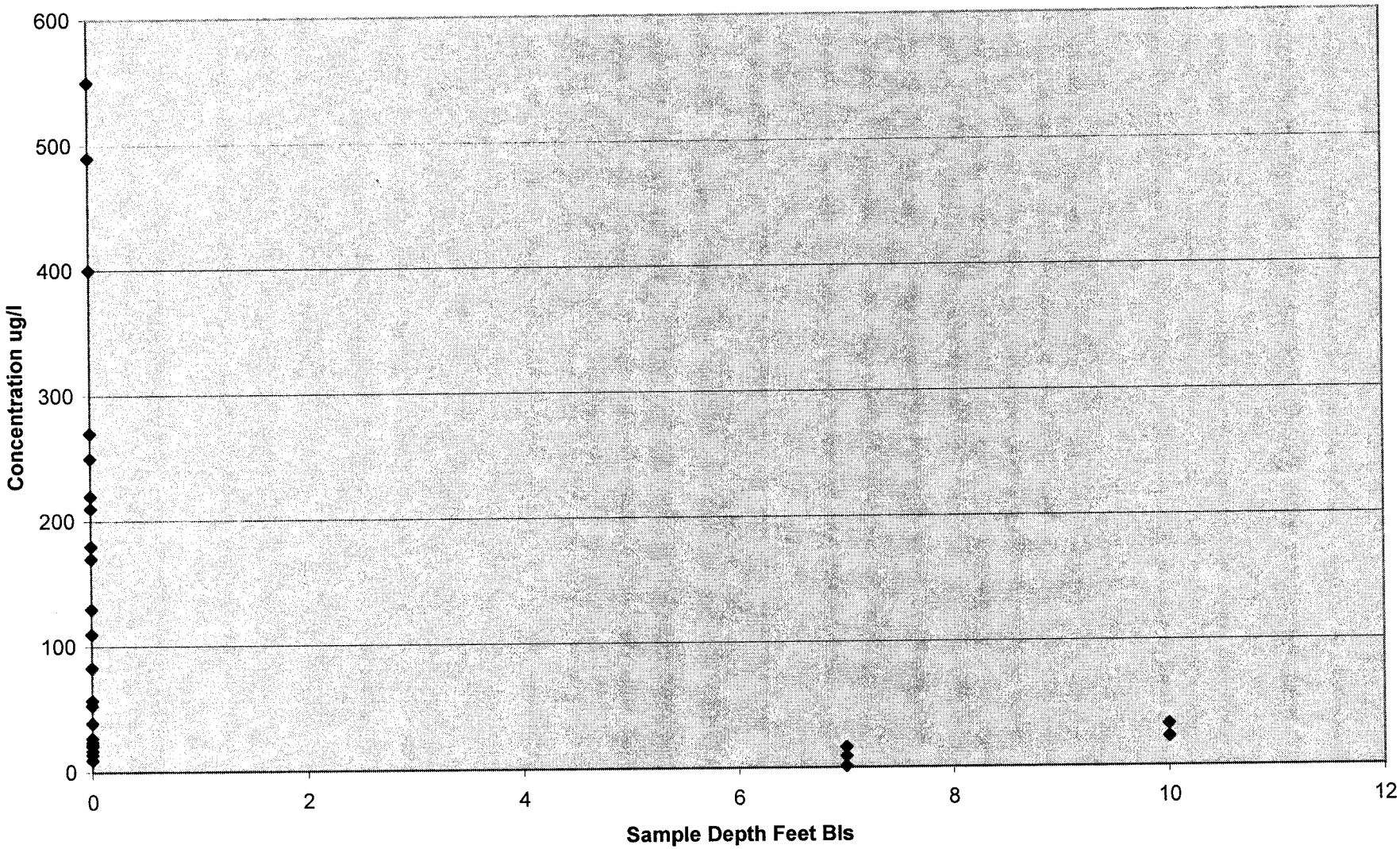
Soil 3: Manganese Detected in Clean Samples



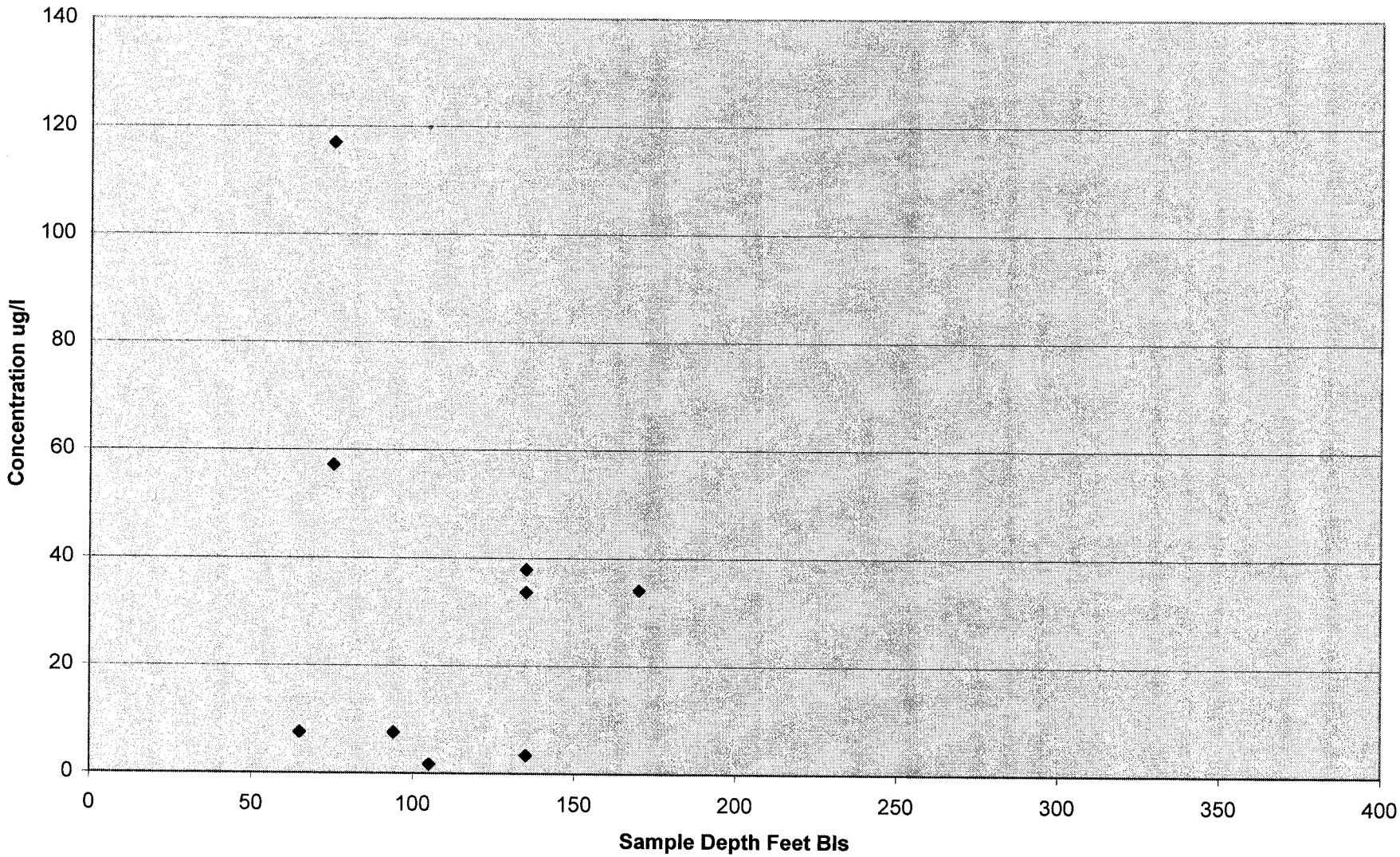
Soil 4: Basewide Manganese



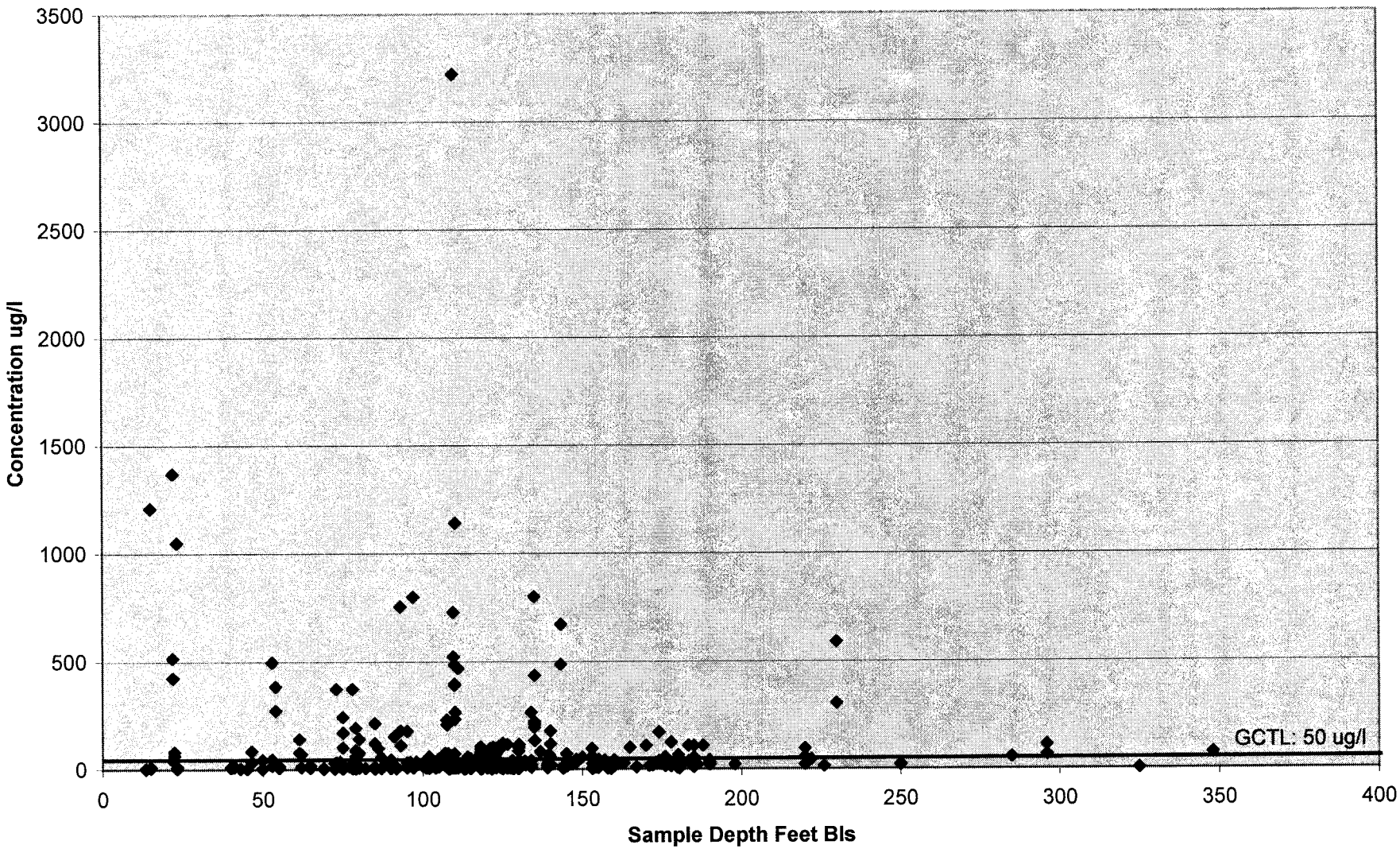
Leachate 1: Manganese



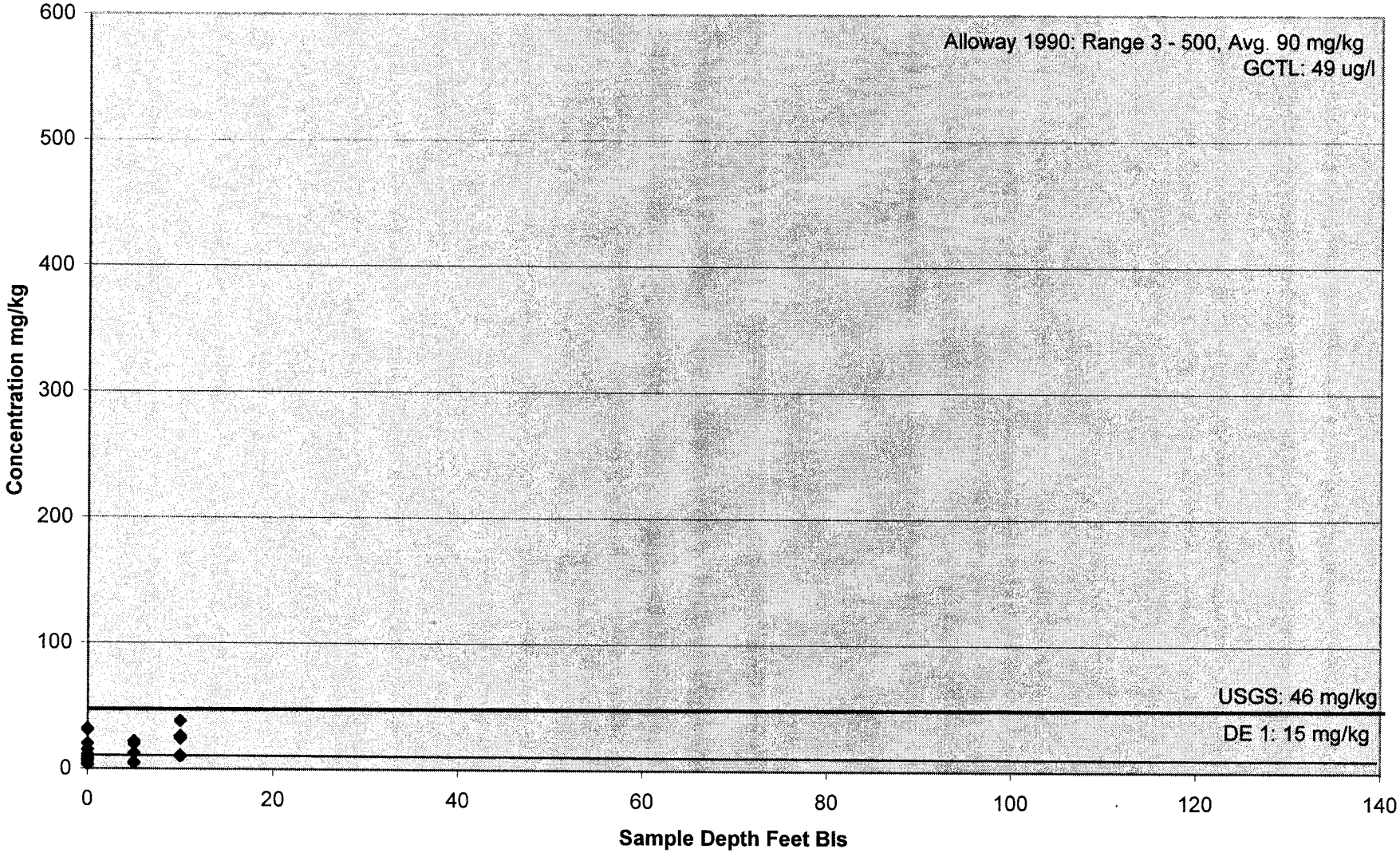
Groundwater 1: Manganese in Background Groundwater



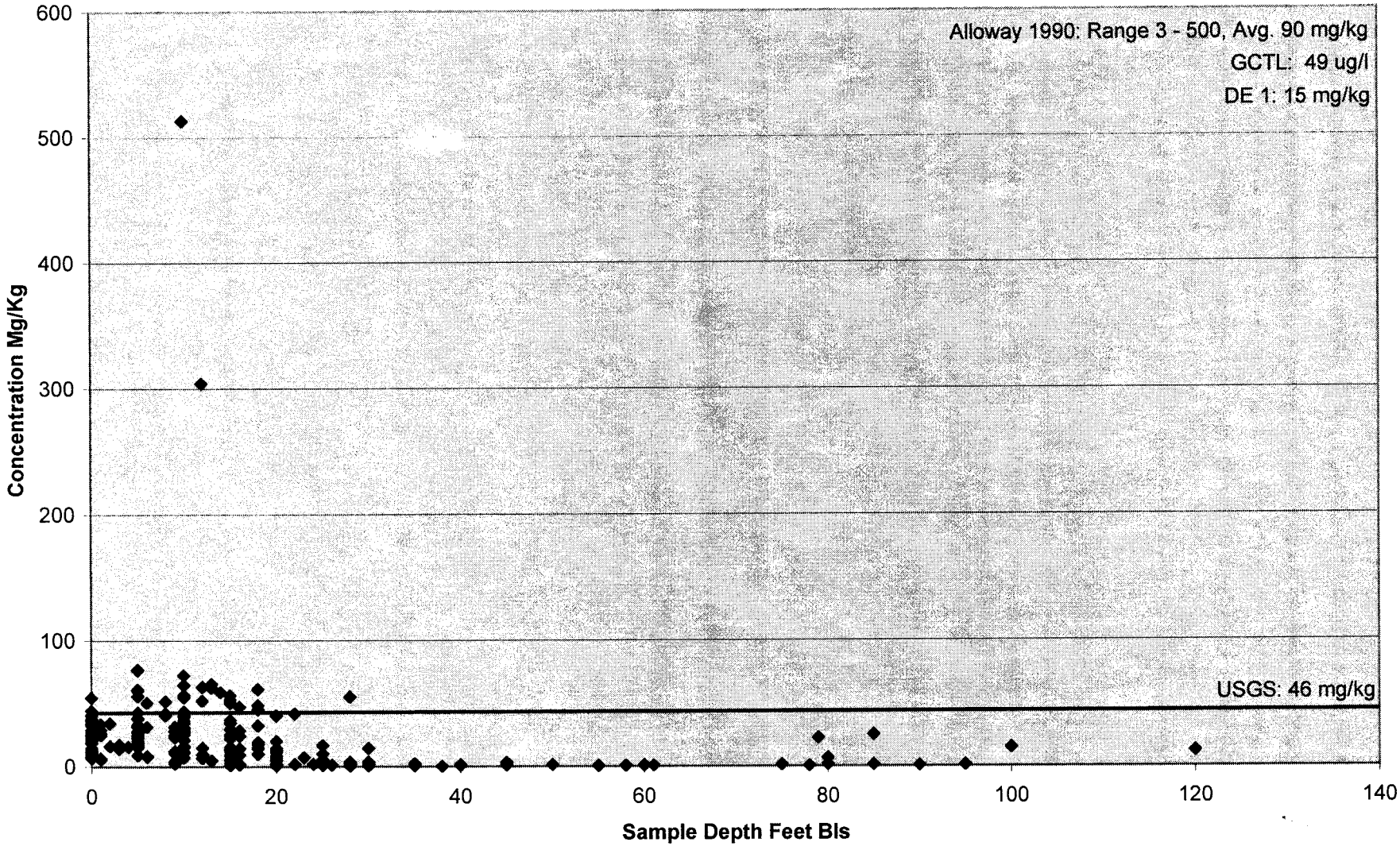
Groundwater 2: Manganese in Groundwater Basewide



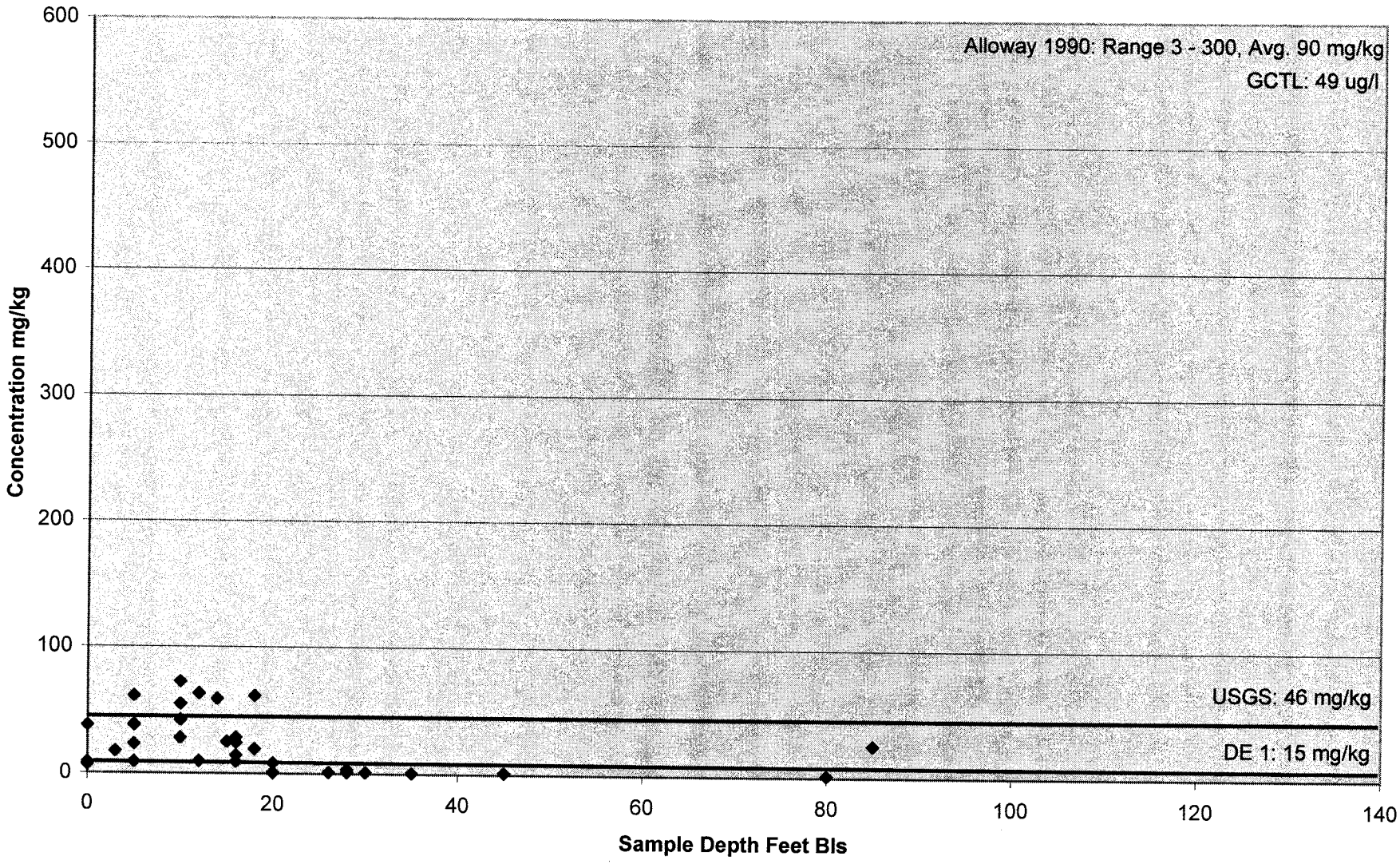
Soil 1: Vanadium Background



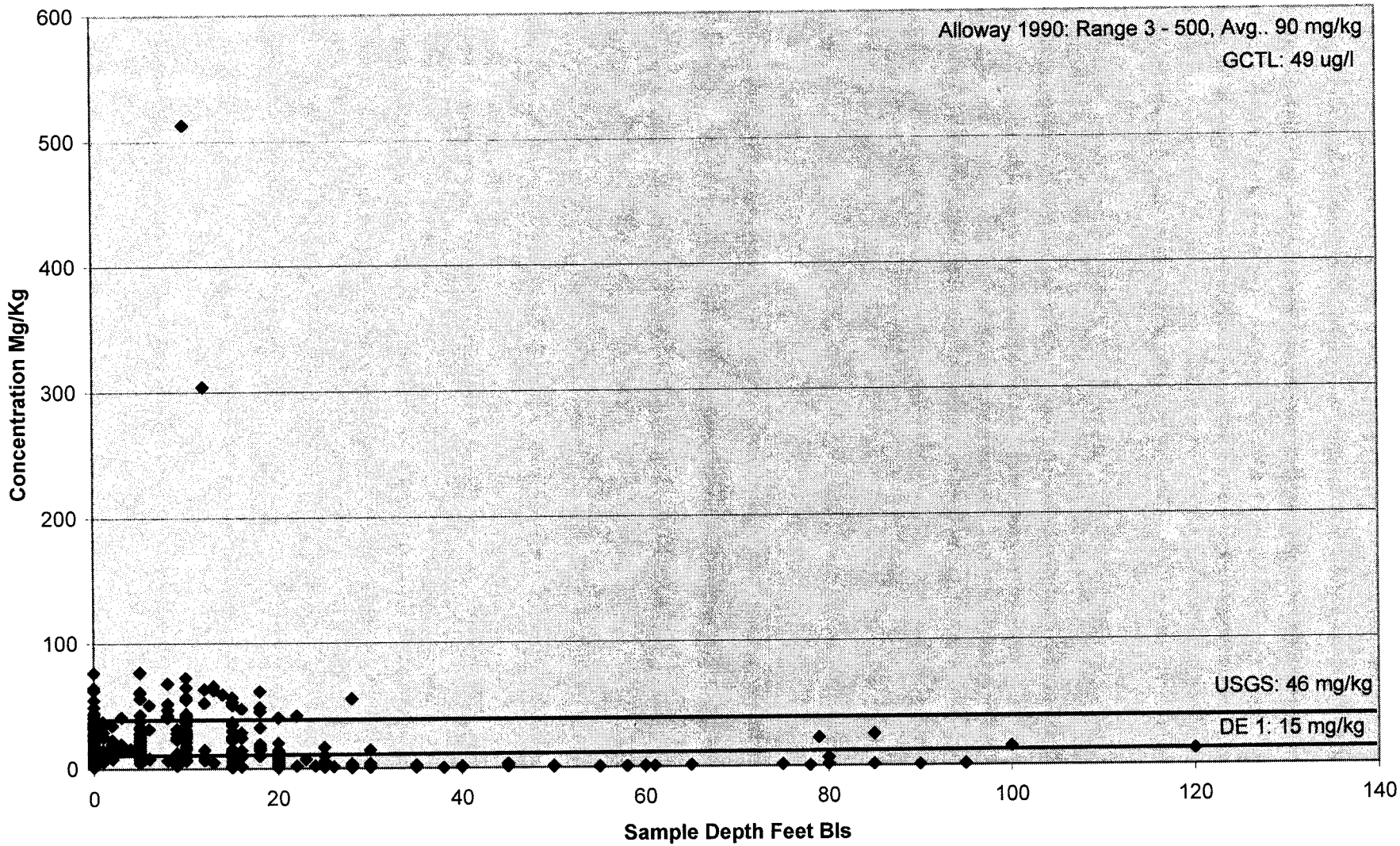
Soil 2: Vanadium Specific Sites



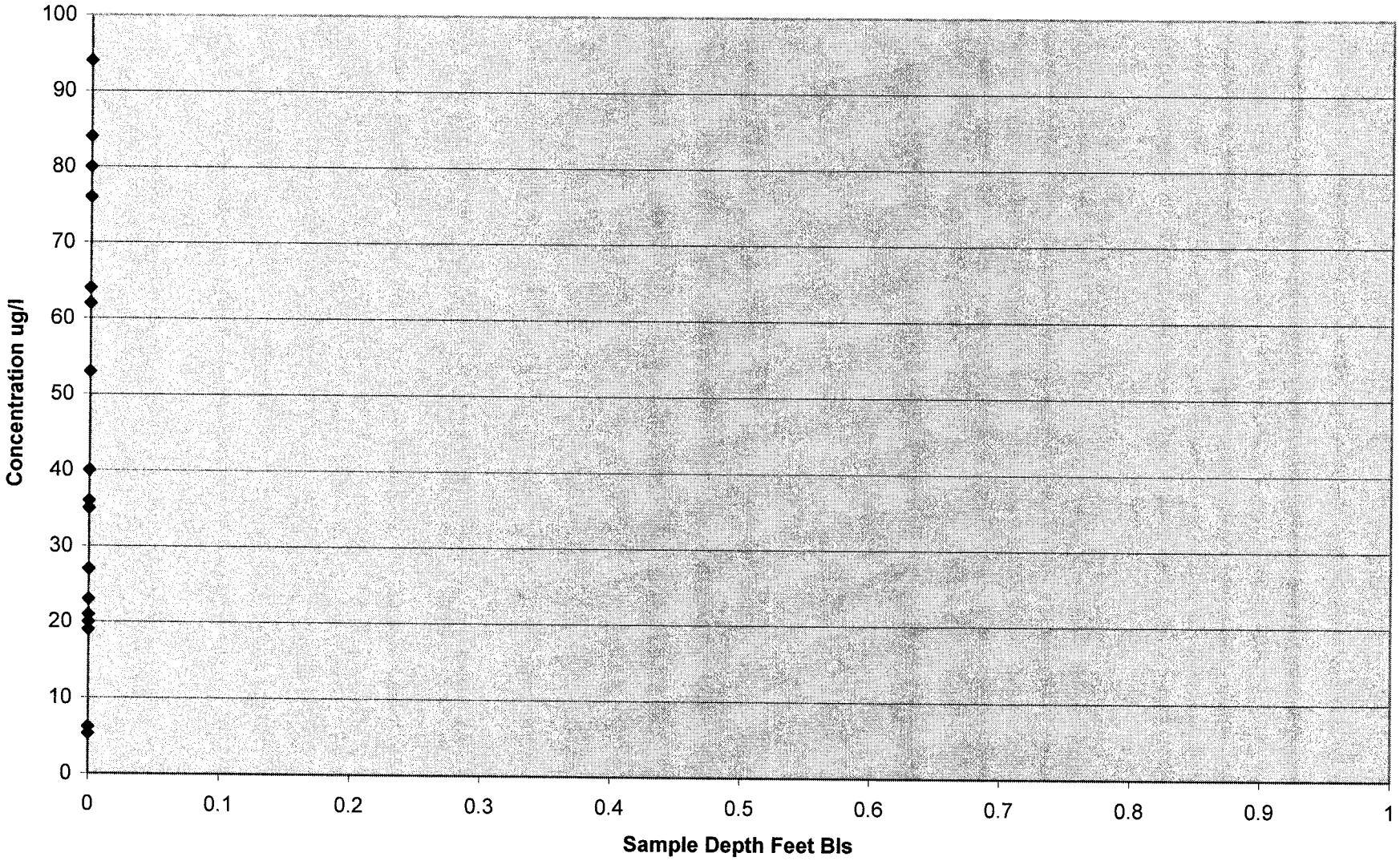
Soil 3: Vanadium Detected in Clean Samples



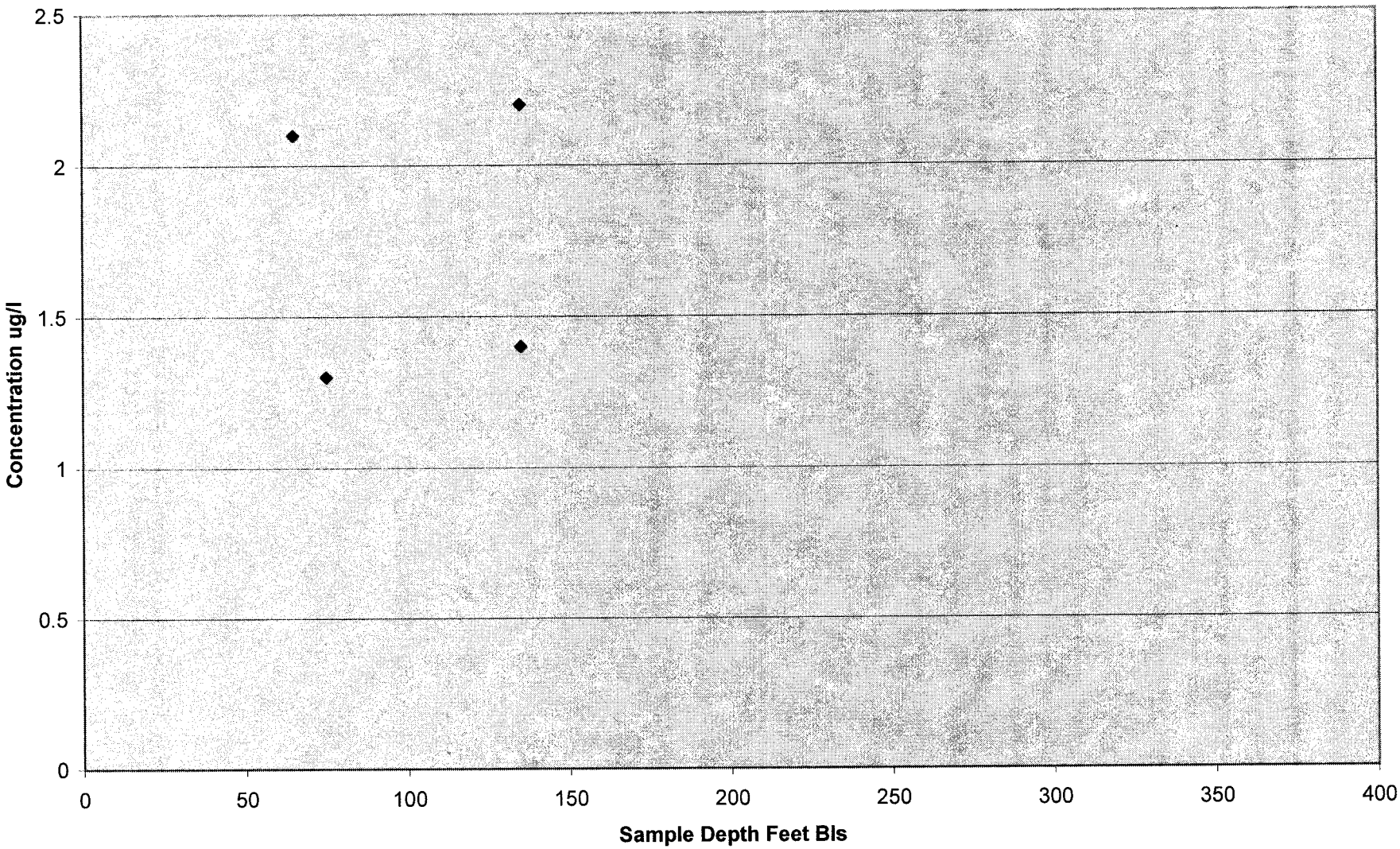
Soil 4: Basewide Vanadium



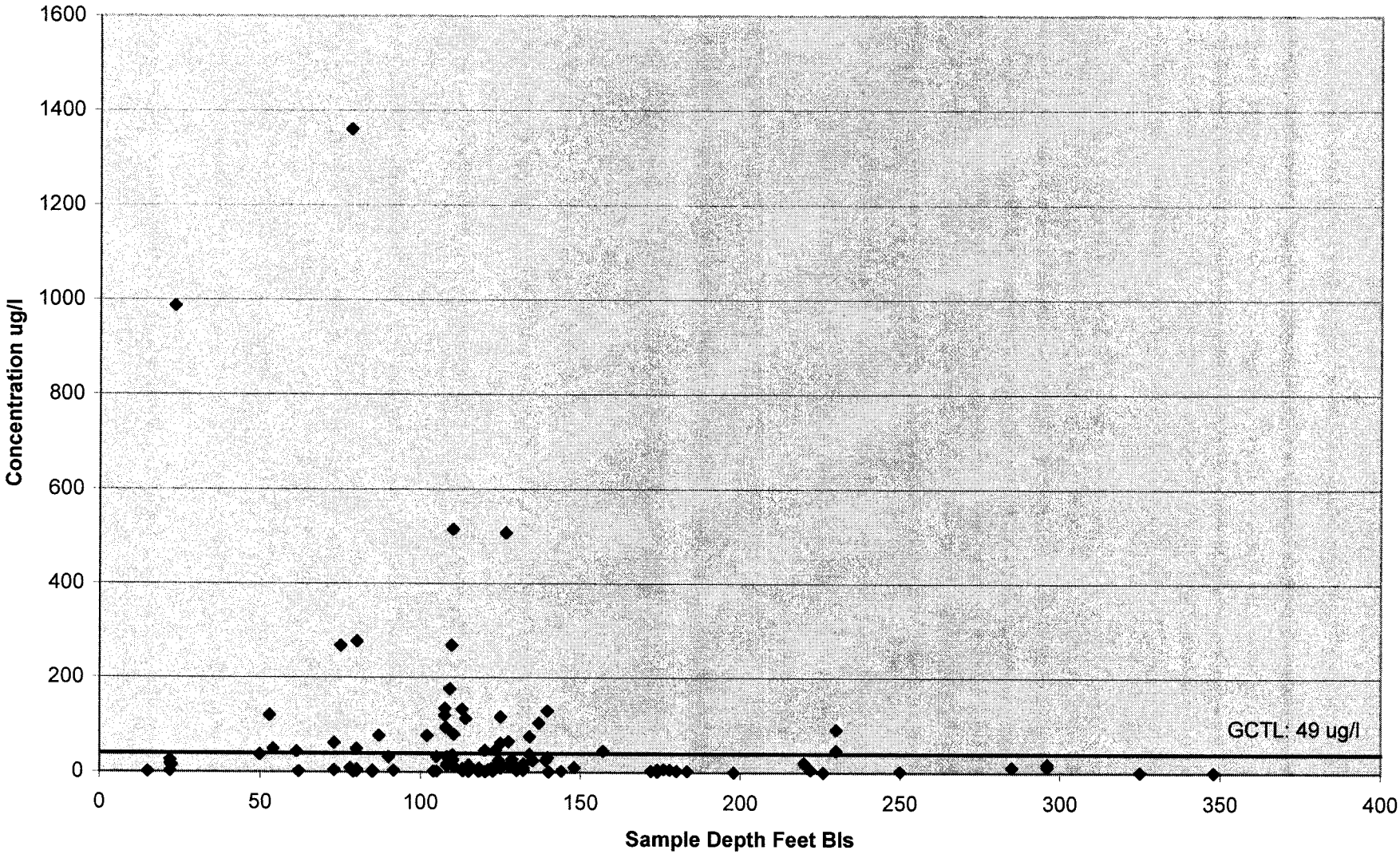
Leachate 1: Vanadium



Groundwater 1: Vanadium in Background Groundwater



Groundwater 2: Vanadium in Groundwater Basewide



APPENDIX C

SOIL BORING LOGS

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: AEGS
DRILLING COMPANY:
DRILLING RIG:

BORING No.: SSB01
DATE: 4-14-00
GEOLOGIST: R. Hill
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
1							Br. Sandy Clay						
2													
3				3.0			Orange Sandy				0		0
4							clay			0			
5													
6				6.0			Red, Brown ~~sandy~~						
7							clay/or sand						
8													
9											0		0
10			13½"							0			
11													
12													
13													
14													
15													
16													
17													
18													
19											0		0
20			21"	20.0' B.T						0			

S-1 1 '8

S-2 1030

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #:

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER:
DRILLING COMPANY:
DRILLING RIG:

BORING No.: SSB02
DATE: 4-14-00
GEOLOGIST: Rob Hill
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1							Reddish. Br. Sandy						
2							clay Tr. of gravel						
3											0		0
4										0			
5				5.0			Red, orange, clayey						
6							f. to med. sand						
7													
8													
9											0	0	
10			13"							0			
11													
12													
13													
14													
15													
16													
17													
18													
19											0		0
20			20"	20.0						0			
				B.T.									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER:
DRILLING COMPANY: AEES
DRILLING RIG:

BORING No.: SSB03
DATE: 4-14-00
GEOLOGIST: R. Hill
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
1							Reddish Br sandy						
2							clay						
3											0		0
4										0			
5				5.0			Red, Br. clayey						
6							sand.						
7													
8													
9											0		0
10			9"							0			
11													
12													
13													
14													
15													
16													
17													
18													
19													
20			13"	20.0 B.T						1	0		0

S-1 1040

S-2 1049

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: A7
DRILLING COMPANY: AECS
DRILLING RIG:

BORING No.: SSB04
DATE: 4/4/00
GEOLOGIST: R. Hill
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1							Reddish Br.						
2							sandy Clay						
3													
4										0	0		0
5				5.0			Red, Br. clayey						
6							f. to med. Sand						
7													
8													
9													
10			13"							0	0		0
11													
12													
13													
14													
15													
16													
17													
18													
19													
20			15"	20.0'						0	0	0	0
				B.T.									

S-1 1006

S-2 1103

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: DPT

BORING No.: 075B005
DATE: 6-14-01
GEOLOGIST: L. Smith
DRILLER: David Cobb

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
0830		38						Lt TAN grey fine SAND		unfiltered	10			
		40								filtered	2			
852		48						Same As Above		unfiltered	4			
		50								filtered	2			
952		58						Same As Above		unfiltered	∅			
		60								filtered	∅			
1028		68						Same As Above		unfiltered	∅			
		70								filtered	∅			
1105		78						Same As Above Grey		filtered	∅			
		80								unfiltered	∅			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm):

Converted to Well: Yes ____ No ✓ Well I.D. #:

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052 Site 7
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe

BORING No.: 07SB5
DATE: 6/14/01
GEOLOGIST: L. Smith
DRILLER: D. Cobb

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1326		88						Same as Above		unfiltered			Ø	
		90								filtered				
1415		98						Same as Above		unfiltered	Ø			
		100								filtered	Ø			
1532	109	108			109 to 110			Silty CLAY w/		unfiltered	Ø			
	111	110						10 to 20% fine Qtz Sand		filtered	Ø			
								Light Gray						
					110 to 111			Light Gray Silty CLAY						
								Almost Clay but to round Sand						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm):

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #:

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Site 7
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe

BORING No.: 07SB201
DATE: 6/13/01
GEOLOGIST: L. Smith
DRILLER: D. Cobb

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
845		8								unfiltered	Ø			
		10								filtered	Ø			
855		18								unfiltered	Ø			
		20								filtered	Ø			
915		28								unfiltered	Ø			
		30								filtered	Ø			
1002		38		40%				Lt Gray SAND		unfiltered	Ø			
		40								filtered	Ø			
1050		48								unfiltered	Ø			
		50								filtered	Ø			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm):

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Site 7
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe

BORING No.: 07SB20A
DATE: 6/13/01
GEOLOGIST: L. Smith
DRILLER: D. Cobb

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1115		58								unfiltered	Ø			
		60								filtered	Ø			
1400		68								unfiltered	Ø			
		70								filtered	Ø			
1505		78								unfiltered	Ø			
		80								filtered	Ø			
1600		88								unfiltered	27.4			
		90								filtered	NM			
1700		98								unfiltered	7.4			
		100								filtered	NM			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm):

Converted to Well: Yes ____ No ✓ Well I.D. #:

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Site 7
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe

BORING No.: 07SB33
DATE: 6/12/01
GEOLOGIST: L. Smith
DRILLER: D. Cobb

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
		8												
		10		100%				tan to brown silty fine sand		unfiltered (ppm)	8			
										filtered	Ø			
		18												
		20		100%				tan to brown silty fine sand		unfiltered (ppm)	20			
										filtered	Ø			
1220		28												
		30		100%				light tan silty fine sand		unfiltered (ppm)	9544			
										filtered	Ø			
1240		38												
		40		100%				As above		unfiltered	44000			
										filtered	Ø			
		48		100%										
1300		50						Sandy Silty CLAY Lt Gray to lt purple		unfiltered	>50000			
										filtered	Ø			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm):

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Site 7
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe

BORING No.: 07SB33
DATE: 6/12/01
GEOLOGIST: L. Smith
DRILLER: D. Cobb

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
1330		58						Fine Sand Lt Grey		unfiltered	>50,000			
		60								filtered	Ø			
1420		68								unfiltered	>50,000			
		70						Fine Sand silty Lt Grey to Lt pink/ocher		filtered	Ø			
1450		78								unfiltered	>50,000			
		80						As above		filtered	2.1			
1545		88						Fine SAND Lt Grey		unfiltered	>50,000			
		90								filtered	2.4			
1630		98						Fine SAND Lt Org/Grey		unfiltered	4,620			
		100								filtered	Ø			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm):

Converted to Well: Yes ____ No ✓ Well I.D. #:

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052 Site 7
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe

BORING No.: 07SB034
DATE: 6/14/01 & 6/16/01
GEOLOGIST: L. Smith
DRILLER: D. Cobb

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1705 6/14/01		19						silty fine SAND		unfiltered	Ø			
		21						Lt Orange		filtered	Ø			
1732 6/14/01		39						lt grey to white fine		unfiltered	Ø			
		41						grained qtz sand		filtered	Ø			
845 6/16/01		59						As Above		unfiltered	25			
		61								filtered	Ø			
945		79						As Above			Ø			
		81												
1450		98												
		100												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): Ø

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: DPT

BORING No.: 07SB035
DATE: 6/15/01
GEOLOGIST: L. Smith
DRILLER: D. Cobb

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
0820		18						Ocher to brick Red Brown		unfiltered	1370			
		20						Clayey silty SAND		filtered	Ø			
		22												
0910		39						White fine grained SAND		unfiltered	>4000			
		41						(beach sand)		filtered	NM			
		41												
		43												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm):

Remarks:

Converted to Well: Yes _____ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: DPT

BORING No.: 07S30836
DATE: 6/15/01
GEOLOGIST: L. Smith
DRILLER: D. Cobb

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
		19						Med to fine silty SAND		unfiltered	Ø			
1015		21						Orange slight color						
		21						bands .5 to 2 inches						
		23												
1050		39			39 to 40.7			Med to fine silty SAND		unfiltered	Ø			
		41						color						
					40.7 to 41			stiff to hard lt gray						
								silty CLAY						
1445		59												
		61			lt Gray to			White fine grained SAND Qtz			Ø			
								petroleum like odor FID unresponsive						
								to sample checked OK						
		79						Same as above		unfiltered	7100			
		81								filtered	NM			
		83												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): Ø

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052 Site 7
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe

BORING No.: 07SB037
DATE: 6/16/01
GEOLOGIST: L. Smith
DRILLER: D. Cobb

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
1605		49					Lt PINK	fine ate SAND & minor		unfiltered	∅			
		51						silt & clay rich sand		filtered	NM			
								layer < 1" thick are						
								present in upper ft.						
1645		75						Same as above		unfiltered	23			
		77								filtered	NM			
1745		99						Same as above.		unfiltered	35			
		101								filtered	NM			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): ∅

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052 Site 07
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe

BORING No.: 07SB038
DATE: 6/17/01
GEOLOGIST: E. Smith
DRILLER: D. Cobb

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
0845		19						orange clayey silty fine sand		unfiltered	Ø			
		21								filtered	NM			
0910		39						lt tan to white v. fine sand		unfiltered	Ø			
		41								filtered	NM			
0930		59						lt pink to lt. ochre to lt. gray silty v. fine quartz sand		unfiltered	8000			
		61								filtered	Ø			
1010		79						Same as above		unfiltered	105			
		81								filtered	NM			
1050		99						Same as above		unfiltered	12800			
		101								filtered	NM			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): Ø

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052 Site 7
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe

BORING No.: 07SB039
DATE: 6/17/01
GEOLOGIST: L. Smith
DRILLER: D. Cobb

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
1300	24							clayey silty fine ate SAND		unfiltered	Ø			
	26							orange		filtered	NM			
1345	54							lt pink tolt ochre to		unfiltered	Ø			
	56							lt grey fine sand		filtered	NM			
1445	74							As above limited ochre		color/unfiltered	Ø			
	76									filtered	NM			
1530	98							Same as above		unfiltered	55			
	100									filtered	Ø			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): Ø

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0082
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: WHF 75B01
DATE: 7/31/00
GEOLOGIST: BPH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	8'		1.9/2'		firm	rdish brn	Clay, sandy		sl moist	0	0		0
5-1 C 0855	10'					mottled yellow brn							
	18'		1.7/2'		firm	rdish brn	Sand, clayey, slight weathered fuel odor		moist to wet	24	0		0
5-2 C 0907	20'												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: W Rding
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: WHF 75B01
DATE: 3/31/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'												
S3 @ 0924			1.8/2'		loose	yellow brn	Sand, fine to med		sl. moist	0	0		0
	30'												
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: WHF75B02
DATE: 3/31/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	8'												
S-1 @ 1044	10'		2½'		fin	rdish br to mod br	clay, sandy, silty fuel odor - faint		sl. moist	75	0		0
	18'												
S-2 @ 1058	20'		2½'	18.7'	fin	mod br rdish br mottled	clay, sandy Sand, clayey black, fuel odor		sl. moist moist to wet	1900	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N005
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: WHF75B02
DATE: 3/31/00
GEOLOGIST: BPH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	26												
S-3 @ 1117	30		1.4/2'			[illegible]	Sand, fine to med.		moist to wet	21	0		0
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0062
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: WHF 75B03
DATE: 3/31/00
GEOLOGIST: BPH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1403	8' 10'		1.8'/2'		fin	ltbl brn	Clay, sandy		sl. moist	1.3	0		0
S-2 @ 1434	18' 20'		1.2'/2'			ltbl to orange brn	Sand, fine to medium, sl. Clayey		sl. moist	3.6	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: WHF 75B03
DATE: 3/31/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'		1.3'			white to white gray	Sand, fine to medium		dry	0	0		0
S 3			2'										
S 13	30'												
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 75B04
DATE: 4/1/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 0815	8		1.5/2'		firm	lt gray	clay, sandy		sl. moist	1<0			0
	10					mod brn							
	18'		1.3/2'			mod brn	Sand, fine		sl moist	1<0			0
S-2 @ 0831	20'												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 75B04
DATE: 4/1/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28												
S3 @ 0345			1.3/2'			wht	fn sand, fine to medium		sl. moist	1<	0		0
	30												
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0082
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 75B05
DATE: 4/1/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 0948	8'		1.6'/2'		firm	tan to white	clay, sandy, faint fuel odor		sl moist	170	0		0
	10'												
S-2 @ 0958	18'		1.3'/2'		loose	tan to brown	Sand, medium w/ some coarse grns		dry	0	0		0
	20'												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: ____

Converted to Well: Yes ____ No ____ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N00520
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 75B05
DATE: 4/1/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'												
5 3 @ 10 4	30'		1.5'/2'			~~lt gray~~ to white	Sand, fine		dry	0	0		0
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600
BORING No.: 75BD6
DATE: 4/1/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
5-1 @ 1035	8' 10'		0.3'/2.0'			not. Dn	Sand, fine		sl. moist	0	0		0
5-2 @ 1104	18' 20		0.6'/2.0'			rdish Dn	Sand, fine to medium		sl. moist	0	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AEGS
DRILLING RIG: Geoprobe 6600

BORING No.: 75B06
DATE: 4/1/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'												
S-3 @ 1127			1.3/2'		loose	orange brn	Sand, fine		sl. moist	0	0		0
	30'												
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N00520
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 75B07
DATE: 4/1/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	8'		1 1.7/2'		firm	med. brn to	Clay, sandy,		sl. moist	167	0		0
5-1 @ 1340	10'					dk brn	silty, slight fuel odor						
	18'		1 1.4/2'		loose	orange to dk brn	Sand, fine		sl. moist	4.5	0		0
5-2 @ 1351	20'												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 75B07
DATE: 4/1/00
GEOLOGIST: BPH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'		1.7'/1.2'		loose	orange brn to lt gray	Sand, fine to medium		sl. moist	0	0		0
1429	30'												
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Dr Rating Field
PROJECT NUMBER: N00520
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 75B08
DATE: 4/1/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1512	8'		1.4'/2'		firm	tan to ~~rdish brn~~	Clay, sandy, silty		sl. moist	0	0		0
	10'												
S-2 @ 1523	18'		1.2'/2'		loose	~~rdish brn~~ to mottled	Sand, fine		sl. moist to dry	0	0		0
	20'												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N00520
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 75B08
DATE: 4/1/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'					yellow br							
5-3			1.4/2'		loose		Sand, medium		d. moist to		0		0
15-37	30'								dry				
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: ND0520
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 75B09
DATE: 4/6/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	8'		1 / 1.5/2'										
S1 @ 0934	10'				fine	yellow to tan	Clay, sandy, silty		moist	0	0		0
	18'		1 / 1.3/2'										
S2 @ 0945	20'				loose	yellow brn	Sand, fine		sl. moist	0	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 75B09
DATE: 4/6/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'												
S-3 @ D952	30'				loose	lt gray to pink	Sand, fine to medium		dry	0	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ___ No ✓ Well I.D. #: ___

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB10
DATE: 4-11-00
GEOLOGIST: R. Hill
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
1				1.0			Black silty, sandy						
2							clay						
3				3.0			Reddish Br. sandy						
4				4.0			clay						
5							Tan & Gray f. to med						
6							sand.						
7							Br. & Gray sandy Clay						
8													
9							(ODOR)			560	0		0
10													
11				11.0			Reddish Br. clayey						
12							sand. (odor)						
13													
14													
15													
16													
17													
18													
19										537			
20													
21													
22													
23													
24													
25													

w/Filter 17.9 ppm

w/Filter 27.6 ppm

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes _____ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER:
DRILLING COMPANY: ABCS
DRILLING RIG: Geoprobe

BORING No.: 75B10
DATE: 4-11-00
GEOLOGIST: R. Hill
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
26							Orange & Gray f.						
27							To Coarse Sand						
28													
29										2.6			
30													
31													
32													
33													
34													
35													
36													
37													
38										4.9			
39													
40				BT. 40.0'									

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes _____ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: Site 7
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB11
DATE: 4-12-00
GEOLOGIST: R. Hill
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
1							Orange, Red sandy						
2							clay						
3													
4											0		0
5													
6							Orange & gray						
7							sandy clay						
8			18"				Moist.						
9										0			
10											0		0
11													
12													
13													
14													
15													
16							Orange & Gray						
17							f. to coarse Sand						
18			15"										
19										2			
20											0		0
21													
22													
23													
24													
25													

S-1 0815

S-2 0822

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes _____ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: Site 7
DRILLING COMPANY:
DRILLING RIG:

BORING No.: 7SB11
DATE: 4-12-99
GEOLOGIST: R. Hill
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
26							Gray & Orange						
27													
28													
29			15"							8			
30				B.T.							0		0
				30.0'									

S-3 0833

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes _____ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB 12
DATE: 5-31-00
GEOLOGIST: D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1					Hard		orange-Red		Dry				
2							Sandy clay						
3													
4													
S-1 005 5			23"		Firm		Black slightly moisty			0	0		0
6							Sandy clay to lgt orange						
7							sandy clay						
8													
9													
S-2 1012 10			24"		Firm		Lgt orange sandy clay			0	0		0
11													
12													
13					Firm		Tan sandy clay (moist)						
S3 02 14							Tan w/orange streaks						
15			21"				Orange Sandy clay			0	0		0
16													
17													
18					Loose		Red-orange sandy						
19			20"				clay - slightly moist						
20							medium to fine			0	0		0
							TD 20'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB13
DATE: 5-31-00
GEOLOGIST: R.D. Munson
DRILLER: D. COBB

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1					Hard		Orange sandy clay		Dry				
	2													
	3													
	4													
S-1 1048	5			19"		Firm		Brown sandy Clay			0	0		0
	6							slightly moist						
	7							Brown w/streaks of red						
	8					Firm		sandy clay slightly moist						
S-2 1056	9							Lt orange, sl. moist						
	10			24"				Dark orange sandy Clay			0	0		0
	11													
	12													
	13					Loose		Tan + orange						
	14							moist sandy clay to						
S-3 1105	15			24"				mostly orange sandy Clay			0	0		0
	16													
	17													
	18					Loose		Lt orange med. moist						
S-4 1113	19							sandy clay						
	20			17"				Dark Br. slightly moist			14.2	0		0
	21							medium sand		FIL	0			
	22													
S-5 0958 6-1-00	23					Loose		Orange med to						
	24							Coarse sand		moist				
	25			17"							0	0		0

TD 25'

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geo Probe

BORING No.: 7SB14
DATE: 5-31-00
GEOLOGIST: D. D. Munson
DRILLER: D. Cobb

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1					Hard		Orange sandy clay		Dry				
	2													
	3													
	4													
S-1 1125	5			15"		Firm		moist tan to brown			51.7	0		0
	6							sandy clay		FIL	0			
	7													
S-2 1133	8					Loose		LT orange + Dark						
	9							orange sandy clay						
	10			18"				slightly moist med.			27.6	0		0
	11									FIL	0	~~0~~		
	12													
	13					Loose		Red/orange sandy						
1145	14							clay slightly						
	15			15"				moist. medium			44.0	0		0
	16									FIL	0			
	17													
	18					Loose		Orange sand						
1155	19							med to coarse						
	20			19"				slightly moist			0	0		0
								TD 20'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes _____ No ✓ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geo Probe

BORING No.: 7SB15
DATE: 5-31-00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1					Hard		orange sandy		Dry				
2							clay						
3							↓						
4													
S-1 1314 5			17"		Firm		ORANGE moist			0	0		0
6							Sandy Clay						
7													
8					Firm		Tan + red						
S-2 1319 9							slightly moist						
10			20"				Sandy clay			0	0		0
11													
12													
13					Loose		Black sand to						
S-3 1326 14							lt orange sandy						
15			20"				clay to orange med sand			0	0		0
16													
17													
18					Loose		Orange med-coarse						
S-4 1333 19							sand to white/						
20			17"				orange med-coarse sand			0	0		0
							TD 20'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB16
DATE: 5-31-00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1					Hard		Orange Sandy		Dry				
2							Clay						
3													
4													
5			19"		Loose		Orange moist			0	0		0
6							Sand, medium						
7							w/ little clay						
8					Loose		Tan + orange						
9							Sandy clay						
10			17"				vry little moisture			0	0		0
11													
12													
13					Loose		Orange + pink Sandy						
14							Clay slight moisture						
15			20'							0	0		0
16													
17													
18					Loose		Orange, pink +						
19							white med-coarse						
20			17"				Sand. slight moisture			0	0		0
							TD 20'						

S-1 1410
S-2 1420
S-3 1430
S-4 1437

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB17
DATE: 5-31-00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1					Hard		Brown Sandy Clay		Dry				
2							Dry						
3													
4													
S-1 1455 5			21"		Firm		Red + Tan Sandy			0	0		0
6							clay. Little moisture						
7													
S2 1502 8					Firm		Red + Gray Sandy						
9							clay						
10			23"							0	0		0
11													
12													
S3 1510 13					Loose		Orange moist sand						
14					Firm		Pink clay						
15			17"		Loose		orange med sand			0	0		0
16													
17													
1515 S4 18					Loose		Pink to tan						
19							med sand						
20			17"				slight moisture			0	0		0
							TD 20'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB18
DATE: 5-31-00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1					Hard		Orange sandy		Dry				
	2							Clay						
	3							↓						
	4													
S-1 1520	5			21"		Firm		orange, moist			0	0		0
	6							sandy clay						
	7													
S-2 1530	8					Firm		orange + tan						
	9							sandy clay						
	10			23"				s/ moisture			0	0		0
	11													
	12													
S-3 1540	13					Loose		Orange-brown						
	14							sandy clay						
	15			22"				s/ moisture			7.6	0		0
	16									FIL	0			
	17													
S-4 1548	18					Loose		moist orange						
	19							Sand. med-coarse						
	20			16"				slight moisture			0	0		0
								TD 20'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB-19
DATE: 5-31-00
GEOLOGIST: R.D. Munson
DRILLER: D. Codd

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1					Hard		Orange Sandy						
	2							Clay		Dry				
	3													
	4													
S-1 1553	5			22"		Firm		Tan moist			0	0		0
	6							sandy Clay						
	7													
S-2 1600	8					Firm		Tan Sandy						
	9							clay						
	10			23"							0	0		0
	11													
	12													
S3 1601	13					Loose		Drk orange						
	14							moist Med sand						
	15			23"				strong odor			5162.00			0
	16									FIL-4396				
	17													
S4 1612	18					Loose		Red moist						
	19							Sand mdt						
	20			18"				Coarse moist			0.8	0		0
								TD 20'		FIL	0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB20
DATE: 6-1-00
GEOLOGIST: R.D. Munson
DRILLER: D. COBB

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1					Hard		orange, sandy clay		Dry		0		0
	2													
	3													
	4													
S1 0955	5			15"		Firm		Dark grey to black		moist	84.4			
	6							sandy clay		FL	97.8			
	7													
S2 0855	8					Firm		Brown + Grey		SL. moist				
	9							Sandy clay						
	10			17"							12.7			
	11									FIL	6.8			
	12													
0901 S3	13					Loose		Red sand w/Little		SL moist				
	14							clay med to coarse						
	15			22"							0			
	16													
	17													
0909 S4	18					Loose		Red sand med-		moist				
	19							coarse						
	20			17"							0			
								TD 20'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 75B21
DATE: 6-1-00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1					Firm		Orange Sandy Clay		Dry				
2													
3													
4													
S-1 5			18"		Firm		Black to tan			17.8			
298 6							Sandy Clay		SL. moist FIL	26.1			
7													
S-2 8					Firm		Brown sand		SL. moist				
A55 9							mdt w/grey clay						
10			17"							14.8			
11									FIL	13.3			
12													
S-3 13					Loose		Orange + tan						
1002 14							Sandy Clay med						
15			23"				to coarse sand			5.2			
16									FIL	5.2			
17													
S-4 18					Loose		Red med to coarse		SL moist				
1008 19							sand						
20			18"							0			
							TD 20'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Are
Background (ppm

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB22
DATE: 6-1-00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1					Firm		Orange sandy Clay						
2													
3													
4													
5			16"		Firm		Brown sandy clay		moist	12.5	0		0
6									FIL	10.4			
7													
8					Firm		Tan sandy clay turning						
9							to red + tan mix		moist				
10			19"							10.4	0		0
11									FIL	9.8			
12													
13													
14					Firm		Red + Tan Sandy		SL. moist				
15			23"				clay		mostly clay	0	0		0
16													
17													
18					Loose		Pink sandy clay		Sl moisture				
19							to Red mdt sand						
20			18"							0	0		0
7							TD 20'						

S-1 1029
S-2 1038
S-3 1041
S-4 1058

* When rock coring, enter rock brokeness.

Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.6

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geo probe

BORING No.: 7-SB23
DATE: 6-1-00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1					Firm		Orange Sandy clay		Dry				
2													
3													
4													
S-1 1129 5			48"		Loose		orange med		SL moisture	0	0		0
6							Sand						
7													
8					Loose		Brown Sandy		SL Moisture				
S-2 1135 9							Clay mdt to						
10			16"				Coarse sand			0	0		0
11													
12													
S-3 1140 13					Loose		Brown Sandy						
14							Clay		moist				
15			16"						ODOR	1281.0	0		0
16									F-L	3223			
17													
S-4 1255 18					Loose		Red sand		moist				
19							mdt odor						
20			16"							39 69.0	0		0
21									F	5.5			
22													
S-5 1425 23					Loose		lgt orange to						
24							white mdt sand		moist				
25			18"							151.4	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

F 0
Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7-SB23
DATE: 6-1-00
GEOLOGIST: RD Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
26													
27													
28					Loose		white to lgt		SL moist				
29							orange mdt						
30 (S-6 1455)			16"				Sand			1.2	0		0
									FIL	0			
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes _____ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB24
DATE: 6-1-00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1					Firm		orange sandy		Dry				
2							clay						
3							↓						
4													
S-1 1551 5			17"		Loose		Brown sandy		SL moisture	0	0		0
6							clay						
7													
S-2 1606 8					Loose		orange to Dark		SLT odor				
9							brown sandy						
10			15"				Clay		moist	2.8, 7	0		0
11									FIL	0			
12													
S-3 1614 13							Dark brown to						
14					mushy		Red sandy clay		very moist				
15			18"				very mushy		8,5	78+	0		0
16									FIL	75.3			
17													
S-4 1620 18							orange sand						
19					Loose		mtd to coarse		moist				
20			18						Stg odor	6,085	0		0
21									FIL	1.0			
22					Loose		white sand		moist				
23							med to fine						
S-5 1625 24							Sand		Sl. odor				
25			17"						3,5	95	0		0
									FIL	0.1			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: GEOPROBE

BORING No.: 7SB24
DATE: 6-2-00
GEOLOGIST: RD Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
26													
27													
28					Loose		orange med to		moist				
29							coarse sand						
30			18"						odor 22,615		0		0
31									FIL	1.3			
32													
33					Loose		Gray med to						
34							coarse sand with		moist				
35			17"				occ 1" black lyr throughout		odor over 33,196		0		0
36									FIL	1.6			
37													
38					Loose		orange med-						
39							coarse sand,		moist				
40			18"				odor		over 33,169		0		0
41									FIL	0			
42													
43					Loose		orange + white		moist				
44							med to fine sand		odor	3.5	0		0
45			14"								-		
46									FIL	0			
47													
48					Loose		med to fine white		moist				
49							+ orange sand		strong odor				
50			18"						Flame out over 98,441		0		0

FIL 0

* When rock coring, enter rock brokeness.

**Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7-SB24
DATE: 6-2-00
GEOLOGIST: R.D Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
51													
52													
53					Loose		Lgt gray med		Flameout				
54							to fine sand		moist				
55			18"						strong odor OVR 9841		0		0
56									FIL.	0			
57													
58													
59					Loose		lgt gray med to		moist				
60			19"				fine sand		strong odor OVR 9481		0		0
61									FIL	0			
62													
63													
64													
65													
66													
67													
68							MDT to Coarse						
69							white sand		moist				
70			21						strong odor OVR 9841		0		0
71									FIL	0			
72													
73													
74													
75													

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Sample taken @ 60'

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB24
DATE: 6-3-00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
76													
77													
78													
79					Loose		white fine sand		LT moisture				
80			22"						13,500		0		0
									FIL	0			
89					Loose		white med to fine		moist				
90			18"				sand		38,464		0		0
									FIL	0			
98					Loose		White + tan fine		moist	25,937	0		0
99							to coarse sand		FIL	0			
100													

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 75824
DATE: 6-3-00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
108													
35 109							1/2 Red 1/2 white		Very moist				
110			10"				MOT to fine sand			115.7			
							TD 110'		F.L	0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB25
DATE: 6-2-00
GEOLOGIST: RD Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1													
2													
3													
4													
5													
6													
7													
8					Loose		orange/brown sandy						
9							clay		SL. moist				
10			17"							0	0		0
11													
12													
13													
14													
15													
16													
17													
18													
19													
20			20"		Loose		orange mdt sand		moist		0		0
21													
22							TD 20'						
23													
24													
25													

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB26
DATE: 6-3-00
GEOLOGIST: R.D
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
8													
9					Loose		Red sandy clay		moist				
10			18"							0	0		0
14													
19													
20			19~~00~~		Loose		Orange mottled fine sand		moist		0		0
							TD 20'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No Y Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 9SB27
DATE: 6-3-00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
8													
9													
10							media would not stay in tube						
1 55 14					Firm		orange sand with a little clay		Hit concrete @ 14' slgt moisture	0	0		0
2 18													
22 19							white fine sand to						
20			19"		Loose		med orange sand		moist	0	0		0
							TD 20'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB28
DATE: 6-4-00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
-1	8													
00	9							Sandy clay						
	10			6"		VRY Loose		Brown/orange med sand			<1	0		0
-2	18													
	19					Loose		orange med		moist				
1/0	20			18"				sand		odor top of sample	532			
										FIL	0			
	28					Loose		white med to fine		sl. moist				
2/4	29							sand with streaks						
	30			22"				of orange sand			5.8	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

TD 30'

FIL 0
Drilling Area
Background (ppm): 1.7

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB29
DATE: 6-4-00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
									(fill dirt)				
3-4 13					Firm		orange/Red Sandy		Half of media				
RQD 14							Clay		fell out of tube				
15			11"							0	0		0
18													
19					Loose		medium to fine						
20			21				orange sand		moist	0	0		0
							TD 20'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 3.2

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7 SB 30
DATE: 6-4-00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
13					Firm		Dark orange - Red		sl. moist				
14							Sandy clay						
15			22"							0	0		0
18													
19					Loose		Drk orange med to		sl. moist				
20							fine sand			0	0		0
							TD 20						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 3.8

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 7SB31
DATE: 6-4-00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
13					mushy		wet Brown/orange						
14							sandy clay						
15			20"						33.1 ppm	0		0	
									FiL	0			
18													
19							Dark orange sand		moist				
20			18"		loose		med to fine			0	0		0
							TD20						

* When rock coring, enter rock brokeness.

Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 3.3

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: Site 29
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 29SB~~06~~ 01
DATE: 4-12-00
GEOLOGIST: Rob Hill
DRILLER: David Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
1							Orange & Gray Sandy						
2				2.0			clay						
3							Gray fine to coarse						
4							sand						
5				5.0							0		0
6							Gray silty clay						
7							some sand						
8													
9										0			
10			21"								0		0
11													
12													
13													
14													
15				15.0									
16							Gray f. to med						
17							sand						
18													
19										0			
20			12"								0		0
21													
22													
23													
24													
25													

S-1 0915

S-2 0928

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: Site 29
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 29SB~~06~~ 07
DATE: 4-12-00
GEOLOGIST: Rob Hill
DRILLER: David Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
26							Gray f. to med						
27							sand -						
28													
29										0			
30			18"	BT 30.0'							0		0

S-3 0939

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No √ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: Site 29
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 29SB~~07~~ 02
DATE: 4-12-00
GEOLOGIST: Rob Hill
DRILLER: David Cubb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
1							Orange & Gray						
2							sandy clay						
3													
4													
5													
6				6.0			Gray & Orange,						
7							silty clay Some Sand						
8													
S-1 0951 9										0			
10											0		0
11													
12													
13													
14													
15				15.0			Orange & Gray						
16							f. to Coarse Sand						
17													
18													
S-2 1003 19										2			
20			14"								0		0
21													
22													
23													
24													
25													

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes _____ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: Site 29
DRILLING COMPANY:
DRILLING RIG:

BORING No.: 29S B07 02
DATE: 4-12-00
GEOLOGIST:
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
26													
27													
28													
29										0			
30			16"	B.T. 30.0							0		0

S-3 / 1015

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ____ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B01
DATE: 4/2/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							9" concrete						
	8'												
S1 @ 1024	10'		1.4'/2'		firm	~~to~~ with lbn over lbn	clay, sandy, silty		sl. moist	K	0		0
	18'												
S2 @ 1040	20'		1.3'/2'			~~to~~ with lbn ~~to~~	sand, medium, clayey gasoline odor		sl. moist ~~to~~ moist	>3900	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0058
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B01
DATE: 4/2/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'												
S-3 @ 1055	30'		1.6'/2'		firm	pebbl gray to brown	Clay, sandy, silty, moist		sl moist	1<	0		0
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B02
DATE: 4/2/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	8'												
S-1 @ 1254	10'		1.0'/1'		loose	orange brn to tan	Sand, fine to med., sl. clayey @ base		sl. moist	1<	0		0
	18'												
S-2 @	20'		1.1'/1'		firm	reddish brn to tan	Sand, medium, clayey faint fuel odor		sl. moist	26	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600
BORING No.: 355B02
DATE: 4/2/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-2 @ 1324	28'		2½'		fine to med.	grayish brown	clay, sandy		sl. moist	K	0		0
	30'				hard								
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B03
DATE: 4/2/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	8'												
S-1 @ 1347			1.6/2'		firm	~~rdsh br~~ ~~to~~ orange br	clay, sandy		moist	1<	0		0
	10'												
	18'												
S-2 @ 1356			1.4/2'		firm	~~rdsh br~~ mottled ~~to~~	clay, sandy, silty		sl. moist ~~to~~ moist	1<	0		0
	20'												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N00520
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B03
DATE: 4/2/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'												
S-3 @ 1408	30'		1.8'/2'		fine	dark gray / mottled / brown	Clay, sandy		sl. moist	1<	0		0
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N00520
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B04
DATE: 4/2/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	8'												
S1 @ 1459			1.5/2'		firm	wht to tan	clay, sandy, silty		sl. moist	1	0		0
	10'												
S2 @ 1510	18'		1.8/2'		firm	wht to tan	clay, sandy gasoline odor		moist	>3900	0		0
	20'												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0082
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B04
DATE: 4/2/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'					range bn							
5-3 @ 15	24 30'				firm	to greenish gray, mottled	Clay, sandy, silty		sl. moist	15	0		0
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B05
DATE: 4/3/00
GEOLOGIST: BDH
DRILLER: PC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	8'												
S-1 @ 0900	10'		0.3'/2'		soft	med. br	clay, sandy, w/ wood fragments		moist	0	0		0
	18'												
S-2 @ 0920	20'		0.9'/2'		firm	rdish br	Sand, medium to fine, clayey		sl. moist	0	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B05
DATE: 4/3/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'		1.0'/2'		firm	reddish brown to grayish gray	Clay, sandy, silty		sl. moist	0	0		0
53 @ 0935	30'												
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B06
DATE: 4/3/00
GEOLOGIST: BPH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	8												
S-1 @ 1003	10		1.8'/2'		firm	rdish brn	clay, sandy		sl. moist	0	0		0
	18'												
S-2 @ 1011	20'		1.8'/2'		hard	rddish brn mottled grish gray	clay, sandy, silty		sl. moist	0	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N00052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B06
DATE: 4/3/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'												
4-3 @ 1023			1.1/2'		firm	dark gray to brown	Clay, sandy, moist		sl. moist	0	0		0
	30'												
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B07
DATE: 4/3/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	8'												
S-1 @ 1342			1.6/2'		soft	rust brn	clay, sandy		sl. moist	0	0		0
	10'												
	18'												
S-2 @ 1353			1.5/2'		firm	rust brn	Sand, clayey, medium		moist	39	0		0
	20'												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B07
DATE: 4/3/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'		1 / 0.8/1		firm	orange brn	clay, sandy		d. moist	77	0		0
S3 @ 1442	30'						faint fuel odor						
	38'		1 / 1.5/1		loose	white	sand, fine to v.f.		dry	0	0		0
S4 @ 1442	40'						TD 40'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: W Kitty Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B08
DATE: 4/3/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	8'		1.4½'										
S-1 @ 1351	10'				firm	rdish Br	Clay, sandy, silty		sl. moist	0	0		0
	18'		1.7½'										
S-2 @ 1600	20'				firm	rdish Br	clay, very sandy, silty		sl. moist	0	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B08
DATE: 4/3/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'		1 1/2'										
5/3 @ 1613					firm		Clay, sandy		d. moist	0	0		0
	30'												
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N00520
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B09
DATE: 4/4/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	8'												
S-1 @ 0800	10'		1.6/2'		soft	rdish brn			sl. moist	0	0		0
	18'												
S-2 @ 0811	20'		1.7/2'		firm	rdish brn			sl. moist	0	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N00520
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 355B09
DATE: 4/4/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'		1'		firm	orange br							
S3			1.7/2'		to	mottled	Clay, sandy, silty		sl. moist	0	0		0
C 0827	30'				Rod	grey gray							
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 35SB10
DATE: 6/6/00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1							Asphalt						
2					Loose		moist white sand		moist				
3							med-coarse						
4													
5			20"		Loose		Drk orange/Red		sl. moist	0	0		0
6							sandy clay		F/L				
7													
8													
9					Firm to		Red sandy clay		sl. moist				
10			22"		Loose					0	0		0
13													
14													
15			23"		Firm		Red sandy clay		moist	0	0		0
18													
19													
20					Firm		Red sandy clay		moist	0	0		0
							TD 20'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No Y Well I.D. #: ____

Tetra Tech NUS, Inc.

0916

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 35SB11
DATE: 6/6/00
GEOLOGIST: R O Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
							Concrete						
					Loose		TAN SAnd		moist				
							↓		Petro odor just				
									below Concrete				
5			20"		Slightly		Red sandy						
6					loose		Clay		moist				
135 7													
8													
9					Loose		Red sandy		moist				
140 10							clay		odor	3111			
									FIL	0			
13													
13 14									moist				
145 14 15					Loose		Red sandy clay		odor 27,	097			
15									FIL	0			
18													
300 19													
20					Firm		Red sandy clay		moist odor	6132			
									No flame FIL	0			
23					Loose		Sandy Pink		moist				
1000 24					↓		clay			1339			
25					Firm				FIL	226			

* When rock coring, enter rock brokeness.

Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm):

Converted to Well: Yes _____ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 35SB12
DATE: 6/6/00
GEOLOGIST: RD Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							Concrete						
					Loose		Brown sand & small						
							gravel						
S1 125 5			0"				NONE		nothing in				
6									tube too soft				
7									or loose				
8					Loose		Drk Red sandy						
S2 9							clay		moist				
307 10			19"							1728			
									FIL	302			
13									Half of media				
S-3 14									outside tube				
1310 15			18"							1739			
									FIL	255			
18													
S4 19					Loose		Red sandy clay		moist				
20										300.8			
									FIL	591.0			
S5 23							Gray sandy clay		moist				
40 24							to pink sandy clay			178.7			
25									FIL	235.4			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm):

Remarks:

Converted to Well: Yes _____ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 35SB11
DATE: 6/6/00
GEOLOGIST: R. D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
28					Hard		Purple clay with		sample did not				
1040 29							a little grey clay		stay in tube				
30							mixed in			0	0		0
31					Hard		Purple + grey clay						
1055 32			18"		Loose		to Loose fine sand		moist	0	0		0
~~33~~													
1055 ~~34~~													
35							TD 32'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 35 SB12
DATE: 6/6/00
GEOLOGIST: RD Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
28													
29					Firm		Gray + Purple		moist				
30							Sandy Clay			260	0		0
							TD 30'		FIL	250			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm):

Converted to Well: Yes _____ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: ~~Kelly Drilling~~ AECS
DRILLING RIG: Geoprobe

BORING No.: 35SB13
DATE: 6/6/00
GEOLOGIST: R.D. Munson
DRILLER: D. Cobb

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							Concrete						
					Loose		Brown sand						
							↓						
					Loose		Red med to fine		moist				
5			14"				sand			0	0		0
51 6 (35)													
7													
8					Loose		Red/Brown med		moist				
52 9 (40)							sand with a little						
10			23"				clay			0	0		0
53 13													
14					Loose		Red sandy clay		moist				
(45) 15			15"							3/3.7	0		0
									FIL	69.3			
18													
4 19					Loose		Orange sandy		moist				
53 20			22"				clay			25+10			
									FIL	0			
5 23													
10 24					Firm		Orange to Pink		moist				
25			23"				sandy clay			0			

TD 25'

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NTS Whitney Field
PROJECT NUMBER: 0052
DRILLING COMPANY: Kelly
DRILLING RIG:

BORING No.: 355B01215
DATE: 5/14/01
GEOLOGIST: L. Smith
DRILLER: B. Kelly

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
											Ø		Ø
											Ø		Ø
											Ø		Ø
											Ø		Ø
											Ø		Ø
											Ø		Ø
											Ø		Ø
											Ø		Ø
					0-15'		Silty Sandy Clay		w/filter 92		Ø		Ø

5
10
15

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): Ø

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: 0052
DRILLING COMPANY: Kelly
DRILLING RIG:

BORING No.: 3SS1301116
DATE: 5/14/01
GEOLOGIST: L. Smith
DRILLER: Bobby Kelly

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
											Ø		Ø
											Ø		Ø
5											Ø		Ø
											Ø		Ø
10											Ø	47	Ø
											Ø		Ø
15						orgy	Silty Sandy CLAY		w/filter 76	280	Ø	200	Ø

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): Ø

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NAS Whiting Field
PROJECT NUMBER: 0052
DRILLING COMPANY: Kelly
DRILLING RIG:

BORING No.: 35SB01220
DATE: 5/14/01
GEOLOGIST: L. Smith
DRILLER: B. Kelly

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
											Ø		Ø
											Ø		Ø
	5										Ø		Ø
											Ø		Ø
	10										Ø		Ø
											Ø		Ø
	15										Ø		Ø
											Ø		Ø
	20					brsr	Silty Sandy Clay		w/filter 92	270	Ø		Ø

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): Ø

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: Kelly Drlg
DRILLING RIG: Cambora CT150
BORING No.: WHF-38-35
DATE: 4/13/00
GEOLOGIST: BDH
DRILLER: BK

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	70'												
S-1 @ 1048	72'	29/17 32/34	1.2/2'			white to brn	Sand, med. to fine gray mon v.c. sd.		sl. moist	0	0		0
S-2 @ 1056	74'	28/37 56/66	1.6/2'			white	Sand, fine to med rare granules		moist	0	0		0
S-3 @ 1105	76'	20/26 35/44	1.4/2'			brn gray to orange brn	Sand, f. to coarse w/ granules, poorly sorted		moist	0	0		0
S-4 @ 1250	78'	21/28 40/44	1.2/2'							1.4	0		0
S-5 @ 1302	80	17/22 30/47	1.4/2'							1.5	0		0
S-6 @ 1321	82'	17/19 26/31	1.4/2'			strong brn to maroon				0	0		0
S-7 @ 1330	84'	15/17 24/27	1.3/2							0	0		0
S-8 @ 1337	86'	12/19 26/34	1.4/2'							0	0		0
				86.3'									
S-9 @ 1344	88'	14/26 17/21			firm	gray brown	clay, sandy, silty maroon stn w/ sand lenses up to 0.5' thick.		sl. moist	0	0		0
S-10 @ 1355	90'	10/18 12/22		90'					moist	0	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ✓ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 38SB01
DATE: 4/4/00
GEOLOGIST: BOH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1028	8' 10'		1.6'/2'		firm	rotted brn	clay, sandy, silty		sl. moist	0	0		0
S-2 @ 1037	18' 20'		1.5'/2'	18' 19.1'	loose firm	white with mottled	sand, fine to v.f. clay, sandy, silty		sl. moist sl. moist	0	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 385B01
DATE: 4/4/00
GEOLOGIST: BDH
DRILLER: DA

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'												
S-3 @ 1053					loose	white	sand, fine to v.f.		sl. moist	0	0		0
	30'												
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0082
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 385B02
DATE: 4/5/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
				0.3'		not bn	Topsoil, silty		sl. moist				
S-1 @ 0712			1/2.5/4'	1.4'	loose	tan	Sand, fine to v.f., silty		sl. moist				
					firm	wh bn	clay, sandy		sl. moist	0	0		0
					loose	not bn	Sand, fine, silty						
	4'												
S-2 @ 0736			1/3/4'		firm	tan	Sand, fine to		sl. moist	0	0		0
						mottled orng bn	medium, increasing						
							clay content @ 7-8'						
	8'												
S-3 @ 0742			1/1.7/2'	8.5'	firm	wh bn	clay, sandy, silty		sl. moist	0	0		0
	10'					mottled	pink gray, tan						
	18'												
S-4 @ 0711			1/1.5/2'		loose	to gray	Sand, fine to v.f.		dry	0	0		0
	20'					wh bn	in 1/8" laminae						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 385B02
DATE: 4/5/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'												
S-5			1.7/2		loose	white	Sand, fine to v.f.		dry	0	0		0
0802	30'						silt/pepper appearance						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N00520
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 385B03
DATE: 4/5/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0			1' 0.3	loose	med. brn	topsoil, sandy						
S-1 @ 0830			2.8'/4'	2.5'		tan	Sand, fine to med., silty		sl. moist	0	0		0
	4'					light brn.	Sand, med., clayey		sl. moist				
S-2 @ 0835	8'		0.8'/2'		loose	tan	Sand, fine, sl. clayey		sl. moist	0	0		0
	10'												
S-3 @ 0850	18'		1.6'/2'		loose	white to light brn	Sand, fine to v.f.		sl. moist	0	0		0
	20'												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0032
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 385B03
DATE: 4/5/00
GEOLOGIST: BDH
DRILLER: PC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	28'												
4 to 5910	30'		1.5/2'		loose	white to light brn	Sand, fine to v.f. in laminae		dry	0	0		0
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N00520
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 38SB04
DATE: 4/5/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S1 @ 1257	8'		1.6'/2'		firm	white to orange/tan	Clay, sandy, silty		sl. moist	K	0		0
	10'												
S2 @ 1326	18'		1.5'/2'		loose	white	Sand, fine to v.f.		dry to sl. moist	0	0		0
	20'												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N00520
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 385B04
DATE: 4/5/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'												
S3 @ 1320			1.4/2'		loose	white	Sand, fine to v.f.		dry	0	0		0
	30'												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N00520
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 385B05
DATE: 4/5/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
5-1 C 1331	8' 10'		1.9'/2'		fine soft	dk brn dk gray	clay, sandy, silty		sl. moist	0	0		0
5-2 C 1342	28' 30'		1.4'/2'		loose	dk gray to white	Sand, fine to VF, sl. clayey or lose		sl. moist	0	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: W Riting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 385B05
DATE: 4/5/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'												
S-3 @ 1355	30'		1.3/2'		loose	white	Sand, fine to medium w/ some gravels		dry	0	0		0
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 385B06
DATE: 4/5/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	8'												
S-1 @ 14	12		1.9'/2'		firm	white brn mottled pink gray, tan	Clay, sandy, silty		sl. moist	0	0		0
	10'												
	18'												
S-2 @ 14	20'		1.8'/2'		loose	white	sand, fine to v.f.		dry	0	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: OU Boring Field
PROJECT NUMBER: N00520
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600
BORING No.: 385B06
DATE: 4/5/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'												
S-3 @ 1437	30'		1.3'/2'		loose	white	Sand, fine to v.f.		dry		0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 38SB07
DATE: 4/5/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
5-1 1450	8' 10'		1.8/2'		firm	reddish brn to yellow brn	Clay, sandy, silty		sl moist	0	0		0
5-2 1458	18' 20'		1.3/2'		loose	white	Sand, fine to v.f.		moist	0	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 38SB07
DATE: 4/5/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'		1 1/2'		loose	white	sand, fine to vf.		dry	0	0		0
5 @ 12	30'												
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600

BORING No.: 38SB08
DATE: 4/5/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1358			1 / 2.6/4	1.0'	loose	tan	Sand, fine to medium		moist	0	0		0
	4'			4.4'	loose	red. brn to tan	Sand, fine, silty		moist	0	0		0
			1 / 1.4/4		firm	light brn	clay, sandy, silty		sl. moist	7.5	0		0
S-2 @ 1605				6.5' / 7.0'			Concrete						
	8'		1 / 1.4/2	8.0'	firm	light brn	Clay, sandy		sl. moist				
S-3 @ 1611	10'				loose	tan	Sand, fine		sl. moist	0	0		0
	18'												
S-4 @ 1619	20'		1 / 1.7/2.0		loose	white to light brn	Sand, fine to v.f. - Carbonate		sl. moist	0	0		0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N005D
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600
BORING No.: 38SB08
DATE: 4/5/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
5 @ 16	28'	5 32	1.3'/2'		loose	white	Sand, fine to v.f.		sl. moist	0	0		0
	30'						TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0056
DRILLING COMPANY: AECS
DRILLING RIG: Geoprobe 6600
BORING No.: 38SB09
DATE: 4/5/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
S-1 @ 1645	8'		1.4/2'		firm	white mottled	Clay, sandy, silty grayish gray		sl. moist	0	0		0
	10'												
S-2 @ 1655	18'		1.4/2'		loose	white	Sand, fine to v.f.		sl. moist	0	0		0
	20'												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

BORING LOG

PROJECT NAME: Whiting Field
PROJECT NUMBER: N0052
DRILLING COMPANY: AECS
DRILLING RIG: geoprobe 6600
BORING NUMBER: 385B09
DATE: 4/5/00
GEOLOGIST: BDH
DRILLER: DC

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	28'												
S3			1.2'/2'		loose	white	Sand, fine to v.f.		sl. moist	0	0		0
CR 1703	30'												
							TD 30'						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

APPENDIX D

ANALYTICAL DATA VALIDATION REPORTS

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

PITT-04-0-053

TO: **TERRY HANSEN** **DATE:** **OCTOBER 18, 2000**

FROM: **JUSTIN ORBICH** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – VOA/GAS**
CTO 079, NAS WHITING FIELD
SDG F5837

SAMPLES: 7/Aqueous

05G00901	06G00101
07G00101	30G00401
66G01301	66G02001
SFT08101	

OVERVIEW

The sample set for CTO 079, SDG F5837, Naval Air Station (NAS) Whiting Field consists of seven (7) aqueous environmental samples which included one (1) trip blank (designated TB). The samples were analyzed for Target Compound List (TCL) volatile plus 1,2-dibromoethane, methane, ethane, and ethene organic compounds. No field duplicate pairs (03G00101/03G00101D and 03GBA00101/03GBA00101D) were included within this SDG.

The samples were collected on February 6th and 7th, 2000 and analyzed by Accutest. All analyses were performed in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria and analyzed according to SW 846 Method 8260B and 8015 analytical and reporting protocols. The data in this SDG was validated with regard to the following parameters:

- * Data completeness
- * Holding times
- * GC/MS tuning and system performance
- Initial/continuing calibrations
- Laboratory method and field quality control blank results
- * Surrogate spike recoveries
- * Matrix Spike/Matrix Spike Duplicate Results
- Blank Spike Results
- * Internal Standard Performance
- * Compound Identification
- * Compound Quantitation
- Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified analytical results are presented in Appendix A.

MEMO TO: **TERRY HANSEN**
DATE: **OCTOBER 18, 2000 – PAGE 2**

VOLATILE FRACTION

The continuing calibration Percent Differences (%Ds) exceeded the 25% quality control limit for methylene chloride. The nondetected results were qualified as estimated (UJ), in all the samples.

The Blank Spike Percent Recovery (%R) was below the quality control limit for styrene. No action was warranted on Blank Spike data alone.

It should be noted that several compounds in several samples were analyzed at a dilution.

GAS FRACTION

The following compounds were detected in the field quality control blanks at the maximum concentrations indicated below:

Compound	Concentration	Aqueous Action
Methylene chloride (T)	0.5 µg/L	2.5 µg/L

(T) Trip Blank

Blank Actions

- Value < Reporting Limits (RL); report RL followed by a U.
- Value > RL and < Action level; report value followed by a U.
- Value > RL and > action level; report value unqualified.

Dilution factors and sample aliquots were taken into consideration during the application of all action levels. The positive results were qualified as (U) as a result of blank contamination for methylene chloride. It should be noted that field quality control blanks are not qualified based on lab method blank contamination.

It should be noted that in sample 07G00101, methane was analyzed at a 5X dilution.

ADDITIONAL COMMENTS

Several samples contained positive results for compounds below the reporting limits. These results were qualified as estimated (J).

EXECUTIVE SUMMARY

Laboratory Performance: The continuing calibration %D exceeded the quality control limit for methylene chloride. Methane was detected as a blank contaminant in the trip blank.

Other Factors Affection Data Quality: Several samples for several compounds were analyzed at a dilution. The blank spike %R was below the quality control limit for styrene.

MEMO TO: **TERRY HANSEN**
DATE: **OCTOBER 18, 2000 – PAGE 3**

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (October 1999) and the NFESC guidelines "Navy IRCDQM" (September 1999). The text of this report has been formulated to address only those problems 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)."

Justin Orbich

Chemist/Data Validator
Tetra Tech NUS

Joseph A. Samchuck

Data Validation Quality Assurance Officer
TetraTech NUS

Attachments:

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

DATA QUALIFIER DEFINITIONS:

J	-	Positive result is estimated as a result of a value below the CRQL or a technical noncompliance.
UJ	-	Nondetected result is considered to be estimated as a result of technical noncompliances.
U	-	Value is a nondetected result as reported by the laboratory, or is considered nondetected as a result of blank contamination and should not be considered present.

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

APPENDIX A

Qualified Analytical Results

SAMPLE NUMBER:	05G00901			06G00101			07G00101			30G00401		
SAMPLE DATE:	02/06/00			02/06/00			02/06/00			02/07/00		
LABORATORY ID:	F5837-1			F5837-2			F5837-3			F5837-6		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
VOLATILES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
1,1,1-TRICHLOROETHANE	1	U		1.1			50	U		1	U	
1,1,2,2-TETRACHLOROETHANE	1	U		1	U		50	U		1	U	
1,1,2-TRICHLOROETHANE	1	U		1	U		50	U		1	U	
1,1-DICHLOROETHANE	1	U		1	U		50	U		1	U	
1,1-DICHLOROETHENE	1	U		18.2			50	U		1	U	
1,2-DIBROMOETHANE	1	U		1	U		50	U		1	U	
1,2-DICHLOROETHANE	1	U		0.66	J	P	150	U		1	U	
1,2-DICHLOROETHENE (TOTAL)	2	U		3.2			100	U		2	U	
1,2-DICHLOROPROPANE	1	U		1	U		50	U		1	U	
2-BUTANONE	5	U		5	U		250	U		5	U	
2-HEXANONE	5	U		5	U		250	U		5	U	
4-METHYL-2-PENTANONE	5	U		5	U		250	U		5	U	
ACETONE	5	U		5	U		250	U		5	U	
BENZENE	1	U		1	U		4900			38.4		
BROMODICHLOROMETHANE	1	U		1	U		50	U		1	U	
BROMOFORM	1	U		1	U		50	U		1	U	
BROMOMETHANE	1	U		1	U		50	U		1	U	
CARBON DISULFIDE	5	U		5	U		250	U		5	U	
CARBON TETRACHLORIDE	1	U		1	U		50	U		1	U	
CHLOROBENZENE	1	U		1	U		50	U		1	U	
CHLOROETHANE	1	U		1	U		50	U		1	U	
CHLOROFORM	1	U		1	U		50	U		1	U	
CHLOROMETHANE	1	U		1	U		50	U		1	U	
CIS-1,3-DICHLOROPROPENE	1	U		1	U		50	U		1	U	
DIBROMOCHLOROMETHANE	1	U		1	U		50	U		1	U	
ETHYLBENZENE	1	U		1	U		2620			176		
METHYLENE CHLORIDE	5	UJ	C	5	UJ	C	250	UJ	C	5	UJ	C
STYRENE	1	U		1	U		50	U		1	U	
TETRACHLOROETHENE	0.78	J	P	1	U		50	U		1	U	
TOLUENE	2.7			1	U		8340			1.2		
TRANS-1,3-DICHLOROPROPENE	1	U		1	U		50	U		1	U	
TRICHLOROETHENE	1	U		239			50	U		30.8		
VINYL CHLORIDE	1	U		1	U		50	U		1	U	
XYLENES, TOTAL	3.2			3	U		4530			303		

SAMPLE NUMBER:	66G01301			66G02001			SFT08101					
SAMPLE DATE:	02/07/00			02/07/00			02/06/00			/ /		
LABORATORY ID:	F5837-7			F5837-5			F5837-4					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U		1	U		1	U				
1,1,2,2-TETRACHLOROETHANE	1	U		1	U		1	U				
1,1,2-TRICHLOROETHANE	1	U		1	U		1	U				
1,1-DICHLOROETHANE	1	U		1	U		1	U				
1,1-DICHLOROETHENE	1	U		1	U		1	U				
1,2-DIBROMOETHANE	1	U		1	U		1	U				
1,2-DICHLOROETHANE	1	U		1	U		1	U				
1,2-DICHLOROETHENE (TOTAL)	30.2			2	U		2	U				
1,2-DICHLOROPROPANE	1	U		1	U		1	U				
2-BUTANONE	5	U		5	U		5	U				
2-HEXANONE	5	U		5	U		5	U				
4-METHYL-2-PENTANONE	5	U		5	U		5	U				
ACETONE	5	U		61.8			5	U				
BENZENE	1	U		2.4			1	U				
BROMODICHLOROMETHANE	1	U		1	U		1	U				
BROMOFORM	1	U		1	U		1	U				
BROMOMETHANE	1	U		1	U		1	U				
CARBON DISULFIDE	5	U		5	U		5	U				
CARBON TETRACHLORIDE	1	U		1	U		1	U				
CHLOROBENZENE	1	U		1	U		1	U				
CHLOROETHANE	1	U		1	U		1	U				
CHLOROFORM	1.1			1	U		1	U				
CHLOROMETHANE	1	U		1	U		1	U				
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U				
DIBROMOCHLOROMETHANE	1	U		1	U		1	U				
ETHYLBENZENE	1	U		1	U		1	U				
METHYLENE CHLORIDE	5	UJ	C	5	UJ	C	5	UJ	C			
STYRENE	1	U		1	U		1	U				
TETRACHLOROETHENE	1	U		1	U		1	U				
TOLUENE	1	U		1	U		1	U				
TRANS-1,3-DICHLOROPROPENE	1	U		1	U		1	U				
TRICHLOROETHENE	244			1.7			1	U				
VINYL CHLORIDE	1	U		1	U		1	U				
XYLENES, TOTAL	3	U		3	U		3	U				

SAMPLE NUMBER:	05G00901			06G00101			07G00101			30G00401		
SAMPLE DATE:	02/06/00			02/06/00			02/06/00			02/07/00		
LABORATORY ID:	F5837-1			F5837-2			F5837-3			F5837-6		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
DISSOLVED METHANE	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
ETHANE	0.014	U		0.014	U		8.47			0.014	U	
ETHENE	0.014	U		0.014	U		0.75			0.014	U	
METHANE	0.2	U	B	14.5			9270			37.9		

SAMPLE NUMBER:	66G01301			66G02001			SFT08101					
SAMPLE DATE:	02/07/00			02/07/00			02/06/00			/ /		
LABORATORY ID:	F5837-7			F5837-5			F5837-4					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DISSOLVED METHANE												
ETHANE	0.014	U		0.014	U		0.014	U				
ETHENE	0.014	U		0.014	U		0.014	U				
METHANE	0.15	U	B	4.32			0.5					

APPENDIX B

Results as Reported by the Laboratory

ACCUTEST

Report of Analysis

Client Sample ID:	05G00901		
Lab Sample ID:	F5837-1	**Date Sampled:**	02/06/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H006100.D	1	02/12/00	CJP	n/a	n/a	VH42
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	0.78	1.0	ug/l	J
108-88-3	Toluene	2.7	1.0	ug/l	
79-01-6	Trichloroethylene	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	3.2	3.0	ug/l	

ND = Not detected
RL = Reporting 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

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Report of Analysis

Client Sample ID:	05G00901		
Lab Sample ID:	F5837-1	**Date Sampled:**	02/06/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		80-120%
17060-07-0	1,2-Dichloroethane-D4	98%		69-128%
2037-26-5	Toluene-D8	105%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

ND = Not detected
RL = Reporting 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

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Report of Analysis

Client Sample ID:	06G00101		
Lab Sample ID:	F5837-2	**Date Sampled:**	02/06/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H006101.D	1	02/12/00	CJP	n/a	n/a	VH42
Run #2	H006118.D	5	02/14/00	CJP	n/a	n/a	VH42

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	18.2	1.0	ug/l	
107-06-2	1,2-Dichloroethane	0.66	1.0	ug/l	J
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	3.2	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	1.1	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	239 [a]	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	ug/l	

ND = Not detected
RL = Reporting 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

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Report of Analysis

Client Sample ID:	06G00101		
Lab Sample ID:	F5837-2	**Date Sampled:**	02/06/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%	90%	80-120%
17060-07-0	1,2-Dichloroethane-D4	97%	91%	69-128%
2037-26-5	Toluene-D8	106%	102%	80-120%
460-00-4	4-Bromofluorobenzene	99%	97%	80-120%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting 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

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Report of Analysis

Client Sample ID:	07G00101		
Lab Sample ID:	F5837-3	**Date Sampled:**	02/06/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H006102.D	50	02/12/00	CJP	n/a	n/a	VH42
Run #2	H006124.D	100	02/14/00	CJP	n/a	n/a	VH42

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	250	ug/l	
71-43-2	Benzene	4900	50	ug/l	
75-27-4	Bromodichloromethane	ND	50	ug/l	
75-25-2	Bromoform	ND	50	ug/l	
108-90-7	Chlorobenzene	ND	50	ug/l	
75-00-3	Chloroethane	ND	50	ug/l	
67-66-3	Chloroform	ND	50	ug/l	
75-15-0	Carbon disulfide	ND	250	ug/l	
56-23-5	Carbon tetrachloride	ND	50	ug/l	
75-34-3	1,1-Dichloroethane	ND	50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	50	ug/l	
107-06-2	1,2-Dichloroethane [a]	ND	150	ug/l	
78-87-5	1,2-Dichloropropane	ND	50	ug/l	
124-48-1	Dibromochloromethane	ND	50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	50	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	100	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	50	ug/l	
100-41-4	Ethylbenzene	2620	50	ug/l	
591-78-6	2-Hexanone	ND	250	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	250	ug/l	
74-83-9	Methyl bromide	ND	50	ug/l	
74-87-3	Methyl chloride	ND	50	ug/l	
75-09-2	Methylene chloride	ND	250	ug/l	
78-93-3	Methyl ethyl ketone	ND	250	ug/l	
100-42-5	Styrene	ND	50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	50	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	50	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	50	ug/l	
127-18-4	Tetrachloroethylene	ND	50	ug/l	
108-88-3	Toluene	8340 [b]	100	ug/l	
79-01-6	Trichloroethylene	ND	50	ug/l	
75-01-4	Vinyl chloride	ND	50	ug/l	
1330-20-7	Xylene (total)	4530	150	ug/l	

ND = Not detected
RL = Reporting 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

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Report of Analysis

Client Sample ID:	07G00101		
Lab Sample ID:	F5837-3	**Date Sampled:**	02/06/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%	91%	80-120%
17060-07-0	1,2-Dichloroethane-D4	97%	93%	69-128%
2037-26-5	Toluene-D8	104%	102%	80-120%
460-00-4	4-Bromofluorobenzene	98%	98%	80-120%

(a) Elevated detection limits due to matrix interference.
(b) Result is from Run# 2

ND = Not detected
RL = Reporting 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

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Report of Analysis

Client Sample ID:	30G00401		
Lab Sample ID:	F5837-6	**Date Sampled:**	02/07/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H006105.D	1	02/12/00	CJP	n/a	n/a	VH42
Run #2	H006117.D	2	02/14/00	CJP	n/a	n/a	VH42

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene	38.4	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	176 [a]	2.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	1.2	1.0	ug/l	
79-01-6	Trichloroethylene	30.8	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	303 [a]	6.0	ug/l	

ND = Not detected
RL = Reporting 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

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Report of Analysis

Client Sample ID:	30G00401		
Lab Sample ID:	F5837-6	**Date Sampled:**	02/07/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%	90%	80-120%
17060-07-0	1,2-Dichloroethane-D4	97%	90%	69-128%
2037-26-5	Toluene-D8	100%	102%	80-120%
460-00-4	4-Bromofluorobenzene	98%	98%	80-120%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting 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

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Report of Analysis

Client Sample ID:	66G01301		
Lab Sample ID:	F5837-7	**Date Sampled:**	02/07/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H006106.D	1	02/12/00	CJP	n/a	n/a	VH42
Run #2	H006119.D	5	02/14/00	CJP	n/a	n/a	VH42

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	1.1	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	30.2	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	244 [a]	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	ug/l	

ND = Not detected
RL = Reporting 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

ACCUTEST

Report of Analysis

Client Sample ID:	66G01301		
Lab Sample ID:	F5837-7	**Date Sampled:**	02/07/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%	92%	80-120%
17060-07-0	1,2-Dichloroethane-D4	93%	92%	69-128%
2037-26-5	Toluene-D8	104%	101%	80-120%
460-00-4	4-Bromofluorobenzene	98%	98%	80-120%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting 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

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Report of Analysis

Client Sample ID:	66G02001		
Lab Sample ID:	F5837-5	**Date Sampled:**	02/07/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H006116.D	1	02/14/00	CJP	n/a	n/a	VH42
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	61.8	5.0	ug/l	
71-43-2	Benzene	2.4	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	1.7	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	ug/l	

ND = Not detected
RL = Reporting 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

ACCUTEST

Report of Analysis

Client Sample ID:	66G02001		
Lab Sample ID:	F5837-5	**Date Sampled:**	02/07/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		80-120%
17060-07-0	1,2-Dichloroethane-D4	88%		69-128%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	97%		80-120%

ND = Not detected
RL = Reporting 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

ACCUTEST

Report of Analysis

Client Sample ID:	SFT08101		
Lab Sample ID:	F5837-4	**Date Sampled:**	02/06/00
Matrix:	AQ - Trip Blank Water	**Date Received:**	02/08/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H006103.D	1	02/12/00	CJP	n/a	n/a	VH42
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	ug/l	

ND = Not detected
RL = Reporting 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

ACCUTEST

Report of Analysis

Client Sample ID:	SFT08101		
Lab Sample ID:	F5837-4	**Date Sampled:**	02/06/00
Matrix:	AQ - Trip Blank Water	**Date Received:**	02/08/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		80-120%
17060-07-0	1,2-Dichloroethane-D4	98%		69-128%
2037-26-5	Toluene-D8	104%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

ND = Not detected
RL = Reporting 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

ACCUTEST

Report of Analysis

Client Sample ID:	05G00901		
Lab Sample ID:	F5837-1	**Date Sampled:**	02/06/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II12858.D	1	02/10/00	ANJ	n/a	n/a	N:GII706
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	0.20	0.10	ug/l	
74-84-0	Ethane	ND	0.014	ug/l	
74-85-1	Ethene	ND	0.014	ug/l	

ND = Not detected
RL = Reporting 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

ACCUTEST

Report of Analysis

Client Sample ID:	06G00101		
Lab Sample ID:	F5837-2	**Date Sampled:**	02/06/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II12859.D	1	02/10/00	ANJ	n/a	n/a	N:GII706
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	14.5	0.10	ug/l	
74-84-0	Ethane	ND	0.014	ug/l	
74-85-1	Ethene	ND	0.014	ug/l	

ND = Not detected
RL = Reporting 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

ACCUTEST

Report of Analysis

Client Sample ID:	07G00101		
Lab Sample ID:	F5837-3	**Date Sampled:**	02/06/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II12861.D	1	02/10/00	ANJ	n/a	n/a	N:GII706
Run #2	II12862.D	5	02/10/00	ANJ	n/a	n/a	N:GII706

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	9270 a	0.50	ug/l	
74-84-0	Ethane	8.47	0.014	ug/l	
74-85-1	Ethene	0.75	0.014	ug/l	

(a) Result is from Run# 2

ND = Not detected
RL = Reporting 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

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Report of Analysis

Client Sample ID:	30G00401		
Lab Sample ID:	F5837-6	**Date Sampled:**	02/07/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II12865.D	1	02/10/00	ANJ	n/a	n/a	N:GII706
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	37.9	0.10	ug/l	
74-84-0	Ethane	ND	0.014	ug/l	
74-85-1	Ethene	ND	0.014	ug/l	

ND = Not detected
RL = Reporting 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

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Report of Analysis

Client Sample ID:	66G01301		
Lab Sample ID:	F5837-7	**Date Sampled:**	02/07/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II12866.D	1	02/10/00	ANJ	n/a	n/a	N:GII706
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	0.15	0.10	ug/l	
74-84-0	Ethane	ND	0.014	ug/l	
74-85-1	Ethene	ND	0.014	ug/l	

ND = Not detected
RL = Reporting 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

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ACCUTEST

Report of Analysis

Client Sample ID:	66G02001		
Lab Sample ID:	F5837-5	**Date Sampled:**	02/07/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II12864.D	1	02/10/00	ANJ	n/a	n/a	N:GII706
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	4.32	0.10	ug/l	
74-84-0	Ethane	ND	0.014	ug/l	
74-85-1	Ethene	ND	0.014	ug/l	

ND = Not detected
RL = Reporting 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

ACCUTEST

Report of Analysis

Client Sample ID:	SFT08101		
Lab Sample ID:	F5837-4	**Date Sampled:**	02/06/00
Matrix:	AQ - Trip Blank Water	**Date Received:**	02/08/00
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II12863.D	1	02/10/00	ANJ	n/a	n/a	N:GII706
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	0.50	0.10	ug/l	
74-84-0	Ethane	ND	0.014	ug/l	
74-85-1	Ethene	ND	0.014	ug/l	

ND = Not detected
RL = Reporting 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

APPENDIX C

Support Documentation

ACCUTEST

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ORLANDO, FL 32811
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ACCUTEST QUOTE #: 030

CLIENT INFORMATION

NAME: Tetra Tech NUS
ADDRESS: 1401 Oven Park Drive St. 102
CITY, STATE, ZIP: Tallahassee FL 32312
SEND REPORT TO:
PHONE #: Howard Engle 850-385-9899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting Field
LOCATION: Bldg 1443 WW treatment Plant
Milton, FL 32570
PROJECT NO.:
FAX #: NONE

ANALYTICAL INFORMATION

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	TCL VOCs	Diss. Methane	GNRMS	Sulfide	Diss. Org. Carbon	LAB USE ONLY
F18321 -1	056-00901	2-6-00	0927	SB, KM, LS	GW	8	5	1		1	1	3	2	1	1	1	
-2	066-00101	↓	1200	↓	↓	↓	"	"		"	"	↓	↓	↓	↓	↓	
-3	076-00101	↓	1535	↓	↓	↓	"	"		"	"	↓	↓	↓	↓	↓	
-4	SFT08101	2-3-00	1800									↓					trip Blank
-5	066-02001	2-7-00	0953	SB, KM, LS	GW	8	5	1		1	1	3	2	1	1	1	
-6	306-00401	↓	1129	↓	↓	↓	"	"		"	"	↓	↓	↓	↓	↓	
-7	066-01301	↓	1447	↓	↓	↓	"	"		"	"	↓	↓	↓	↓	↓	
	Temp. Blank																

Note: Some dates on Bottles 02-6-00 + 06-02-00 are the same.

DATA TURNAROUND INFORMATION

- [x] STANDARD
- [ ] 48 HOUR RUSH
- [ ] 24 HOUR EMERGENCY
- [ ] OTHER

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- [ ] STANDARD
- [ ] COMMERCIAL "B"
- [ ] DISK DELIVERABLE
- [ ] STATE FORMS
- [ ] OTHER (SPECIFY)

COMMENTS/REMARKS

Sample 07G00101 has strong odor
CoC # 002
Fed Ex airbill # 2369342006
Cooler Temp 2.5°C

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER: 1800	DATE TIME: 1800	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
Jeff Barten	2-7-00	1. Fed Ex 2-7-00 1800	2.		2.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
		3. 2800	4.		4.
	DATE TIME:	RECEIVED BY:	SEAL #	PRESERVE WHERE APPLICABLE ☐	ON ICE ☐	TEMPERATURE ____ C
		5.			

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	05G00901	F5837-1	NORMAL	F5837	CL	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	06G00101	F5837-2	NORMAL	F5837	CL	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	07G00101	F5837-3	NORMAL	F5837	CL	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	30G00401	F5837-6	NORMAL	F5837	CL	02/07/00	02/08/00	02/09/00	1	1	2
MG/L	66G01301	F5837-7	NORMAL	F5837	CL	02/07/00	02/08/00	02/09/00	1	1	2
MG/L	66G02001	F5837-5	NORMAL	F5837	CL	02/07/00	02/08/00	02/10/00	1	2	3
MG/L	05G00901	F5837-1	NORMAL	F5837	DOC	02/06/00	03/02/00	03/02/00	25	0	25
MG/L	06G00101	F5837-2	NORMAL	F5837	DOC	02/06/00	03/02/00	03/02/00	25	0	25
MG/L	07G00101	F5837-3	NORMAL	F5837	DOC	02/06/00	03/02/00	03/02/00	25	0	25
MG/L	30G00401	F5837-6	NORMAL	F5837	DOC	02/07/00	03/02/00	03/02/00	24	0	24
MG/L	66G01301	F5837-7	NORMAL	F5837	DOC	02/07/00	03/02/00	03/02/00	24	0	24
MG/L	66G02001	F5837-5	NORMAL	F5837	DOC	02/07/00	03/02/00	03/02/00	24	0	24
UG/L	05G00901	F5837-1	NORMAL	F5837	ETHA	02/06/00	/ /	02/10/00	0	0	4
UG/L	06G00101	F5837-2	NORMAL	F5837	ETHA	02/06/00	/ /	02/10/00	0	0	4
UG/L	07G00101	F5837-3	NORMAL	F5837	ETHA	02/06/00	/ /	02/10/00	0	0	4
UG/L	30G00401	F5837-6	NORMAL	F5837	ETHA	02/07/00	/ /	02/10/00	0	0	3
UG/L	66G01301	F5837-7	NORMAL	F5837	ETHA	02/07/00	/ /	02/10/00	0	0	3
UG/L	66G02001	F5837-5	NORMAL	F5837	ETHA	02/07/00	/ /	02/10/00	0	0	3
UG/L	SFT08101	F5837-4	NORMAL	F5837	ETHA	02/06/00	/ /	02/10/00	0	0	4
UG/L	05G00901	F5837-1	NORMAL	F5837	ETHE	02/06/00	/ /	02/10/00	0	0	4
UG/L	06G00101	F5837-2	NORMAL	F5837	ETHE	02/06/00	/ /	02/10/00	0	0	4
UG/L	07G00101	F5837-3	NORMAL	F5837	ETHE	02/06/00	/ /	02/10/00	0	0	4
UG/L	30G00401	F5837-6	NORMAL	F5837	ETHE	02/07/00	/ /	02/10/00	0	0	3
UG/L	66G01301	F5837-7	NORMAL	F5837	ETHE	02/07/00	/ /	02/10/00	0	0	3
UG/L	66G02001	F5837-5	NORMAL	F5837	ETHE	02/07/00	/ /	02/10/00	0	0	3

									EXTR_DATE	ANAL_DATE	ANAL_DATE
UG/L	SFT08101	F5837-4	NORMAL	F5837	ETHE	02/06/00	/ /	02/10/00	0	0	4
UG/L	05G00901	F5837-1	NORMAL	F5837	METH	02/06/00	/ /	02/10/00	0	0	4
UG/L	06G00101	F5837-2	NORMAL	F5837	METH	02/06/00	/ /	02/10/00	0	0	4
UG/L	07G00101	F5837-3	NORMAL	F5837	METH	02/06/00	/ /	02/10/00	0	0	4
UG/L	30G00401	F5837-6	NORMAL	F5837	METH	02/07/00	/ /	02/10/00	0	0	3
UG/L	66G01301	F5837-7	NORMAL	F5837	METH	02/07/00	/ /	02/10/00	0	0	3
UG/L	66G02001	F5837-5	NORMAL	F5837	METH	02/07/00	/ /	02/10/00	0	0	3
UG/L	SFT08101	F5837-4	NORMAL	F5837	METH	02/06/00	/ /	02/10/00	0	0	4
MG/L	05G00901	F5837-1	NORMAL	F5837	NTA	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	06G00101	F5837-2	NORMAL	F5837	NTA	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	07G00101	F5837-3	NORMAL	F5837	NTA	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	30G00401	F5837-6	NORMAL	F5837	NTA	02/07/00	02/08/00	02/09/00	1	1	2
MG/L	66G01301	F5837-7	NORMAL	F5837	NTA	02/07/00	02/08/00	02/09/00	1	1	2
MG/L	66G02001	F5837-5	NORMAL	F5837	NTA	02/07/00	/ /	02/09/00	0	0	2
MG/L	05G00901	F5837-1	NORMAL	F5837	NTI	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	06G00101	F5837-2	NORMAL	F5837	NTI	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	07G00101	F5837-3	NORMAL	F5837	NTI	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	30G00401	F5837-6	NORMAL	F5837	NTI	02/07/00	02/08/00	02/09/00	1	1	2
MG/L	66G01301	F5837-7	NORMAL	F5837	NTI	02/07/00	02/08/00	02/09/00	1	1	2
MG/L	66G02001	F5837-5	NORMAL	F5837	NTI	02/07/00	/ /	02/09/00	0	0	2
MG/L	05G00901	F5837-1	NORMAL	F5837	NTIA	02/06/00	/ /	02/09/00	0	0	3
MG/L	06G00101	F5837-2	NORMAL	F5837	NTIA	02/06/00	/ /	02/09/00	0	0	3
MG/L	07G00101	F5837-3	NORMAL	F5837	NTIA	02/06/00	/ /	02/09/00	0	0	3
MG/L	30G00401	F5837-6	NORMAL	F5837	NTIA	02/07/00	/ /	02/09/00	0	0	2
MG/L	66G01301	F5837-7	NORMAL	F5837	NTIA	02/07/00	/ /	02/09/00	0	0	2
MG/L	66G02001	F5837-5	NORMAL	F5837	NTIA	02/07/00	/ /	02/09/00	0	0	2
UG/L	05G00901	F5837-1	NORMAL	F5837	OV	02/06/00	/ /	02/12/00	0	0	6

UG/L	06G00101	F5837-2	NORMAL	F5837	OV	02/06/00	/ /	02/12/00	0	0	6
UG/L	07G00101	F5837-3	NORMAL	F5837	OV	02/06/00	/ /	02/12/00	0	0	6
UG/L	30G00401	F5837-6	NORMAL	F5837	OV	02/07/00	/ /	02/14/00	0	0	7
UG/L	66G01301	F5837-7	NORMAL	F5837	OV	02/07/00	/ /	02/12/00	0	0	5
UG/L	66G02001	F5837-5	NORMAL	F5837	OV	02/07/00	/ /	02/14/00	0	0	7
UG/L	SFT08101	F5837-4	NORMAL	F5837	OV	02/06/00	/ /	02/12/00	0	0	6
MG/L	05G00901	F5837-1	NORMAL	F5837	SO4	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	06G00101	F5837-2	NORMAL	F5837	SO4	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	07G00101	F5837-3	NORMAL	F5837	SO4	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	30G00401	F5837-6	NORMAL	F5837	SO4	02/07/00	02/08/00	02/09/00	1	1	2
MG/L	66G01301	F5837-7	NORMAL	F5837	SO4	02/07/00	02/08/00	02/09/00	1	1	2
MG/L	66G02001	F5837-5	NORMAL	F5837	SO4	02/07/00	/ /	02/09/00	0	0	2
MG/L	05G00901	F5837-1	NORMAL	F5837	SUL	02/06/00	/ /	02/12/00	0	0	6
MG/L	06G00101	F5837-2	NORMAL	F5837	SUL	02/06/00	/ /	02/12/00	0	0	6
MG/L	07G00101	F5837-3	NORMAL	F5837	SUL	02/06/00	/ /	02/12/00	0	0	6
MG/L	30G00401	F5837-6	NORMAL	F5837	SUL	02/07/00	/ /	02/12/00	0	0	5
MG/L	66G01301	F5837-7	NORMAL	F5837	SUL	02/07/00	/ /	02/12/00	0	0	5
MG/L	66G02001	F5837-5	NORMAL	F5837	SUL	02/07/00	/ /	02/12/00	0	0	5

Response Factor Report MSVOA3

hod : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
le : EPA 624 & SWA 5030B/8260B
t Update : Thu Jan 13 09:53:02 2000
ponse via : Initial Calibration

ibration Files
=H005551.D 2 =H005552.D 3 =H005553.D
=H005554.D 5 =H005555.D 6 =H005556.D

Compound	1	2	3	4	5	6	Avg	%RSD
Fluorobenzene	----------	----------	----------	ISTD	----------	----------	----------	
Dichlorodifluoromet	0.363	0.360	0.347	0.339	0.326	0.354	0.348	4.02
Chloromethane	0.605	0.523	0.520	0.500	0.493	0.522	0.527	7.60
Vinyl Chloride	0.464	0.411	0.418	0.401	0.394	0.426	0.419	5.94
Bromomethane	0.282	0.306	0.289	0.274	0.263	0.274	0.281	5.32
Chloroethane		0.224	0.221	0.211	0.204	0.218	0.215	3.70
Trichlorofluorometh		0.255	0.219	0.239	0.232	0.271	0.243	8.40
Acrolein	0.065	0.059	0.060	0.056	0.061	0.064	0.061	5.58
1,1-Dichloroethene	0.581	0.566	0.578	0.574	0.571	0.618	0.581	3.24
Acetone		0.148	0.139	0.133	0.140	0.144	0.141	4.00
Carbon Disulfide	1.128	1.168	1.165	1.154	1.144	1.217	1.162	2.61
Methylene Chloride		0.618	0.616	0.617	0.605	0.639	0.619	1.97
trans-1,2-Dichloroe	0.705	0.608	0.602	0.607	0.592	0.631	0.624	6.64
Acrylonitrile	0.112	0.119	0.121	0.122	0.128	0.133	0.122	6.07
Methyl Tert Butyl E	0.763	0.845	0.872	0.864	0.887	0.936	0.861	6.63
1,1-Dichloroethane	0.717	0.677	0.674	0.667	0.670	0.705	0.685	3.02
Vinyl acetate	0.923	1.050	1.100	1.121	1.144	1.204	1.091	8.85
Di-isopropyl ether	1.457	1.433	1.432	1.443	1.459	1.564	1.465	3.42
2,2-Dichloropropane	0.490	0.501	0.499	0.485	0.461	0.493	0.488	2.95
cis-1,2-Dichloroeth	0.386	0.353	0.372	0.370	0.369	0.384	0.372	3.23
2-Butanone	0.189	0.175	0.184	0.186	0.197	0.205	0.189	5.50
Bromochloromethane	0.222	0.215	0.214	0.211	0.210	0.223	0.216	2.47
Chloroform	0.766	0.726	0.724	0.711	0.707	0.741	0.729	2.96
1,1,1-Trichloroetha	0.526	0.539	0.545	0.534	0.521	0.555	0.537	2.33
Dibromofluoromethan	0.385	0.383	0.383	0.391	0.380	0.403	0.387	2.17
1,1-Dichloropropene	0.375	0.433	0.444	0.447	0.444	0.483	0.438	7.99
Carbon Tetrachlorid	0.409	0.474	0.481	0.473	0.470	0.497	0.467	6.43
1,2-Dichloroethane-	0.515	0.515	0.511	0.507	0.497	0.529	0.512	2.05
Benzene	1.229	1.140	1.129	1.134	1.116	1.180	1.155	3.68
1,2-Dichloroethane		0.690	0.656	0.645	0.633	0.658	0.657	3.24
Trichloroethene	0.369	0.351	0.347	0.350	0.348	0.346	0.352	2.43
1,2-Dichloropropane	0.428	0.353	0.355	0.367	0.373	0.373	0.375	7.30
Dibromomethane	0.266	0.271	0.285	0.279	0.287	0.280	0.278	2.90
1,4-Dioxane		0.002	0.002	0.002	0.003	0.003	~~0.003~~	12.87
Bromodichloromethan		0.473	0.498	0.506	0.512	0.510	0.500	3.16
2-Chloroethyl vinyl	0.187	0.211	0.228	0.218	0.240	0.233	0.220	8.64
4-Methyl-2-pentanon	0.338	0.354	0.387	0.370	0.386	0.407	0.374	6.65
cis-1,3-Dichloropro	0.459	0.481	0.484	0.472	0.515	0.519	0.488	4.86
Chlorobenzene-d5	----------	----------	----------	ISTD	----------	----------	----------	
Toluene-d8	1.173	1.157	1.158	1.167	1.158	1.166	1.163	0.56
Toluene	1.410	1.296	1.336	1.326	1.323	1.318	1.335	2.93
trans-1,3-Dichlorop	0.508	0.512	0.548	0.562	0.578	0.589	0.550	6.09

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ut of Range

Response Factor Report MSVOA3

thod : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
tle : EPA 624 & SWA 5030B/8260B
st Update : Thu Jan 13 09:53:02 2000
sponse via : Initial Calibration

libration Files
=H005551.D 2 =H005552.D 3 =H005553.D
=H005554.D 5 =H005555.D 6 =H005556.D

Compound	1	2	3	4	5	6	Avg	%RSD
1,1,2-Trichloroetha	0.334	0.316	0.330	0.324	0.333	0.327	0.327	2.11
Tetrachloroethene	0.438	0.468	0.472	0.468	0.457	0.449	0.459	2.86
2-hexanone	0.289	0.298	0.318	0.329	0.349	0.343	0.321	7.51
1,3-Dichloropropane	0.634	0.592	0.580	0.593	0.599	0.591	0.598	3.12
Dibromochloromethan	0.370	0.403	0.443	0.458	0.476	0.477	0.438	9.82
1,2-Dibromoethane	0.352	0.358	0.396	0.405	0.407	0.403	0.387	6.44
1-Chlorohexane	0.343	0.383	0.413	0.418	0.422	0.430	0.401	8.16
Chlorobenzene	1.015	0.910	0.916	0.889	0.898	0.884	0.919	5.30
1,1,1,2-Tetrachloro	0.394	0.367	0.379	0.378	0.374	0.370	0.377	2.54
Ethylbenzene	1.400	1.420	1.469	1.446	1.433	1.423	1.432	1.67
m,p-Xylene	1.134	1.229	1.268	1.242	1.227	1.196	1.216	3.81
o-Xylene	1.222	1.261	1.214	1.307	1.281	1.271	1.259	2.82
Styrene	0.665	0.800	0.798	0.850	0.877	0.868	0.810	9.72
Bromoform		0.291	0.306	0.354	0.379	0.388	0.344	12.64
1,4-Dichlorobenzene-d	----------	----------	----------	ISTD	----------	----------	----------	
Isopropylbenzene	1.800	2.076	2.071	2.107	2.076	2.074	2.034	5.66
4-Bromofluorobenzen	1.024	0.969	0.949	0.949	0.945	0.948	0.964	3.19
Bromobenzene	0.882	0.776	0.761	0.769	0.759	0.740	0.781	6.54
1,1,2,2-Tetrachloro	0.832	0.782	0.773	0.781	0.788	0.777	0.789	2.73
1,2,3-Trichloroprop		0.209	0.206	0.204	0.200	0.191	0.202	3.42
n-Propylbenzene	2.574	2.748	2.771	2.773	2.687	2.656	2.701	2.90
2-Chlorotoluene	1.782	1.870	1.867	1.840	1.829	1.795	1.831	1.97
4-Chlorotoluene	1.851	1.973	1.928	1.934	1.892	1.868	1.908	2.38
1,3,5-Trimethylbenz	1.482	1.894	1.928	1.890	1.876	1.856	1.821	9.20
sec-Butylbenzene	1.616	2.007	2.055	2.079	2.062	2.057	1.979	9.06
1,3-Dichlorobenzene	1.394	1.376	1.369	1.370	1.333	1.303	1.358	2.45
4-Isopropyltoluene		1.644	1.685	1.717	1.721	1.692	1.692	1.84
1,4-Dichlorobenzene	1.572	1.445	1.397	1.391	1.363	1.339	1.418	5.90
tert-Butylbenzene	1.007	1.214	1.230	1.254	1.225	1.238	1.195	7.76
n-Butylbenzene	1.359	1.709	1.780	1.796	1.782	1.766	1.699	9.96
1,2-Dichlorobenzene	1.257	1.273	1.285	1.291	1.274	1.259	1.273	1.08
1,2,4-Trimethylbenz		1.947	1.945	1.963	1.922	1.906	1.936	1.16
1,2-Dibromo-3-Chlor		0.123	0.132	0.134	0.142	0.140	0.134	5.54
1,2,4-Trichlorobenz	1.121	1.037	1.066	1.054	1.059	1.030	1.061	3.05
Hexachlorobutadiene	0.606	0.539	0.543	0.511	0.513	0.499	0.535	7.20
Naphthalene	1.590	1.673	1.763	1.796	1.877	1.841	1.757	6.13
1,2,3-Trichlorobenz	1.057	1.021	1.013	1.020	1.020	0.985	1.019	2.24

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Out of Range

Instrument Performance Check (BFB)

Job Number: F5837
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: VH41-BFB
Lab File ID: H006090.D
Instrument ID: GCMSH
Injection Date: 02/11/00
Injection Time: 23:48

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	28008	25.5		Pass
75	30.0 - 60.0% of mass 95	58525	53.2		Pass
95	Base peak, 100% relative abundance	110024	100.0		Pass
96	5.0 - 9.0% of mass 95	7574	6.9		Pass
173	Less than 2.0% of mass 174	159	0.14	(0.17) [a]	Pass
174	50.0 - 100.0% of mass 95	95243	86.6		Pass
175	5.0 - 9.0% of mass 174	7288	6.6	(7.7) [a]	Pass
176	95.0 - 101.0% of mass 174	95125	86.5	(99.9) [a]	Pass
177	5.0 - 9.0% of mass 176	6616	6.0	(7.0) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VH40-CC23	H006090.D	02/11/00	23:48	00:00	Continuing cal 40
VH41-BS4	H006091.D	02/12/00	00:29	00:41	Blank Spike
VH42-BS	H006091.D	02/12/00	00:29	00:41	Blank Spike
VH41-MB4	H006092.D	02/12/00	01:10	01:22	Method Blank
VH42-MB	H006092.D	02/12/00	01:10	01:22	Method Blank
ZZZZZZ	H006095.D	02/12/00	03:12	03:24	(unrelated sample)
F5822-1	H006097.D	02/12/00	04:34	04:46	(used for QC only; not part of job F5837)
ZZZZZZ	H006098.D	02/12/00	05:15	05:27	(unrelated sample)
ZZZZZZ	H006099.D	02/12/00	05:57	06:09	(unrelated sample)
F5837-1	H006100.D	02/12/00	06:38	06:50	05G00901
F5837-2	H006101.D	02/12/00	07:18	07:30	06G00101
F5837-3	H006102.D	02/12/00	08:00	08:12	07G00101
F5837-4	H006103.D	02/12/00	08:41	08:53	SFT08101
F5837-6	H006105.D	02/12/00	10:05	10:17	30G00401
F5837-7	H006106.D	02/12/00	10:45	10:57	66G01301

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\021100\H006090.D Vial: 21
Acq On : 11 Feb 2000 11:48 pm Operator: ClaudiaP
Sample : CC23-40 Inst : MSVOA3
Misc : ms470,vh41,,,, Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : EPA 624 & SWA 5030B/8260B
Last Update : Thu Jan 13 09:53:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
I	Fluorobenzene	1.000	1.000	0.0	129	0.00
	Dichlorodifluoromethane	0.348	0.234	~~32.8#~~	89	0.00
P	Chloromethane	0.527	0.405	~~23.1#~~	104	0.02
C	Vinyl Chloride	0.419	0.362	13.6	116	0.05
	Bromomethane	0.281	0.255	9.3	120	0.00
	Chloroethane	0.215	0.202	6.0	124	0.00
	Trichlorofluoromethane	0.243	0.182	~~25.1#~~	98	-0.01
	Acrolein	0.061	~~0.020~~	~~67.2#~~	47#	0.00
C	1,1-Dichloroethene	0.581	0.532	8.4	119	0.00
	Acetone	0.141	0.121	14.2	117	0.00
	Carbon Disulfide	1.162	1.093	5.9	122	0.00
	Methylene Chloride	0.619	0.854	-38.0#	178	0.00
	trans-1,2-Dichloroethene	0.624	0.571	8.5	121	0.00
	Acrylonitrile	0.122	0.107	12.3	113	0.00
	Methyl Tert Butyl Ether	0.861	0.810	5.9	121	0.00
P	1,1-Dichloroethane	0.685	0.631	7.9	122	0.00
	Vinyl acetate	1.091	0.927	15.0	106	0.00
	Di-isopropyl ether	1.465	1.390	5.1	124	-0.01
	2,2-Dichloropropane	0.488	0.378	~~22.5#~~	100	0.00
	cis-1,2-Dichloroethene	0.372	0.346	7.0	120	0.00
	2-Butanone	0.189	0.159	15.9	111	-0.01
	Bromochloromethane	0.216	0.201	6.9	123	0.00
C	Chloroform	0.729	0.673	7.7	122	0.00
	1,1,1-Trichloroethane	0.537	0.497	7.4	120	0.00
S	Dibromofluoromethane	0.387	0.375	3.1	124	0.00
	1,1-Dichloropropene	0.438	0.408	6.8	117	0.00
	Carbon Tetrachloride	0.467	0.446	4.5	121	0.00
S	1,2-Dichloroethane-d4	0.512	0.495	3.3	126	0.00
	Benzene	1.155	1.044	9.6	119	0.00
	1,2-Dichloroethane	0.657	0.595	9.4	119	0.00
	Trichloroethene	0.352	0.320	9.1	118	0.00
C	1,2-Dichloropropane	0.375	0.344	8.3	121	0.00
	Dibromomethane	0.278	0.259	6.8	120	0.00
	1,4-Dioxane	0.003	~~0.003~~	0.0	137	0.00
	Bromodichloromethane	0.500	0.461	7.8	117	0.00
	2-Chloroethyl vinyl ether	0.220	0.175	~~20.5#~~	103	0.00
	4-Methyl-2-pentanone	0.374	0.352	5.9	122	0.00
	cis-1,3-Dichloropropene	0.488	0.439	10.0	120	0.00
I	Chlorobenzene-d5	1.000	1.000	0.0	125	0.00
S	Toluene-d8	1.163	1.193	-2.6	128	0.00

= Out of Range

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Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\021100\H006090.D
Acq On : 11 Feb 2000 11:48 pm
Sample : CC23-40
Misc : ms470,vh41,,,,,
MS Integration Params: RTEINT.P

Vial: 21
Operator: ClaudiaP
Inst : MSVOA3
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : EPA 624 & SWA 5030B/8260B
Last Update : Thu Jan 13 09:53:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
C	Toluene	1.335	1.336	-0.1	126	0.00
	trans-1,3-Dichloropropene	0.550	0.517	6.0	115	0.00
	1,1,2-Trichloroethane	0.327	0.319	2.4	124	0.00
	Tetrachloroethene	0.459	0.477	-3.9	128	0.00
	2-hexanone	0.321	0.308	4.0	118	0.00
	1,3-Dichloropropane	0.598	0.594	0.7	126	0.00
	Dibromochloromethane	0.438	0.432	1.4	118	0.00
	1,2-Dibromoethane	0.387	0.385	0.5	119	0.00
	1-Chlorohexane	0.401	0.404	-0.7	121	0.00
P	Chlorobenzene	0.919	0.930	-1.2	131	0.00
	1,1,1,2-Tetrachloroethane	0.377	0.390	-3.4	130	0.00
C	Ethylbenzene	1.432	1.477	-3.1	128	0.00
	m,p-Xylene	1.216	1.267	-4.2	128	0.00
	o-Xylene	1.259	1.347	-7.0	129	0.00
	Styrene	0.810	0.878	-8.4	130	0.00
P	Bromoform	0.344	0.319	7.3	113	0.00
I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	130	0.00
	Isopropylbenzene	2.034	2.143	-5.4	132	0.00
S	4-Bromofluorobenzene	0.964	0.927	3.8	127	0.00
	Bromobenzene	0.781	0.774	0.9	131	0.00
P	1,1,2,2-Tetrachloroethane	0.789	0.751	4.8	125	0.00
	1,2,3-Trichloropropane	0.202	0.193	4.5	123	0.00
	n-Propylbenzene	2.701	2.775	-2.7	130	0.00
	2-Chlorotoluene	1.831	1.880	-2.7	132	0.00
	4-Chlorotoluene	1.908	1.971	-3.3	132	0.00
	1,3,5-Trimethylbenzene	1.821	1.972	-8.3	135	0.00
	sec-Butylbenzene	1.979	2.218	-12.1	138	0.00
	1,3-Dichlorobenzene	1.358	1.419	-4.5	134	0.00
	4-Isopropyltoluene	1.692	1.812	-7.1	137	0.00
	1,4-Dichlorobenzene	1.418	1.463	-3.2	136	0.00
	tert-Butylbenzene	1.195	1.339	-12.1	138	0.00
	n-Butylbenzene	1.699	1.830	-7.7	132	0.00
	1,2-Dichlorobenzene	1.273	1.380	-8.4	139	0.00
	1,2,4-Trimethylbenzene	1.936	2.066	-6.7	136	0.00
	1,2-Dibromo-3-Chloropropane	0.134	0.119	11.2	115	0.00
	1,2,4-Trichlorobenzene	1.061	1.062	-0.1	131	0.00
	Hexachlorobutadiene	0.535	0.513	4.1	130	0.00
	Naphthalene	1.757	1.622	7.7	117	0.00
	1,2,3-Trichlorobenzene	1.019	0.965	5.3	123	0.00

= Out of Range SPCC's out = 0 CCC's out = 0

Instrument Performance Check (BFB)

Job Number: F5837
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: VH40-BFB
Lab File ID: H006109.D
Instrument ID: GCMSH
Injection Date: 02/14/00
Injection Time: 10:23

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	1867	24.0		Pass
75	30.0 - 60.0% of mass 95	3785	48.6		Pass
95	Base peak, 100% relative abundance	7785	100.0		Pass
96	5.0 - 9.0% of mass 95	588	7.6		Pass
173	Less than 2.0% of mass 174	0	0.0	(0.0) [a]	Pass
174	50.0 - 100.0% of mass 95	6826	87.7		Pass
175	5.0 - 9.0% of mass 174	563	7.2	(8.2) [a]	Pass
176	95.0 - 101.0% of mass 174	6766	86.9	(99.1) [a]	Pass
177	5.0 - 9.0% of mass 176	517	6.6	(7.6) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VH40-CC23	H006110.D	02/14/00	10:40	00:17	Continuing cal 40
VH42-BS2	H006111.D	02/14/00	11:21	00:58	Blank Spike
VH40-BS6	H006111.D	02/14/00	11:21	00:58	Blank Spike
VH41-BS5	H006111.D	02/14/00	11:21	00:58	Blank Spike
VH40-MB6	H006112.D	02/14/00	12:02	01:39	Method Blank
VH41-MB5	H006112.D	02/14/00	12:02	01:39	Method Blank
VH42-MB2	H006112.D	02/14/00	12:02	01:39	Method Blank
ZZZZZZ	H006113.D	02/14/00	12:43	02:20	(unrelated sample)
ZZZZZZ	H006114.D	02/14/00	13:25	03:02	(unrelated sample)
ZZZZZZ	H006115.D	02/14/00	14:06	03:43	(unrelated sample)
F5837-5	H006116.D	02/14/00	14:47	04:24	66G02001
F5837-6	H006117.D	02/14/00	15:29	05:06	30G00401
F5837-2	H006118.D	02/14/00	16:11	05:48	06G00101
F5837-7	H006119.D	02/14/00	16:52	06:29	66G01301
ZZZZZZ	H006120.D	02/14/00	17:34	07:11	(unrelated sample)
ZZZZZZ	H006121.D	02/14/00	18:15	07:52	(unrelated sample)
ZZZZZZ	H006122.D	02/14/00	18:56	08:33	(unrelated sample)
ZZZZZZ	H006123.D	02/14/00	19:37	09:14	(unrelated sample)
F5837-3	H006124.D	02/14/00	20:18	09:55	07G00101
F5822-1MS	H006125.D	02/14/00	20:59	10:36	Matrix Spike
F5822-1MSD	H006126.D	02/14/00	21:40	11:17	Matrix Spike Duplicate
VH40-CC23	H006127.D	02/14/00	22:22	11:59	Continuing cal 40

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\021400\H006110.D Vial: 1
Acq On : 14 Feb 2000 10:40 am Operator: ClaudiaP
Sample : CC23-40 Inst : MSVOA3
Misc : ms465,vh37,,,,, Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : EPA 624 & SWA 5030B/8260B
Last Update : Thu Jan 13 09:53:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
I	Fluorobenzene	1.000	1.000	0.0	143	-0.01
	Dichlorodifluoromethane	0.348	0.235	~~32.5#~~	99	0.00
P	Chloromethane	0.527	0.431	18.2	123	0.03
C	Vinyl Chloride	0.419	0.370	11.7	132	0.05
	Bromomethane	0.281	0.242	13.9	126	0.00
	Chloroethane	0.215	0.199	7.4	135	-0.01
	Trichlorofluoromethane	0.243	0.264	-8.6	158	0.00
	Acrolein	0.061	~~0.031~~	~~49.2#~~	80	0.00
C	1,1-Dichloroethene	0.581	0.551	5.2	137	0.00
	Acetone	0.141	0.125	11.3	134	0.00
	Carbon Disulfide	1.162	1.139	2.0	141	0.00
	Methylene Chloride	0.619	0.620	-0.2	144	0.00
	trans-1,2-Dichloroethene	0.624	0.582	6.7	137	0.00
	Acrylonitrile	0.122	0.115	5.7	135	0.00
	Methyl Tert Butyl Ether	0.861	0.827	3.9	137	0.00
P	1,1-Dichloroethane	0.685	0.645	5.8	138	0.00
	Vinyl acetate	1.091	1.019	6.6	130	0.00
	Di-isopropyl ether	1.465	1.471	-0.4	146	0.00
	2,2-Dichloropropane	0.488	0.484	0.8	143	0.00
	cis-1,2-Dichloroethene	0.372	0.356	4.3	138	0.00
	2-Butanone	0.189	0.173	8.5	133	-0.01
	Bromochloromethane	0.216	0.204	5.6	138	0.00
C	Chloroform	0.729	0.668	8.4	134	0.00
	1,1,1-Trichloroethane	0.537	0.495	7.8	132	0.00
S	Dibromofluoromethane	0.387	0.362	6.5	133	0.00
	1,1-Dichloropropene	0.438	0.431	1.6	138	0.00
	Carbon Tetrachloride	0.467	0.432	7.5	131	0.00
S	1,2-Dichloroethane-d4	0.512	0.457	10.7	129	0.00
	Benzene	1.155	1.107	4.2	140	-0.01
	1,2-Dichloroethane	0.657	0.573	12.8	127	-0.01
	Trichloroethene	0.352	0.333	5.4	136	0.00
C	1,2-Dichloropropane	0.375	0.362	3.5	141	0.00
	Dibromomethane	0.278	0.251	9.7	129	0.00
	1,4-Dioxane	0.003	~~0.003~~	0.0	165	0.00
	Bromodichloromethane	0.500	0.465	7.0	131	-0.01
	2-Chloroethyl vinyl ether	0.220	0.196	10.9	128	0.00
	4-Methyl-2-pentanone	0.374	0.370	1.1	143	0.00
	cis-1,3-Dichloropropene	0.488	0.476	2.5	144	-0.01
	Chlorobenzene-d5	1.000	1.000	0.0	140	0.00
	Toluene-d8	1.163	1.182	-1.6	142	0.00

= Out of Range

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\021400\H006110.D Vial: 1
Acq On : 14 Feb 2000 10:40 am Operator: ClaudiaP
Sample : CC23-40 Inst : MSVOA3
Misc : ms465,vh37,,,,, Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : EPA 624 & SWA 5030B/8260B
Last Update : Thu Jan 13 09:53:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
C	Toluene	1.335	1.377	-3.1	146	0.00
	trans-1,3-Dichloropropene	0.550	0.556	-1.1	139	0.00
	1,1,2-Trichloroethane	0.327	0.327	0.0	142	0.00
	Tetrachloroethene	0.459	0.476	-3.7	143	0.00
	2-hexanone	0.321	0.317	1.2	136	0.00
	1,3-Dichloropropane	0.598	0.601	-0.5	142	0.00
	Dibromochloromethane	0.438	0.437	0.2	134	0.00
	1,2-Dibromoethane	0.387	0.392	-1.3	136	-0.01
	1-Chlorohexane	0.401	0.444	-10.7	149	-0.01
P	Chlorobenzene	0.919	0.938	-2.1	148	0.00
	1,1,1,2-Tetrachloroethane	0.377	0.385	-2.1	143	0.00
C	Ethylbenzene	1.432	1.513	-5.7	147	0.00
	m,p-Xylene	1.216	1.274	-4.8	144	0.00
	o-Xylene	1.259	1.356	-7.7	146	0.00
	Styrene	0.810	0.919	-13.5	152	0.00
P	Bromoform	0.344	0.324	5.8	128	0.00
I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	138	0.00
	Isopropylbenzene	2.034	2.299	-13.0	151	0.00
S	4-Bromofluorobenzene	0.964	0.976	-1.2	142	0.00
	Bromobenzene	0.781	0.823	-5.4	148	0.00
P	1,1,2,2-Tetrachloroethane	0.789	0.807	-2.3	143	0.00
	1,2,3-Trichloropropane	0.202	0.206	-2.0	139	0.00
	n-Propylbenzene	2.701	3.020	-11.8	150	0.00
	2-Chlorotoluene	1.831	2.041	-11.5	153	-0.00
	4-Chlorotoluene	1.908	2.126	-11.4	152	0.00
	1,3,5-Trimethylbenzene	1.821	2.117	-16.3	154	0.00
	sec-Butylbenzene	1.979	2.396	-21.1#	159	0.00
	1,3-Dichlorobenzene	1.358	1.466	-8.0	148	0.00
	4-Isopropyltoluene	1.692	1.979	-17.0	159	-0.01
	1,4-Dichlorobenzene	1.418	1.468	-3.5	146	0.00
	tert-Butylbenzene	1.195	1.413	-18.2	155	0.00
	n-Butylbenzene	1.699	1.958	-15.2	150	0.00
	1,2-Dichlorobenzene	1.273	1.392	-9.3	149	0.00
	1,2,4-Trimethylbenzene	1.936	2.170	-12.1	152	0.00
	1,2-Dibromo-3-Chloropropane	0.134	0.124	7.5	127	0.00
	1,2,4-Trichlorobenzene	1.061	1.102	-3.9	144	0.00
	Hexachlorobutadiene	0.535	0.572	-6.9	154	0.00
	Naphthalene	1.757	1.682	4.3	129	0.00
	1,2,3-Trichlorobenzene	1.019	0.980	3.8	133	0.00

159

#) = Out of Range SPCC's out = 0 CCC's out = 0

Blank Spike Summary

Job Number: F5837
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VH42-BS	H006091.D	1	02/12/00	CJP	n/a	n/a	VH42

The QC reported here applies to the following samples: **Method:** SW846 8260B

F5837-1, F5837-2, F5837-3, F5837-4, F5837-6, F5837-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	109	87	37-160
71-43-2	Benzene	25	23.7	95	61-141
75-27-4	Bromodichloromethane	25	22.4	90	72-125
75-25-2	Bromoform	25	17.8	71	62-126
108-90-7	Chlorobenzene	25	25.2	101	75-125
75-00-3	Chloroethane	25	26.2	105	58-134
67-66-3	Chloroform	25	22.8	91	73-125
75-15-0	Carbon disulfide	125	125	100	70-146
56-23-5	Carbon tetrachloride	25	24.0	96	62-126
75-34-3	1,1-Dichloroethane	25	24.0	96	75-125
75-35-4	1,1-Dichloroethylene	25	25.7	103	73-125
107-06-2	1,2-Dichloroethane	25	22.4	90	66-130
78-87-5	1,2-Dichloropropane	25	22.6	90	75-125
124-48-1	Dibromochloromethane	25	22.9	92	75-125
10061-01-5	cis-1,3-Dichloropropene	25	21.3	85	58-136
540-59-0	1,2-Dichloroethene (total)	50	47.7	95	57-137
10061-02-6	trans-1,3-Dichloropropene	25	22.1	88	49-139
100-41-4	Ethylbenzene	25	26.0	104	67-128
591-78-6	2-Hexanone	125	113	90	60-135
108-10-1	4-Methyl-2-pentanone	125	113	90	64-131
74-83-9	Methyl bromide	25	27.8	111	32-149
74-87-3	Methyl chloride	25	19.5	78	59-143
75-09-2	Methylene chloride	25	25.0	100	73-125
78-93-3	Methyl ethyl ketone	125	103	82	54-133
100-42-5	Styrene	25	16.0	64*	74-127
71-55-6	1,1,1-Trichloroethane	25	23.9	96	72-125
79-34-5	1,1,2,2-Tetrachloroethane	25	22.5	90	68-125
79-00-5	1,1,2-Trichloroethane	25	23.7	95	75-125
127-18-4	Tetrachloroethylene	25	26.8	107	75-125
108-88-3	Toluene	25	25.8	103	72-125
79-01-6	Trichloroethylene	25	23.8	95	72-125
75-01-4	Vinyl chloride	25	24.5	98	63-138
1330-20-7	Xylene (total)	75	79.7	106	69-127

Blank Spike Summary

Job Number: F5837
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VH42-BS	H006091.D	1	02/12/00	CJP	n/a	n/a	VH42

The QC reported here applies to the following samples: **Method:** SW846 8260B

F5837-1, F5837-2, F5837-3, F5837-4, F5837-6, F5837-7

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	97%	80-120%
17060-07-0	1,2-Dichloroethane-D4	95%	69-128%
2037-26-5	Toluene-D8	101%	80-120%
460-00-4	4-Bromofluorobenzene	96%	80-120%

TETRA TECH NUS, INC. CALCULATION WORKSHEET PAGE ____ OF ____

CLIENT: CTO 079- NAS Whiting Field	JOB NUMBER: F5837
SUBJECT: Volatile	3000000461
BASED ON: ~~Xylenes (total)~~ 00 Toluene	DRAWING NUMBER:
BY: JWO / CHECKED BY:	APPROVED BY: / DATE: 4/17/00

$$= \frac{(\text{Area})(\text{Conc. IS})}{(\text{Area IS})(\overline{RRF}_{IC})}$$

$$= \frac{(17411)(50\ \mu g/L)}{(534527)(1.335)}$$

$$= 1.22\ \mu g/L$$

Report of Analysis

Client Sample ID:	30G00401		
Lab Sample ID:	F5837-6	**Date Sampled:**	02/07/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H006105.D	1	02/12/00	CJP	n/a	n/a	VH42
Run #2	H006117.D	2	02/14/00	CJP	n/a	n/a	VH42

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene	38.4	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	176 [a]	2.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	1.2	1.0	ug/l	
79-01-6	Trichloroethylene	30.8	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	303 [a]	6.0	ug/l	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	30G00401		
Lab Sample ID:	F5837-6	**Date Sampled:**	02/07/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%	90%	80-120%
17060-07-0	1,2-Dichloroethane-D4	97%	90%	69-128%
2037-26-5	Toluene-D8	100%	102%	80-120%
460-00-4	4-Bromofluorobenzene	98%	98%	80-120%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting 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

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\021100\H006105.D Vial: 36
Acq On : 12 Feb 2000 10:05 am Operator: ClaudiaP
Sample : F5837-6,5ml Inst : MSVOA3
Misc : ms472,vh42,,,,, Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Feb 14 9:33 2000 Quant Results File: 8260LL.RES

Quant Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : EPA 624 & SWA 5030B/8260B
Last Update : Thu Jan 13 09:53:02 2000
Response via : Initial Calibration
DataAcq Meth : 8260W

nternal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	14.55	96	671667	50.00	ug/L	-0.01
39) Chlorobenzene-d5	19.76	117	534527	50.00	ug/L	-0.01
57) 1,4-Dichlorobenzene-d4	24.16	152	325291	50.00	ug/L	0.00
ystem Monitoring Compounds						
25) Dibromofluoromethane	13.38	113	242685	46.63	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 93.26%			
28) 1,2-Dichloroethane-d4	13.98	65	333155	48.42	ug/L	0.00
Spiked Amount 50.000	Range 69 - 128		Recovery = 96.84%			
40) Toluene-d8	17.23	98	621573	49.99	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 99.98%			
59) 4-Bromofluorobenzene	21.85	95	308436	49.18	ug/L	-0.01
Spiked Amount 50.000	Range 80 - 120		Recovery = 98.36%			
arget Compounds						Qvalue
29) Benzene	14.12	78	595656	38.40	ug/L	92
31) Trichloroethene	15.18	95	145648	30.79	ug/L	97
41) Toluene	17.33	91	17411	1.22	ug/L	96
52) Ethylbenzene	19.96	91	2452134	160.20	ug/L	100
53) m,p-Xylene	20.16	91	3217269	247.49	ug/L	99
54) o-Xylene	20.90	91	325539	24.18	ug/L	97
66) 1,3,5-Trimethylbenzene	22.59	105	41473	3.50	ug/L	98
74) 1,2,4-Trimethylbenzene	23.36	105	71687	5.69	ug/L	99

#) = qualifier out of range (m) = manual integration

Response Factor Report MSVOA3

thod : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
tle : EPA 624 & SWA 5030B/8260B
st Update : Thu Jan 13 09:53:02 2000
sponse via : Initial Calibration

libration Files
=H005551.D 2 =H005552.D 3 =H005553.D
=H005554.D 5 =H005555.D 6 =H005556.D

	Compound	1	2	3	4	5	6	Avg	%RSD
	Fluorobenzene	----------	----------	----------	ISTD	----------	----------	----------	
	Dichlorodifluoromet	0.363	0.360	0.347	0.339	0.326	0.354	0.348	4.02
	Chloromethane	0.605	0.523	0.520	0.500	0.493	0.522	0.527	7.60
	Vinyl Chloride	0.464	0.411	0.418	0.401	0.394	0.426	0.419	5.94
	Bromomethane	0.282	0.306	0.289	0.274	0.263	0.274	0.281	5.32
	Chloroethane		0.224	0.221	0.211	0.204	0.218	0.215	3.70
	Trichlorofluorometh		0.255	0.219	0.239	0.232	0.271	0.243	8.40
	Acrolein	0.065	0.059	0.060	0.056	0.061	0.064	0.061	5.58
	1,1-Dichloroethene	0.581	0.566	0.578	0.574	0.571	0.618	0.581	3.24
	Acetone		0.148	0.139	0.133	0.140	0.144	0.141	4.00
	Carbon Disulfide	1.128	1.168	1.165	1.154	1.144	1.217	1.162	2.61
	Methylene Chloride		0.618	0.616	0.617	0.605	0.639	0.619	1.97
	trans-1,2-Dichloroe	0.705	0.608	0.602	0.607	0.592	0.631	0.624	6.64
	Acrylonitrile	0.112	0.119	0.121	0.122	0.128	0.133	0.122	6.07
	Methyl Tert Butyl E	0.763	0.845	0.872	0.864	0.887	0.936	0.861	6.63
	1,1-Dichloroethane	0.717	0.677	0.674	0.667	0.670	0.705	0.685	3.02
	Vinyl acetate	0.923	1.050	1.100	1.121	1.144	1.204	1.091	8.85
	Di-isopropyl ether	1.457	1.433	1.432	1.443	1.459	1.564	1.465	3.42
	2,2-Dichloropropane	0.490	0.501	0.499	0.485	0.461	0.493	0.488	2.95
	cis-1,2-Dichloroeth	0.386	0.353	0.372	0.370	0.369	0.384	0.372	3.23
	2-Butanone	0.189	0.175	0.184	0.186	0.197	0.205	0.189	5.50
	Bromochloromethane	0.222	0.215	0.214	0.211	0.210	0.223	0.216	2.47
	Chloroform	0.766	0.726	0.724	0.711	0.707	0.741	0.729	2.96
	1,1,1-Trichloroetha	0.526	0.539	0.545	0.534	0.521	0.555	0.537	2.33
	Dibromofluoromethan	0.385	0.383	0.383	0.391	0.380	0.403	0.387	2.17
	1,1-Dichloropropene	0.375	0.433	0.444	0.447	0.444	0.483	0.438	7.99
	Carbon Tetrachlorid	0.409	0.474	0.481	0.473	0.470	0.497	0.467	6.43
	1,2-Dichloroethane-	0.515	0.515	0.511	0.507	0.497	0.529	0.512	2.05
	Benzene	1.229	1.140	1.129	1.134	1.116	1.180	1.155	3.68
	1,2-Dichloroethane		0.690	0.656	0.645	0.633	0.658	0.657	3.24
	Trichloroethene	0.369	0.351	0.347	0.350	0.348	0.346	0.352	2.43
	1,2-Dichloropropane	0.428	0.353	0.355	0.367	0.373	0.373	0.375	7.30
	Dibromomethane	0.266	0.271	0.285	0.279	0.287	0.280	0.278	2.90
	1,4-Dioxane		0.002	0.002	0.002	0.003	0.003	~~0.003~~	12.87
	Bromodichloromethan		0.473	0.498	0.506	0.512	0.510	0.500	3.16
	2-Chloroethyl vinyl	0.187	0.211	0.228	0.218	0.240	0.233	0.220	8.64
	4-Methyl-2-pentanon	0.338	0.354	0.387	0.370	0.386	0.407	0.374	6.65
	cis-1,3-Dichloropro	0.459	0.481	0.484	0.472	0.515	0.519	0.488	4.86
I	Chlorobenzene-d5	----------	----------	----------	ISTD	----------	----------	----------	
S	Toluene-d8	1.173	1.157	1.158	1.167	1.158	1.166	1.163	0.56
C	Toluene	1.410	1.296	1.336	1.326	1.323	1.318	1.335	2.93
	trans-1,3-Dichlorop	0.508	0.512	0.548	0.562	0.578	0.589	0.550	6.09

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090

Out of Range

Response Factor Report MSVOA3

ethod : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
itle : EPA 624 & SWA 5030B/8260B
ast Update : Thu Jan 13 09:53:02 2000
esponse via : Initial Calibration

alibration Files
=H005551.D 2 =H005552.D 3 =H005553.D
=H005554.D 5 =H005555.D 6 =H005556.D

	Compound	1	2	3	4	5	6	Avg	%RSD
	1,1,2-Trichloroetha	0.334	0.316	0.330	0.324	0.333	0.327	0.327	2.11
	Tetrachloroethene	0.438	0.468	0.472	0.468	0.457	0.449	0.459	2.86
	2-hexanone	0.289	0.298	0.318	0.329	0.349	0.343	0.321	7.51
	1,3-Dichloropropane	0.634	0.592	0.580	0.593	0.599	0.591	0.598	3.12
	Dibromochloromethan	0.370	0.403	0.443	0.458	0.476	0.477	0.438	9.82
	1,2-Dibromoethane	0.352	0.358	0.396	0.405	0.407	0.403	0.387	6.44
	1-Chlorohexane	0.343	0.383	0.413	0.418	0.422	0.430	0.401	8.16
P	Chlorobenzene	1.015	0.910	0.916	0.889	0.898	0.884	0.919	5.30
	1,1,1,2-Tetrachloro	0.394	0.367	0.379	0.378	0.374	0.370	0.377	2.54
C	Ethylbenzene	1.400	1.420	1.469	1.446	1.433	1.423	1.432	1.67
	m,p-Xylene	1.134	1.229	1.268	1.242	1.227	1.196	1.216	3.81
	o-Xylene	1.222	1.261	1.214	1.307	1.281	1.271	1.259	2.82
	Styrene	0.665	0.800	0.798	0.850	0.877	0.868	0.810	9.72
P	Bromoform		0.291	0.306	0.354	0.379	0.388	0.344	12.64
I	1,4-Dichlorobenzene-d	----------	----------	----------	ISTD	----------	----------	----------	
	Isopropylbenzene	1.800	2.076	2.071	2.107	2.076	2.074	2.034	5.66
S	4-Bromofluorobenzen	1.024	0.969	0.949	0.949	0.945	0.948	0.964	3.19
	Bromobenzene	0.882	0.776	0.761	0.769	0.759	0.740	0.781	6.54
P	1,1,2,2-Tetrachloro	0.832	0.782	0.773	0.781	0.788	0.777	0.789	2.73
	1,2,3-Trichloroprop		0.209	0.206	0.204	0.200	0.191	0.202	3.42
	n-Propylbenzene	2.574	2.748	2.771	2.773	2.687	2.656	2.701	2.90
	2-Chlorotoluene	1.782	1.870	1.867	1.840	1.829	1.795	1.831	1.97
	4-Chlorotoluene	1.851	1.973	1.928	1.934	1.892	1.868	1.908	2.38
	1,3,5-Trimethylbenz	1.482	1.894	1.928	1.890	1.876	1.856	1.821	9.20
	sec-Butylbenzene	1.616	2.007	2.055	2.079	2.062	2.057	1.979	9.06
	1,3-Dichlorobenzene	1.394	1.376	1.369	1.370	1.333	1.303	1.358	2.45
	4-Isopropyltoluene		1.644	1.685	1.717	1.721	1.692	1.692	1.84
	1,4-Dichlorobenzene	1.572	1.445	1.397	1.391	1.363	1.339	1.418	5.90
	tert-Butylbenzene	1.007	1.214	1.230	1.254	1.225	1.238	1.195	7.76
	n-Butylbenzene	1.359	1.709	1.780	1.796	1.782	1.766	1.699	9.96
	1,2-Dichlorobenzene	1.257	1.273	1.285	1.291	1.274	1.259	1.273	1.08
	1,2,4-Trimethylbenz		1.947	1.945	1.963	1.922	1.906	1.936	1.16
	1,2-Dibromo-3-Chlor		0.123	0.132	0.134	0.142	0.140	0.134	5.54
	1,2,4-Trichlorobenz	1.121	1.037	1.066	1.054	1.059	1.030	1.061	3.05
	Hexachlorobutadiene	0.606	0.539	0.543	0.511	0.513	0.499	0.535	7.20
	Naphthalene	1.590	1.673	1.763	1.796	1.877	1.841	1.757	6.13
	1,2,3-Trichlorobenz	1.057	1.021	1.013	1.020	1.020	0.985	1.019	2.24

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100

Out of Range

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**T. HANSEN**	**DATE:**	**NOVEMBER 6, 2000**
FROM:	**JENNIFER MALLE**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION- MISCELLANEOUS PARAMETERS**
CTO 079 –NAS WHITING FIELD
SDG – F5837

SAMPLES: 6/Aqueous/

05G00901	06G00101	07G00101	30G00401
66G01301	66G02001		

Overview

The sample set for CTO 079, NAS Whiting Field, SDG F5837 consists of six (6) aqueous environmental samples. No field duplicate pairs were included within this SDG.

All samples were analyzed for chloride, dissolved organic carbon, hydrogen sulfide, nitrate, nitrite, nitrate/nitrite and sulfate. The samples were collected by Tetra Tech NUS on February 6-7, 2000 and analyzed by Accutest Laboratories under Naval Facilities Engineering Service Center (NFESC) Guidance Document, , "Navy Installation Restoration Chemical Data Quality Manual" (September 1999).

Analyses for chloride, nitrate, nitrite and sulfate were conducted under method SW846 9056. Dissolved organic carbon analyses were conducted under SW846 9060M. Analyses for nitrate/nitrite were conducted under SM18 4500N03E.

The data was evaluated based on the following parameters:

* • Data Completeness
• Holding Times
* • Initial and Continuing Calibration Recoveries
* • Laboratory Blank Analysis
* • Matrix Spike Recoveries
• Laboratory Duplicate Precision
* • Sample Quanitation
* • Detection Limits

* - All quality control criteria were met for this parameter.

Holding Times

The 48 hour holding time for nitrate and nitrite were exceeded in samples 05G00901, 06G00101 and 07G00101. Positive and nondetected results reported for nitrate and nitrite in the affected samples were qualified as estimated, "J" and "UJ" respectively.

Due to the analysis method for nitrate/nitrite, (calculated as nitrate + nitrite) the holding time exceedances for nitrate and nitrite also apply to this parameter. Nondetected results reported for nitrate/nitrite in the affected samples were qualified as estimated and "UJ", respectively.

Laboratory Duplicate Precision

Laboratory duplicate imprecison greater than the 20% quality control limit was noted for dissolved organic carbon. The positive result reported for dissolved organic carbon was qualified as estimated, "J".

Executive Summary

Laboratory Performance: Holding time exceedances were noted for nitrate, nitrite and nitrate/nitrite. Laboratory duplicate imprecision was noted for dissolved organic carbon.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994 and the NFESC document entitled "Navy IRCDQM" (NFESC 9/99).

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)."

Jennifer Malle

Tetra Tech NUS
Jennifer Malle
Environmental Scientist

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

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

APPENDIX A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

SAMPLE NUMBER:	05G00901	06G00101	07G00101	30G00401
SAMPLE DATE:	02/06/00	02/06/00	02/06/00	02/07/00
LABORATORY ID:	F5837-1	F5837-2	F5837-3	F5837-6
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	0.0 %	0.0 %	0.0 %	0.0 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
CHLORIDE(MG/L)	6.7			3.5			8.1			4.4		
DISSOLVED ORGANIC CARBON(MG/L)	5.0	U		5.0	U		5.0	U		10.1	J	F
HYDROGEN SULFIDE(MG/L)	2.0	U		2.0	U		2.7			2.0	U	
NITRATE, AS NITROGEN(MG/L)	6.5	J	H	0.47	J	H	0.10	UJ	H	0.10	U	
NITRATE/NITRITE, AS N(MG/L)	6.5	J	H	0.47	J	H	0.11	UJ	H	0.11	U	
NITRITE, AS NITROGEN(MG/L)	0.01	UJ	H	0.01	UJ	H	0.01	UJ	H	0.01	U	
SULFATE(MG/L)	50.0	U		5.0	U		5.0	U		5.0	U	

SAMPLE NUMBER:	66G01301	66G02001		
SAMPLE DATE:	02/07/00	02/07/00	/ /	/ /
LABORATORY ID:	F5837-7	F5837-5		
QC_TYPE:	NORMAL	NORMAL		
% SOLIDS:	0.0 %	0.0 %	100.0 %	100.0 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
CHLORIDE(MG/L)	3.7			7.2								
DISSOLVED ORGANIC CARBON(MG/L)	5.0	U		5.0	U							
HYDROGEN SULFIDE(MG/L)	2.0	U		2.0	U							
NITRATE, AS NITROGEN(MG/L)	2.1			1.4								
NITRATE/NITRITE, AS N(MG/L)	2.1			1.4								
NITRITE, AS NITROGEN(MG/L)	0.01	U		0.03								
SULFATE(MG/L)	5.0	U		5.0	U							

APPENDIX B

Results as Reported by the Laboratory

ACCUTEST

Report of Analysis

Client Sample ID:	05G00901		
Lab Sample ID:	F5837-1	**Date Sampled:**	02/06/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
		Percent Solids:	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed By		Method
Chloride	6.7	5.0	mg/l	10	02/09/00	EP	EPA 300/SW846 9056
Dissolved Organic Carbon	<5.0	5.0	mg/l	5	03/02/00	ANJ	EPA415.1/SW8469060M
Hydrogen Sulfide	<2.0	2.0	mg/l	1	02/12/00	JK	SM18 4500/EPA 376.1
Nitrogen, Nitrate	6.5	1.0	mg/l	10	02/09/00	EP	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite [a]	6.5	1.0	mg/l	1	02/09/00	EP	SM18 4500NO3E
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	02/09/00	EP	EPA 300/SW846 9056
Sulfate	<50	50	mg/l	10	02/09/00	EP	EPA 300/SW846 9056

(a) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

RL = Reporting Limit

ACCUTEST

Report of Analysis

Client Sample ID:	06G00101		
Lab Sample ID:	F5837-2	**Date Sampled:**	02/06/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
		Percent Solids:	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed By		Method
Chloride	3.5	0.50	mg/l	1	02/09/00	EP	EPA 300/SW846 9056
Dissolved Organic Carbon	<5.0	5.0	mg/l	5	03/02/00	ANJ	EPA415.1/SW8469060M
Hydrogen Sulfide	<2.0	2.0	mg/l	1	02/12/00	JK	SM18 4500/EPA 376.1
Nitrogen, Nitrate	0.47	0.10	mg/l	1	02/09/00	EP	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite [a]	0.47	0.11	mg/l	1	02/09/00	EP	SM18 4500NO3E
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	02/09/00	EP	EPA 300/SW846 9056
Sulfate	<5.0	5.0	mg/l	1	02/09/00	EP	EPA 300/SW846 9056

(a) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	07G00101		
Lab Sample ID:	F5837-3	**Date Sampled:**	02/06/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
		Percent Solids:	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	8.1	5.0	mg/l	10	02/09/00	EP	EPA 300/SW846 9056
Dissolved Organic Carbon	<5.0	5.0	mg/l	5	03/02/00	ANJ	EPA415.1/SW8469060M
Hydrogen Sulfide	2.7	2.0	mg/l	1	02/12/00	JK	SM18 4500/EPA 376.1
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	02/09/00	EP	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite [a]	<0.11	0.11	mg/l	1	02/09/00	EP	SM18 4500NO3E
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	02/09/00	EP	EPA 300/SW846 9056
Sulfate	<5.0	5.0	mg/l	1	02/09/00	EP	EPA 300/SW846 9056

(a) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

RL = Reporting Limit

ACCUTEST

Report of Analysis

Client Sample ID:	30G00401		
Lab Sample ID:	F5837-6	**Date Sampled:**	02/07/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
		Percent Solids:	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	4.4	0.50	mg/l	1	02/09/00	EP	EPA 300/SW846 9056
Dissolved Organic Carbon	10.1	5.0	mg/l	5	03/02/00	ANJ	EPA415.1/SW8469060M
Hydrogen Sulfide	<2.0	2.0	mg/l	1	02/12/00	JK	SM18 4500/EPA 376.1
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	02/09/00	EP	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite [a]	<0.11	0.11	mg/l	1	02/09/00	EP	SM18 4500NO3E
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	02/09/00	EP	EPA 300/SW846 9056
Sulfate	<5.0	5.0	mg/l	1	02/09/00	EP	EPA 300/SW846 9056

(a) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	66G01301		
Lab Sample ID:	F5837-7	**Date Sampled:**	02/07/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
		Percent Solids:	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	3.7	0.50	mg/l	1	02/09/00	EP	EPA 300/SW846 9056
Dissolved Organic Carbon	<5.0	5.0	mg/l	5	03/02/00	ANJ	EPA415.1/SW8469060M
Hydrogen Sulfide	<2.0	2.0	mg/l	1	02/12/00	JK	SM18 4500/EPA 376.1
Nitrogen, Nitrate	2.1	0.10	mg/l	1	02/09/00	EP	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite [a]	2.1	0.11	mg/l	1	02/09/00	EP	SM18 4500NO3E
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	02/09/00	EP	EPA 300/SW846 9056
Sulfate	<5.0	5.0	mg/l	1	02/09/00	EP	EPA 300/SW846 9056

(a) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

RL = Reporting Limit

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ACCUTEST

Report of Analysis

Client Sample ID:	66G02001		
Lab Sample ID:	F5837-5	**Date Sampled:**	02/07/00
Matrix:	AQ - Ground Water	**Date Received:**	02/08/00
		Percent Solids:	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed By		Method
Chloride	7.2	2.5	mg/l	5	02/10/00	EP	EPA 300/SW846 9056
Dissolved Organic Carbon	<5.0	5.0	mg/l	5	03/02/00	ANJ	EPA415.1/SW8469060M
Hydrogen Sulfide	<2.0	2.0	mg/l	1	02/12/00	JK	SM18 4500/EPA 376.1
Nitrogen, Nitrate	1.4	0.10	mg/l	1	02/09/00	EP	EPA 300/SW846 9056
Nitrogen, Nitrate + Nitrite [a]	1.4	0.11	mg/l	1	02/09/00	EP	SM18 4500NO3E
Nitrogen, Nitrite	0.030	0.010	mg/l	1	02/09/00	EP	EPA 300/SW846 9056
Sulfate	<5.0	5.0	mg/l	1	02/09/00	EP	EPA 300/SW846 9056

(a) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

RL = Reporting Limit

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APPENDIX C

Support Documentation

ACCUTEST

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ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST QUOTE #: 030-

CLIENT INFORMATION	FACILITY INFORMATION
NAME: Tetra Tech NUS	PROJECT NAME: NAS Whiting Field
ADDRESS: 1401 Oven Park Drive St. 102	LOCATION: Bldg 1443 WW treatment Plant
CITY, STATE, ZIP: Tallahassee FL 32312	Milton, FL 32570
SEND REPORT TO: PHONE #: Howard Engle 850-385-9899	PROJECT NO.:
	FAX #: NONE

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	TCL VOCs	Diss. Methane	Anions	Sulfide	Diss. Org. Carbon	MATRIX CODE / LAB USE ONLY
F19832-1	[redacted]	2-6-00	0927	SB, KM, LS	GW	8	5	1		1	1	3	2	1	1	1	
-2	[redacted]	↓	1200	↓	↓	↓	"	"		"	"	↓	↓	↓	↓	↓	
-3	[redacted]	↓	1535	↓	↓	↓	"	"		"	"	↓	↓	↓	↓	↓	
-4	SFT08101	2-3-00	1800									↓					trip Blank
-5	[redacted]	2-7-00	0953	SB, KM, LS	GW	8	5	1		1	1	3	2	1	1	1	
-6	[redacted]	↓	1129	↓	↓	↓	"	"		"	"	↓	↓	↓	↓	↓	
-7	[redacted]	↓	1447	↓	↓	↓	"	"		"	"	↓	↓	↓	↓	↓	
	Temp. Blank																

Note: Some dates on Bottles 02-6-00 & 02-02-00 are the SAME

MATRIX CODE:
DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

DATA TURNAROUND INFORMATION

- [x] STANDARD
- [ ] 48 HOUR RUSH
- [ ] 24 HOUR EMERGENCY
- [ ] OTHER

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- [ ] STANDARD
- [ ] COMMERCIAL "B"
- [ ] DISK DELIVERABLE
- [ ] STATE FORMS
- [ ] OTHER (SPECIFY)

COMMENTS/REMARKS

Sample 07G00101 has strong odor
COC # 002
Fed Ex airbill # 2369342006
Cooler temp 2.5°C

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER: 1800	DATE TIME: 1800 2-7-00	RECEIVED BY: 1. Fed Ex 1800 2-7-00	RELINQUISHED BY: 2.	DATE TIME:	RECEIVED BY: 2.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY: 3. 2800	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
	DATE TIME:	RECEIVED BY: 5.	SEAL #	PRESERVE WHERE APPLICABLE ☐	ON ICE ☐ TEMPERATURE ____ C

03/27/00

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	05G00901	F5837-1	NORMAL	F5837	CL	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	06G00101	F5837-2	NORMAL	F5837	CL	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	07G00101	F5837-3	NORMAL	F5837	CL	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	30G00401	F5837-6	NORMAL	F5837	CL	02/07/00	02/08/00	02/09/00	1	1	2
MG/L	66G01301	F5837-7	NORMAL	F5837	CL	02/07/00	02/08/00	02/09/00	1	1	2
MG/L	66G02001	F5837-5	NORMAL	F5837	CL	02/07/00	02/08/00	02/10/00	1	2	3
MG/L	05G00901	F5837-1	NORMAL	F5837	DOC	02/06/00	03/02/00	03/02/00	25	0	25
MG/L	06G00101	F5837-2	NORMAL	F5837	DOC	02/06/00	03/02/00	03/02/00	25	0	25
MG/L	07G00101	F5837-3	NORMAL	F5837	DOC	02/06/00	03/02/00	03/02/00	25	0	25
MG/L	30G00401	F5837-6	NORMAL	F5837	DOC	02/07/00	03/02/00	03/02/00	24	0	24
MG/L	66G01301	F5837-7	NORMAL	F5837	DOC	02/07/00	03/02/00	03/02/00	24	0	24
MG/L	66G02001	F5837-5	NORMAL	F5837	DOC	02/07/00	03/02/00	03/02/00	24	0	24
UG/L	05G00901	F5837-1	NORMAL	F5837	ETHA	02/06/00	/ /	02/10/00	0	0	4
UG/L	06G00101	F5837-2	NORMAL	F5837	ETHA	02/06/00	/ /	02/10/00	0	0	4
UG/L	07G00101	F5837-3	NORMAL	F5837	ETHA	02/06/00	/ /	02/10/00	0	0	4
UG/L	30G00401	F5837-6	NORMAL	F5837	ETHA	02/07/00	/ /	02/10/00	0	0	3
UG/L	66G01301	F5837-7	NORMAL	F5837	ETHA	02/07/00	/ /	02/10/00	0	0	3
UG/L	66G02001	F5837-5	NORMAL	F5837	ETHA	02/07/00	/ /	02/10/00	0	0	3
UG/L	SFT08101	F5837-4	NORMAL	F5837	ETHA	02/06/00	/ /	02/10/00	0	0	4
UG/L	05G00901	F5837-1	NORMAL	F5837	ETHE	02/06/00	/ /	02/10/00	0	0	4
UG/L	06G00101	F5837-2	NORMAL	F5837	ETHE	02/06/00	/ /	02/10/00	0	0	4
UG/L	07G00101	F5837-3	NORMAL	F5837	ETHE	02/06/00	/ /	02/10/00	0	0	4
UG/L	30G00401	F5837-6	NORMAL	F5837	ETHE	02/07/00	/ /	02/10/00	0	0	3
UG/L	66G01301	F5837-7	NORMAL	F5837	ETHE	02/07/00	/ /	02/10/00	0	0	3
UG/L	66G02001	F5837-5	NORMAL	F5837	ETHE	02/07/00	/ /	02/10/00	0	0	3

									EXTR_DATE	ANAL_DATE	ANAL_DATE
UG/L	SFT08101	F5837-4	NORMAL	F5837	ETHE	02/06/00	/ /	02/10/00	0	0	4
UG/L	05G00901	F5837-1	NORMAL	F5837	METH	02/06/00	/ /	02/10/00	0	0	4
UG/L	06G00101	F5837-2	NORMAL	F5837	METH	02/06/00	/ /	02/10/00	0	0	4
UG/L	07G00101	F5837-3	NORMAL	F5837	METH	02/06/00	/ /	02/10/00	0	0	4
UG/L	30G00401	F5837-6	NORMAL	F5837	METH	02/07/00	/ /	02/10/00	0	0	3
UG/L	66G01301	F5837-7	NORMAL	F5837	METH	02/07/00	/ /	02/10/00	0	0	3
UG/L	66G02001	F5837-5	NORMAL	F5837	METH	02/07/00	/ /	02/10/00	0	0	3
UG/L	SFT08101	F5837-4	NORMAL	F5837	METH	02/06/00	/ /	02/10/00	0	0	4
MG/L	05G00901	F5837-1	NORMAL	F5837	NTA	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	06G00101	F5837-2	NORMAL	F5837	NTA	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	07G00101	F5837-3	NORMAL	F5837	NTA	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	30G00401	F5837-6	NORMAL	F5837	NTA	02/07/00	02/08/00	02/09/00	1	1	2
MG/L	66G01301	F5837-7	NORMAL	F5837	NTA	02/07/00	02/08/00	02/09/00	1	1	2
MG/L	66G02001	F5837-5	NORMAL	F5837	NTA	02/07/00	/ /	02/09/00	0	0	2
MG/L	05G00901	F5837-1	NORMAL	F5837	NTI	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	06G00101	F5837-2	NORMAL	F5837	NTI	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	07G00101	F5837-3	NORMAL	F5837	NTI	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	30G00401	F5837-6	NORMAL	F5837	NTI	02/07/00	02/08/00	02/09/00	1	1	2
MG/L	66G01301	F5837-7	NORMAL	F5837	NTI	02/07/00	02/08/00	02/09/00	1	1	2
MG/L	66G02001	F5837-5	NORMAL	F5837	NTI	02/07/00	/ /	02/09/00	0	0	2
MG/L	05G00901	F5837-1	NORMAL	F5837	NTIA	02/06/00	/ /	02/09/00	0	0	3
MG/L	06G00101	F5837-2	NORMAL	F5837	NTIA	02/06/00	/ /	02/09/00	0	0	3
MG/L	07G00101	F5837-3	NORMAL	F5837	NTIA	02/06/00	/ /	02/09/00	0	0	3
MG/L	30G00401	F5837-6	NORMAL	F5837	NTIA	02/07/00	/ /	02/09/00	0	0	2
MG/L	66G01301	F5837-7	NORMAL	F5837	NTIA	02/07/00	/ /	02/09/00	0	0	2
MG/L	66G02001	F5837-5	NORMAL	F5837	NTIA	02/07/00	/ /	02/09/00	0	0	2
UG/L	05G00901	F5837-1	NORMAL	F5837	OV	02/06/00	/ /	02/12/00	0	0	6

									EXTR_DATE	ANAL_DATE	ANAL_DATE
UG/L	06G00101	F5837-2	NORMAL	F5837	OV	02/06/00	/ /	02/12/00	0	0	6
UG/L	07G00101	F5837-3	NORMAL	F5837	OV	02/06/00	/ /	02/12/00	0	0	6
UG/L	30G00401	F5837-6	NORMAL	F5837	OV	02/07/00	/ /	02/14/00	0	0	7
UG/L	66G01301	F5837-7	NORMAL	F5837	OV	02/07/00	/ /	02/12/00	0	0	5
UG/L	66G02001	F5837-5	NORMAL	F5837	OV	02/07/00	/ /	02/14/00	0	0	7
UG/L	SFT08101	F5837-4	NORMAL	F5837	OV	02/06/00	/ /	02/12/00	0	0	6
MG/L	05G00901	F5837-1	NORMAL	F5837	SO4	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	06G00101	F5837-2	NORMAL	F5837	SO4	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	07G00101	F5837-3	NORMAL	F5837	SO4	02/06/00	02/08/00	02/09/00	2	1	3
MG/L	30G00401	F5837-6	NORMAL	F5837	SO4	02/07/00	02/08/00	02/09/00	1	1	2
MG/L	66G01301	F5837-7	NORMAL	F5837	SO4	02/07/00	02/08/00	02/09/00	1	1	2
MG/L	66G02001	F5837-5	NORMAL	F5837	SO4	02/07/00	/ /	02/09/00	0	0	2
MG/L	05G00901	F5837-1	NORMAL	F5837	SUL	02/06/00	/ /	02/12/00	0	0	6
MG/L	06G00101	F5837-2	NORMAL	F5837	SUL	02/06/00	/ /	02/12/00	0	0	6
MG/L	07G00101	F5837-3	NORMAL	F5837	SUL	02/06/00	/ /	02/12/00	0	0	6
MG/L	30G00401	F5837-6	NORMAL	F5837	SUL	02/07/00	/ /	02/12/00	0	0	5
MG/L	66G01301	F5837-7	NORMAL	F5837	SUL	02/07/00	/ /	02/12/00	0	0	5
MG/L	66G02001	F5837-5	NORMAL	F5837	SUL	02/07/00	/ /	02/12/00	0	0	5

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F5837
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Chloride	GP1327	0.50	<0.50	mg/l	101.0	90-110%
Hydrogen Sulfide	GN5081	2.0	<2.0	mg/l		
Nitrogen, Nitrite	GP1327	0.010	<0.010	mg/l	100.0	90-110%
Sulfate	GP1327	5.0	<5.0	mg/l	99.3	90-110%

Associated Samples:
Batch GN5081: F5837-1, F5837-2, F5837-3, F5837-5, F5837-6, F5837-7
Batch GP1327: F5837-1, F5837-2, F5837-3, F5837-5, F5837-6, F5837-7

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F5837
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: ALSE12570 - TETRFLTA: NAS Whiting Field PO#N0052-MS

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Dissolved Organic Carbon	GP9061	1.0	<1.0	mg/l	93.8	80-120%

Associated Samples:
Batch GP9061: F5837-1, F5837-2, F5837-3, F5837-5, F5837-6, F5837-7

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F5837
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chloride	GP1327	F5837-2	mg/l	3.5	2	5.2	85.0	80-120%
Nitrogen, Nitrite	GP1327	F5837-2	mg/l	<0.010	0.05	0.050	100.0	80-120%
Sulfate	GP1327	F5837-2	mg/l	<5.0	15	12.2	81.3	80-120%

Associated Samples:
Batch GP1327: F5837-1, F5837-2, F5837-3, F5837-5, F5837-6, F5837-7

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F5837
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: ALSE12570 - TETRFLTA: NAS Whiting Field PO#N0052-MS

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Dissolved Organic Carbon	GP9061	F5827-1	mg/l	5.9	50	52.6	93.4	75-125%

Associated Samples:
Batch GP9061: F5837-1, F5837-2, F5837-3, F5837-5, F5837-6, F5837-7

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F5837
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N00052-MSA0200-014

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chloride	GP1327	F5837-2	mg/l	3.5	3.6	2.8	0-20%
Hydrogen Sulfide	GN5081	F5837-1	mg/l	<2.0	<2.0	0.0	0-20%
Nitrogen, Nitrite	GP1327	F5837-2	mg/l	<0.010	<0.010	0.0	0-20%
Sulfate	GP1327	F5837-2	mg/l	<5.0	<5.0	0.0	0-20%

Associated Samples:
Batch GN5081: F5837-1, F5837-2, F5837-3, F5837-5, F5837-6, F5837-7
Batch GP1327: F5837-1, F5837-2, F5837-3, F5837-5, F5837-6, F5837-7

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F5837
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: ALSE12570 - TETRFLTA: NAS Whiting Field PO#N0052-MS

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Dissolved Organic Carbon	GP9061	F5827-1	mg/l	5.9	8.4	35.0(a)	0-20%

Associated Samples:
Batch GP9061: F5837-1, F5837-2, F5837-3, F5837-5, F5837-6, F5837-7
(a) RPD acceptable due to low duplicate and sample concentrations.

Sample	Sample Type	Level	Method	Data File	Volume	Dilution	Weight	Int. Std.	Comment
ICB	Sample		anions.met	020800_007.dxd	1	1	1	1	
CCV	Check Std.	1	anions.met	020800_008.dxd	1	1	1	1	
CCV	Check Std.	1	anions.met	020800_019.dxd	1	1	1	1	
CCB	Sample		anions.met	020800_020.dxd	1	1	1	1	
GP1327-MB1	Sample		anions.met	020800_026.dxd	1	1	1	1	
GP1327-B1	Sample		anions.met	020800_027.dxd	1	1	1	1	
CCV	Check Std.	1	anions.met	020800_031.dxd	1	1	1	1	
CCB	Sample		anions.met	020800_032.dxd	1	1	1	1	
GP1327-D1	Sample		anions.met	020800_033.dxd	1	1	1	1	
GP1327-S1	Sample		anions.met	020800_034.dxd	1	1	1	1	
F5837-2	Sample		anions.met	020800_035.dxd	1	1	1	1	
F5837-1	Sample		anions.met	020800_036.dxd	1	10	1	1	
F5837-1	Sample		anions.met	020800_037.dxd	1	1	1	1	
F5837-3	Sample		anions.met	020800_038.dxd	1	10	1	1	
F5837-3	Sample		anions.met	020800_039.dxd	1	1	1	1	
F5837-5	Sample		anions.met	020800_041.dxd	1	1	1	1	
CCV	Check Std.	1	anions.met	020800_043.dxd	1	1	1	1	
CCB	Sample		anions.met	020800_044.dxd	1	1	1	1	
F5837-6	Sample		anions.met	020800_046.dxd	1	1	1	1	
F5837-7	Sample		anions.met	020800_047.dxd	1	5	1	1	
F5837-7	Sample		anions.met	020800_048.dxd	1	1	1	1	
CCV	Check Std.	1	anions.met	020800_049.dxd	1	1	1	1	
CCB	Sample		anions.met	020800_050.dxd	1	1	1	1	

Method Path: C:\PEAKNET\METHOD
Data Path: C:\PEAKNET\DATA
t:
created schedule.

ample	Sample Type	Level	Method	Data File	Volume	Dilution	Weight	Int. Std.	Comment
LANK	Sample		anions.met	123199_001.dxd	1	1	1	1	
TD A	Calibration St	1	anions.met	123199_002.dxd	1	1	1	1	
TD B	Calibration St	2	anions.met	123199_003.dxd	1	1	1	1	
TD C	Calibration St	3	anions.met	123199_004.dxd	1	1	1	1	
TD D	Calibration St	4	anions.met	123199_005.dxd	1	1	1	1	
TD E	Calibration St	5	anions.met	123199_006.dxd	1	1	1	1	
B	Sample		anions.met	020800_007.dxd	1	1	1	1	
CV	Check Std.	1	anions.met	020800_008.dxd	1	1	1	1	
B1	Sample		anions.met	020800_009.dxd	1	1	1	1	
81	Sample		anions.met	020800_010.dxd	1	1	1	1	
833-2 1:10	Sample		anions.met	020800_011.dxd	1	10	1	1	
833-2 1:5	Sample		anions.met	020800_012.dxd	1	5	1	1	
833-2	Sample		anions.met	020800_013.dxd	1	1	1	1	
P 60 NUT. 1:50	Sample		anions.met	020800_014.dxd	1	50	1	1	
P 60 NUT. 1:10	Sample		anions.met	020800_015.dxd	1	10	1	1	
P 60 NUT. 1:5	Sample		anions.met	020800_016.dxd	1	5	1	1	
P 60 NUT.	Sample		anions.met	020800_017.dxd	1	1	1	1	
NSE	Sample		anions.met	020800_018.dxd	1	1	1	1	
CV	Check Std.	1	anions.met	020800_019.dxd	1	1	1	1	
CB	Sample		anions.met	020800_020.dxd	1	1	1	1	
P 60 MIN. 1:50	Sample		anions.met	020800_021.dxd	1	50	1	1	
P 60 MIN. 1:10	Sample		anions.met	020800_022.dxd	1	10	1	1	
P 60 MIN. I:5	Sample		anions.met	020800_023.dxd	1	5	1	1	
P 60 MIN.	Sample		anions.met	020800_024.dxd	1	1	1	1	
NSE	Sample		anions.met	020800_025.dxd	1	1	1	1	
3 2	Sample		anions.met	020800_026.dxd	1	1	1	1	
2	Sample		anions.met	020800_027.dxd	1	1	1	1	
837-2 DUP 1:5	Sample		anions.met	020800_028.dxd	1	5	1	1	
837-2 MS 1:5	Sample		anions.met	020800_029.dxd	1	5	1	1	
837-2 1:5	Sample		anions.met	020800_030.dxd	1	5	1	1	
CV	Check Std.	1	anions.met	020800_031.dxd	1	1	1	1	
CB	Sample		anions.met	020800_032.dxd	1	1	1	1	
837-2 DUP	Sample		anions.met	020800_033.dxd	1	1	1	1	
837-2 MS	Sample		anions.met	020800_034.dxd	1	1	1	1	
837-2	Sample		anions.met	020800_035.dxd	1	1	1	1	
837-1 1:10	Sample		anions.met	020800_036.dxd	1	10	1	1	
837-1	Sample		anions.met	020800_037.dxd	1	1	1	1	
837-3 1:10	Sample		anions.met	020800_038.dxd	1	10	1	1	
837-3	Sample		anions.met	020800_039.dxd	1	1	1	1	
837-5 1:20	Sample		anions.met	020800_040.dxd	1	20	1	1	
837-5	Sample		anions.met	020800_041.dxd	1	1	1	1	
NSE	Sample		anions.met	020800_042.dxd	1	1	1	1	
V	Check Std.	1	anions.met	020800_043.dxd	1	1	1	1	
B	Sample		anions.met	020800_044.dxd	1	1	1	1	
837-6 1:10	Sample		anions.met	020800_045.dxd	1	10	1	1	
837-6	Sample		anions.met	020800_046.dxd	1	1	1	1	
837-7 1:5	Sample		anions.met	020800_047.dxd	1	5	1	1	
837-7	Sample		anions.met	020800_048.dxd	1	1	1	1	
V	Check Std.	1	anions.met	020800_049.dxd	1	1	1	1	
B	Sample		anions.met	020800_050.dxd	1	1	1	1	
	Sample		shutdown.met		1	1	1	1	

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a Path: C:\PEAKNET\DATA

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2/8/00 4:56:56 PI

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F5837
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: ALSE12570 - TETRFLTA: NAS Whiting Field PO#N0052-MS

File ID: 000302W1.TOC
Analyst: JK
Parameters: Dissolved Organic Carbon

Date Analyzed: 03/02/00
Run ID: GN28766

Methods: EPA415.1/SW8469060M

Time	Sample Description	Dilution Factor	PS Recov	Comments
16:38	GN28766-CRI1	1		
17:20	GN28766-HSTD1	1		
18:35	GN28766-ICV1	1		
18:47	GN28766-ICB1	1		
19:30	ZZZZZZ	1		
19:56	GN28766-CCV1	1		
20:08	GN28766-CCB1	1		
20:20	GP9061-MB1	1		
20:28	GP9061-B1	1		
20:40	ZZZZZZ	1		
20:56	GP9061-D1	5		
21:02	GP9061-S1	5		
21:08	F5827-1	5		(sample used for QC only; not part of login F5837)
21:16	F5837-1	5		
21:22	F5837-2	5		
21:29	F5837-3	5		
21:35	F5837-5	5		
21:50	GN28766-CCV2	1		
21:57	GN28766-CCB2	1		
22:09	F5837-6	5		
22:16	F5837-7	5		
22:22	ZZZZZZ	5		
22:29	ZZZZZZ	5		
22:35	ZZZZZZ	5		
22:42	ZZZZZZ	5		
22:48	ZZZZZZ	5		
22:54	ZZZZZZ	5		
23:01	ZZZZZZ	5		
23:07	ZZZZZZ	5		
23:15	GN28766-CCV3	1		
23:22	GN28766-CCB3	1		
23:35	ZZZZZZ	5		
23:41	ZZZZZZ	5		

415

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F5837
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: ALSE12570 - TETRFLTA: NAS Whiting Field PO#N0052-MS

File ID: 000302W1.TOC Date Analyzed: 03/02/00 Methods: EPA415.1/SW8469060M
Analyst: JK Run ID: GN28766
Parameters: Dissolved Organic Carbon

Time	Sample Description	Dilution Factor	PS Recov	Comments
23:48	ZZZZZZ	5		
23:54	ZZZZZZ	5		
00:01	ZZZZZZ	5		
00:08	GN28766-CCV4	1		
00:15	GN28766-CCB4	1		

Refer to raw data for calibration curve and standards.

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**MR. T. HANSEN**	**DATE:**	**OCTOBER 16, 2000**
FROM:	**LINDA KARSONOVICH**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION- VOA/SVOA/PAH/TPH**
CTO 079, NAS WHITING FIELD
SDG F6186

SAMPLES: 2/Solid/

07SB00120 07SB00210

OVERVIEW

The sample set for CTO 079 NAS Whiting Field, SDG F6186 consists of two (2) soil borings. The samples were analyzed for volatile organic compounds (VOA) plus 1,2-dibromoethane selected semivolatile organic compounds, polynuclear aromatic hydrocarbons (PAHs), and total petroleum hydrocarbons (TPH). No field duplicate pairs were included in the SDG.

The samples were collected by TetraTech NUS on March 31, 2000 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using SW-846 Method 8260B, 8270C, 8310, and Florida PRO analysis and reporting protocols. The data contained in this SDG were validated with regard to the following parameters:

- * Data completeness
- * Holding times
- * GC/MS Tuning and System Performance
- Initial/continuing calibrations
- * Laboratory method blank results
- * Surrogate Recoveries
- * Internal Standard Recoveries
- * Blank Spike/Blank Spike Duplicate Results
- Matrix Spike/Matrix Spike Duplicate Results
- * Compound Identification
- * Compound Quantitation
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Volatile

Sample 07SB00120 was analyzed and reported at a 50X dilution factor due to the presence of target compounds. This accounts for the elevated reporting limits for this sample. No qualifiers were assigned on this basis.

Sample 07SB00210 was analyzed and reported at a 500X dilution factor due to the presence of target compounds. This accounts for the elevated reporting limits for this sample. No qualifiers were assigned on this basis.

A continuing calibration percent difference (%D) exceeded the 25% quality control limit for chloromethane. Nondetected results were qualified as estimated, UJ.

Semivolatile

All data quality parameters were met for this fraction.

PAH

Initial calibration %RSDs exceeded the 20% quality control limit on one analytical column for anthracene. However, the laboratory quantitated this compound using linear regression. Therefore, no qualifiers were assigned on this basis.

All other data quality parameters were met for this fraction.

TPH

Sample 07SB00210 was analyzed and reported at a 2X dilution factor due to the presence of target compounds. This accounts for the elevated reporting limits for this sample. No qualifiers were assigned on this basis.

All other data quality parameters were met for this fraction.

Additional Comments

Positive results below the reporting limit, RL, were qualified as estimated, J, due to uncertainty near the detection limit.

Matrix spike and matrix spike duplicate recoveries fell below or exceeded the quality control limits for several compounds in the volatile, semivolatile, and PAH fractions. Relative percent differences (RPDs) also exceeded the quality control limits. No qualifiers were required on this basis since the unspiked samples were not included in the sample delivery group (SDG).

EXECUTIVE SUMMARY

Laboratory Performance Issues: Chloromethane exceeded the continuing calibration criteria in the volatile fraction.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), and the NFESC guidelines IRCDQM (Sept. 1999). 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

Linda Karsonovich
Chemist/Data Validator

TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

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

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

SOIL DATA
Accutest, NJ
SDG: F6186

SAMPLE NUMBER:	07SB00120			07SB00210								
SAMPLE DATE:	03/31/00			03/31/00			/ /			/ /		
LABORATORY ID:	F6186-1			F6186-2								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	84.9 %			84.9 %			100.0 %			100.0 %		
UNITS:	UG/KG			UG/KG								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	270	U		3100	U							
1,1,2,2-TETRACHLOROETHANE	270	U		3100	U							
1,1,2-TRICHLOROETHANE	270	U		3100	U							
1,1-DICHLOROETHANE	270	U		3100	U							
1,1-DICHLOROETHENE	270	U		3100	U							
1,2-DIBROMOETHANE	270	U		3100	U							
1,2-DICHLOROETHANE	270	U		3100	U							
1,2-DICHLOROETHENE (TOTAL)	540	U		6200	U							
1,2-DICHLOROPROPANE	270	U		3100	U							
2-BUTANONE	540	U		6200	U							
2-HEXANONE	540	U		6200	U							
4-METHYL-2-PENTANONE	4500	U		6200	U							
ACETONE	2700	U		31000	U							
BENZENE	54.2	J	P	3100	U							
BROMODICHLOROMETHANE	270	U		3100	U							
BROMOFORM	270	U		3100	U							
BROMOMETHANE	270	U		3100	U							
CARBON DISULFIDE	540	U		6200	U							
CARBON TETRACHLORIDE	270	U		3100	U							
CHLOROBENZENE	270	U		3100	U							
CHLOROETHANE	270	U		3100	U							
CHLOROFORM	270	U		3100	U							
CHLOROMETHANE	270	UJ	C	3100	UJ	C						
CIS-1,3-DICHLOROPROPENE	270	U		3100	U							
DIBROMOCHLOROMETHANE	270	U		3100	U							
ETHYLBENZENE	438			17300								
METHYLENE CHLORIDE	540	U		6200	U							
STYRENE	270	U		3100	U							
TETRACHLOROETHENE	270	U		3100	U							
TOLUENE	2940			554	J	P						
TRANS-1,3-DICHLOROPROPENE	270	U		3100	U							
TRICHLOROETHENE	270	U		3100	U							
VINYL CHLORIDE	270	U		3100	U							
XYLENES, TOTAL	291	J	P	37200								

SOIL DATA
Accutest, NJ
SDG: F6186

SAMPLE NUMBER:	07SB00120			07SB00210								
SAMPLE DATE:	03/31/00			03/31/00			/ /			/ /		
LABORATORY ID:	F6186-1			F6186-2								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	84.9 %			84.9 %			100.0 %			100.0 %		
UNITS:	UG/KG			UG/KG								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	390	U		390	U							
1,2-DICHLOROBENZENE	390	U		390	U							
1,3-DICHLOROBENZENE	390	U		390	U							
1,4-DICHLOROBENZENE	390	U		390	U							
2,4,5-TRICHLOROPHENOL	390	U		390	U							
2,4,6-TRICHLOROPHENOL	390	U		390	U							
2,4-DICHLOROPHENOL	390	U		390	U							
2,4-DIMETHYLPHENOL	980	U		980	U							
2,4-DINITROPHENOL	980	U		980	U							
2,4-DINITROTOLUENE	390	U		390	U							
2,6-DINITROTOLUENE	390	U		390	U							
2-CHLORONAPHTHALENE	390	U		390	U							
2-CHLOROPHENOL	390	U		390	U							
2-METHYLPHENOL	390	U		390	U							
2-NITROANILINE	390	U		390	U							
2-NITROPHENOL	390	U		390	U							
3&4-METHYLPHENOL	390	U		390	U							
3,3'-DICHLOROBENZIDINE	780	U		780	U							
3-NITROANILINE	390	U		390	U							
4,6-DINITRO-2-METHYLPHENOL	780	U		780	U							
4-BROMOPHENYL PHENYL ETHER	390	U		390	U							
4-CHLORO-3-METHYLPHENOL	390	U		390	U							
4-CHLOROANILINE	390	U		390	U							
4-CHLOROPHENYL PHENYL ETHER	390	U		390	U							
4-NITROANILINE	390	U		390	U							
4-NITROPHENOL	980	U		980	U							
BENZOIC ACID	980	U		980	U							
BENZYL ALCOHOL	390	U		390	U							
BIS(2-CHLOROETHOXY)METHANE	390	U		390	U							
BIS(2-CHLOROETHYL)ETHER	390	U		390	U							
BIS(2-CHLOROISOPROPYL) ETHER	390	U		390	U							
BIS(2-ETHYLHEXYL)PHTHALATE	390	U		390	U							
BUTYLBENZYL PHTHALATE	390	U		390	U							
CARBAZOLE	390	U		390	U							

SOIL DATA
Accutest, NJ
SDG: F6186

SAMPLE NUMBER:	07SB00120			07SB00210								
SAMPLE DATE:	03/31/00			03/31/00			/ /			/ /		
LABORATORY ID:	F6186-1			F6186-2								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	84.9 %			84.9 %			100.0 %			100.0 %		
UNITS:	UG/KG			UG/KG								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
DI-N-BUTYL PHTHALATE	390	U		390	U							
DI-N-OCTYL PHTHALATE	390	U		390	U							
DIBENZOFURAN	390	U		390	U							
DIETHYL PHTHALATE	390	U		390	U							
DIMETHYL PHTHALATE	390	U		390	U							
HEXACHLOROBENZENE	390	U		390	U							
HEXACHLOROBUTADIENE	390	U		390	U							
HEXACHLOROCYCLOPENTADIENE	390	U		390	U							
HEXACHLOROETHANE	390	U		390	U							
ISOPHORONE	390	U		390	U							
N-NITROSO-DI-N-PROPYLAMINE	390	U		390	U							
N-NITROSODIPHENYLAMINE	390	U		390	U							
NITROBENZENE	390	U		390	U							
PENTACHLOROPHENOL	980	U		980	U							
PHENOL	390	U		390	U							

SOIL DATA
Accutest, NJ
SDG: F6186

SAMPLE NUMBER:	07SB00120			07SB00210								
SAMPLE DATE:	03/31/00			03/31/00			/ /			/ /		
LABORATORY ID:	F6186-1			F6186-2								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	84.9 %			84.9 %			100.0 %			100.0 %		
UNITS:	UG/KG			UG/KG								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	390	U		390	U							
2-METHYLNAPHTHALENE	390	U		390	U							
ACENAPHTHENE	390	U		390	U							
ACENAPHTHYLENE	780	U		790	U							
ANTHRACENE	390	U		390	U							
BENZO(A)ANTHRACENE	78	U		79	U							
BENZO(A)PYRENE	78	U		79	U							
BENZO(B)FLUORANTHENE	78	U		79	U							
BENZO(G,H,I)PERYLENE	78	U		79	U							
BENZO(K)FLUORANTHENE	78	U		79	U							
CHRYSENE	78	U		79	U							
DIBENZO(A,H)ANTHRACENE	78	U		79	U							
FLUORANTHENE	390	U		390	U							
FLUORENE	390	U		390	U							
INDENO(1,2,3-CD)PYRENE	78	U		79	U							
NAPHTHALENE	390	U		390	U							
PHENANTHRENE	390	U		390	U							
PYRENE	390	U		390	U							

SOIL DATA
Accutest, NJ
SDG: F6186

SAMPLE NUMBER:	07SB00120			07SB00210								
SAMPLE DATE:	03/31/00			03/31/00			/ /			/ /		
LABORATORY ID:	F6186-1			F6186-2								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	84.9 %			84.9 %			100.0 %			100.0 %		
UNITS:	MG/KG			MG/KG								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PETROLEUM HYDROCARBONS												
TPH (C8-C40)	12.8			50.3								

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID:	07SB00120		
Lab Sample ID:	F6186-1	**Date Sampled:**	03/31/00
Matrix:	SO - Soil	**Date Received:**	04/01/00
Method:	SW846 8260B	**Percent Solids:**	84.9
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H006963.D	50	04/14/00	CJP	n/a	n/a	VH66
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	2700	ug/kg	
71-43-2	Benzene	54.2	270	ug/kg	J
75-27-4	Bromodichloromethane	ND	270	ug/kg	
75-25-2	Bromoform	ND	270	ug/kg	
108-90-7	Chlorobenzene	ND	270	ug/kg	
75-00-3	Chloroethane	ND	270	ug/kg	
67-66-3	Chloroform	ND	270	ug/kg	
75-15-0	Carbon disulfide	ND	540	ug/kg	
56-23-5	Carbon tetrachloride	ND	270	ug/kg	
75-34-3	1,1-Dichloroethane	ND	270	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	270	ug/kg	
107-06-2	1,2-Dichloroethane	ND	270	ug/kg	
78-87-5	1,2-Dichloropropane	ND	270	ug/kg	
124-48-1	Dibromochloromethane	ND	270	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	270	ug/kg	
540-59-0	1,2-Dichloroethene (total)	ND	540	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	270	ug/kg	
100-41-4	Ethylbenzene	438	270	ug/kg	
591-78-6	2-Hexanone	ND	540	ug/kg	
108-10-1	4-Methyl-2-pentanone [a]	ND	4500	ug/kg	
74-83-9	Methyl bromide	ND	270	ug/kg	
74-87-3	Methyl chloride	ND	270	ug/kg	
75-09-2	Methylene chloride	ND	540	ug/kg	
78-93-3	Methyl ethyl ketone	ND	540	ug/kg	
100-42-5	Styrene	ND	270	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	270	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	270	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	270	ug/kg	
127-18-4	Tetrachloroethylene	ND	270	ug/kg	
108-88-3	Toluene	2940	270	ug/kg	
79-01-6	Trichloroethylene	ND	270	ug/kg	
75-01-4	Vinyl chloride	ND	270	ug/kg	
1330-20-7	Xylene (total)	291	820	ug/kg	J

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	07SB00120		
Lab Sample ID:	F6186-1	**Date Sampled:**	03/31/00
Matrix:	SO - Soil	**Date Received:**	04/01/00
Method:	SW846 8260B	**Percent Solids:**	84.9
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		71-122%
2037-26-5	Toluene-D8	120%		73-128%
460-00-4	4-Bromofluorobenzene	101%		53-158%
17060-07-0	1,2-Dichloroethane-D4	104%		71-122%

(a) Elevated detection limits due to matrix interference.

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	07SB00210		
Lab Sample ID:	F6186-2	**Date Sampled:**	03/31/00
Matrix:	SO - Soil	**Date Received:**	04/01/00
Method:	SW846 8260B	**Percent Solids:**	84.9
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H006960.D	500	04/14/00	CJP	n/a	n/a	VH66
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	31000	ug/kg	
71-43-2	Benzene	ND	3100	ug/kg	
75-27-4	Bromodichloromethane	ND	3100	ug/kg	
75-25-2	Bromoform	ND	3100	ug/kg	
108-90-7	Chlorobenzene	ND	3100	ug/kg	
75-00-3	Chloroethane	ND	3100	ug/kg	
67-66-3	Chloroform	ND	3100	ug/kg	
75-15-0	Carbon disulfide	ND	6200	ug/kg	
56-23-5	Carbon tetrachloride	ND	3100	ug/kg	
75-34-3	1,1-Dichloroethane	ND	3100	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	3100	ug/kg	
107-06-2	1,2-Dichloroethane	ND	3100	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3100	ug/kg	
124-48-1	Dibromochloromethane	ND	3100	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3100	ug/kg	
540-59-0	1,2-Dichloroethene (total)	ND	6200	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3100	ug/kg	
100-41-4	Ethylbenzene	17300	3100	ug/kg	
591-78-6	2-Hexanone	ND	6200	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	6200	ug/kg	
74-83-9	Methyl bromide	ND	3100	ug/kg	
74-87-3	Methyl chloride	ND	3100	ug/kg	
75-09-2	Methylene chloride	ND	6200	ug/kg	
78-93-3	Methyl ethyl ketone	ND	6200	ug/kg	
100-42-5	Styrene	ND	3100	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3100	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3100	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3100	ug/kg	
127-18-4	Tetrachloroethylene	ND	3100	ug/kg	
108-88-3	Toluene	554	3100	ug/kg	J
79-01-6	Trichloroethylene	ND	3100	ug/kg	
75-01-4	Vinyl chloride	ND	3100	ug/kg	
1330-20-7	Xylene (total)	37200	9200	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	07SB00210		
Lab Sample ID:	F6186-2	**Date Sampled:**	03/31/00
Matrix:	SO - Soil	**Date Received:**	04/01/00
Method:	SW846 8260B	**Percent Solids:**	84.9
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		71-122%
2037-26-5	Toluene-D8	106%		73-128%
460-00-4	4-Bromofluorobenzene	101%		53-158%
17060-07-0	1,2-Dichloroethane-D4	94%		71-122%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	07SB00120		
Lab Sample ID:	F6186-1	**Date Sampled:**	03/31/00
Matrix:	SO - Soil	**Date Received:**	04/01/00
Method:	SW846 3550B/8270C	**Percent Solids:**	84.9
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L003495.D	1	04/07/00	ME	04/06/00	OP1427	SL226
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic acid	ND	980	ug/kg	
95-57-8	2-Chlorophenol	ND	390	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	390	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	390	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	980	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	980	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	780	ug/kg	
95-48-7	2-Methylphenol	ND	390	ug/kg	
	3&4-Methylphenol	ND	390	ug/kg	
88-75-5	2-Nitrophenol	ND	390	ug/kg	
100-02-7	4-Nitrophenol	ND	980	ug/kg	
87-86-5	Pentachlorophenol	ND	980	ug/kg	
108-95-2	Phenol	ND	390	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	390	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	390	ug/kg	
83-32-9	Acenaphthene	ND	390	ug/kg	
208-96-8	Acenaphthylene	ND	390	ug/kg	
120-12-7	Anthracene	ND	390	ug/kg	
56-55-3	Benzo(a)anthracene	ND	390	ug/kg	
50-32-8	Benzo(a)pyrene	ND	390	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	390	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	390	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	390	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	390	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	ug/kg	
100-51-6	Benzyl Alcohol	ND	390	ug/kg	
91-58-7	2-Chloronaphthalene	ND	390	ug/kg	
106-47-8	4-Chloroaniline	ND	390	ug/kg	
86-74-8	Carbazole	ND	390	ug/kg	
218-01-9	Chrysene	ND	390	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	390	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	390	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	390	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	390	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	390	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	390	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	07SB00120		
Lab Sample ID:	F6186-1	**Date Sampled:**	03/31/00
Matrix:	SO - Soil	**Date Received:**	04/01/00
Method:	SW846 3550B/8270C	**Percent Solids:**	84.9
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	390	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	390	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	390	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	780	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	390	ug/kg	
132-64-9	Dibenzofuran	ND	390	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	390	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	ug/kg	
84-66-2	Diethyl phthalate	ND	390	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	ug/kg	
206-44-0	Fluoranthene	ND	390	ug/kg	
86-73-7	Fluorene	ND	390	ug/kg	
118-74-1	Hexachlorobenzene	ND	390	ug/kg	
87-68-3	Hexachlorobutadiene	ND	390	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	390	ug/kg	
67-72-1	Hexachloroethane	ND	390	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	390	ug/kg	
78-59-1	Isophorone	ND	390	ug/kg	
91-57-6	2-Methylnaphthalene	ND	390	ug/kg	
88-74-4	2-Nitroaniline	ND	390	ug/kg	
99-09-2	3-Nitroaniline	ND	390	ug/kg	
100-01-6	4-Nitroaniline	ND	390	ug/kg	
91-20-3	Naphthalene	ND	390	ug/kg	
98-95-3	Nitrobenzene	ND	390	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	390	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	390	ug/kg	
85-01-8	Phenanthrene	ND	390	ug/kg	
129-00-0	Pyrene	ND	390	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	390	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	82%		36-129%
4165-62-2	Phenol-d5	88%		38-135%
118-79-6	2,4,6-Tribromophenol	95%		37-144%
4165-60-0	Nitrobenzene-d5	84%		36-135%
321-60-8	2-Fluorobiphenyl	88%		44-135%
1718-51-0	Terphenyl-d14	94%		42-149%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	07SB00210		
Lab Sample ID:	F6186-2	**Date Sampled:**	03/31/00
Matrix:	SO - Soil	**Date Received:**	04/01/00
Method:	SW846 3550B/8270C	**Percent Solids:**	84.9
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L003496.D	1	04/07/00	ME	04/06/00	OP1427	SL226
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic acid	ND	980	ug/kg	
95-57-8	2-Chlorophenol	ND	390	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	390	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	390	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	980	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	980	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	780	ug/kg	
95-48-7	2-Methylphenol	ND	390	ug/kg	
	3&4-Methylphenol	ND	390	ug/kg	
88-75-5	2-Nitrophenol	ND	390	ug/kg	
100-02-7	4-Nitrophenol	ND	980	ug/kg	
87-86-5	Pentachlorophenol	ND	980	ug/kg	
108-95-2	Phenol	ND	390	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	390	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	390	ug/kg	
83-32-9	Acenaphthene	ND	390	ug/kg	
208-96-8	Acenaphthylene	ND	390	ug/kg	
120-12-7	Anthracene	ND	390	ug/kg	
56-55-3	Benzo(a)anthracene	ND	390	ug/kg	
50-32-8	Benzo(a)pyrene	ND	390	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	390	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	390	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	390	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	390	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	ug/kg	
100-51-6	Benzyl Alcohol	ND	390	ug/kg	
91-58-7	2-Chloronaphthalene	ND	390	ug/kg	
106-47-8	4-Chloroaniline	ND	390	ug/kg	
86-74-8	Carbazole	ND	390	ug/kg	
218-01-9	Chrysene	ND	390	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	390	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	390	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	390	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	390	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	390	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	390	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	07SB00210		
Lab Sample ID:	F6186-2	**Date Sampled:**	03/31/00
Matrix:	SO - Soil	**Date Received:**	04/01/00
Method:	SW846 3550B/8270C	**Percent Solids:**	84.9
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	390	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	390	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	390	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	780	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	390	ug/kg	
132-64-9	Dibenzofuran	ND	390	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	390	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	ug/kg	
84-66-2	Diethyl phthalate	ND	390	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	ug/kg	
206-44-0	Fluoranthene	ND	390	ug/kg	
86-73-7	Fluorene	ND	390	ug/kg	
118-74-1	Hexachlorobenzene	ND	390	ug/kg	
87-68-3	Hexachlorobutadiene	ND	390	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	390	ug/kg	
67-72-1	Hexachloroethane	ND	390	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	390	ug/kg	
78-59-1	Isophorone	ND	390	ug/kg	
91-57-6	2-Methylnaphthalene	ND	390	ug/kg	
88-74-4	2-Nitroaniline	ND	390	ug/kg	
99-09-2	3-Nitroaniline	ND	390	ug/kg	
100-01-6	4-Nitroaniline	ND	390	ug/kg	
91-20-3	Naphthalene	ND	390	ug/kg	
98-95-3	Nitrobenzene	ND	390	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	390	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	390	ug/kg	
85-01-8	Phenanthrene	ND	390	ug/kg	
129-00-0	Pyrene	ND	390	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	390	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	76%		36-129%
4165-62-2	Phenol-d5	82%		38-135%
118-79-6	2,4,6-Tribromophenol	84%		37-144%
4165-60-0	Nitrobenzene-d5	82%		36-135%
321-60-8	2-Fluorobiphenyl	87%		44-135%
1718-51-0	Terphenyl-d14	93%		42-149%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	07SB00120		
Lab Sample ID:	F6186-1	**Date Sampled:**	03/31/00
Matrix:	SO - Soil	**Date Received:**	04/01/00
Method:	EPA 8310	**Percent Solids:**	84.9
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA000577.D	1	04/07/00	CCJ	04/07/00	OP1431	GAA31
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	390	ug/kg	
208-96-8	Acenaphthylene	ND	780	ug/kg	
120-12-7	Anthracene	ND	390	ug/kg	
56-55-3	Benzo(a)anthracene	ND	78	ug/kg	
50-32-8	Benzo(a)pyrene	ND	78	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	78	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	78	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	78	ug/kg	
218-01-9	Chrysene	ND	78	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	78	ug/kg	
206-44-0	Fluoranthene	ND	390	ug/kg	
86-73-7	Fluorene	ND	390	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	78	ug/kg	
91-20-3	Naphthalene	ND	390	ug/kg	
90-12-0	1-Methylnaphthalene	ND	390	ug/kg	
91-57-6	2-Methylnaphthalene	ND	390	ug/kg	
85-01-8	Phenanthrene	ND	390	ug/kg	
129-00-0	Pyrene	ND	390	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	80%		35-135%
92-94-4	p-Terphenyl	89%		50-150%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	07SB00210		
Lab Sample ID:	F6186-2	**Date Sampled:**	03/31/00
Matrix:	SO - Soil	**Date Received:**	04/01/00
Method:	EPA 8310	**Percent Solids:**	84.9
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA000578.D	1	04/07/00	CCJ	04/07/00	OP1431	GAA31
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	390	ug/kg	
208-96-8	Acenaphthylene	ND	790	ug/kg	
120-12-7	Anthracene	ND	390	ug/kg	
56-55-3	Benzo(a)anthracene	ND	79	ug/kg	
50-32-8	Benzo(a)pyrene	ND	79	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	79	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	79	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	79	ug/kg	
218-01-9	Chrysene	ND	79	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	79	ug/kg	
206-44-0	Fluoranthene	ND	390	ug/kg	
86-73-7	Fluorene	ND	390	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	79	ug/kg	
91-20-3	Naphthalene	ND	390	ug/kg	
90-12-0	1-Methylnaphthalene	ND	390	ug/kg	
91-57-6	2-Methylnaphthalene	ND	390	ug/kg	
85-01-8	Phenanthrene	ND	390	ug/kg	
129-00-0	Pyrene	ND	390	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	82%		35-135%
92-94-4	p-Terphenyl	91%		50-150%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	07SB00120		
Lab Sample ID:	F6186-1	**Date Sampled:**	03/31/00
Matrix:	SO - Soil	**Date Received:**	04/01/00
Method:	FLORIDA-PRO	**Percent Solids:**	84.9
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP07750.D	1	04/07/00	ME	04/05/00	OP1417	GOP352
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	12.8	9.8	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	106%		40-140%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	07SB00210		
Lab Sample ID:	F6186-2	**Date Sampled:**	03/31/00
Matrix:	SO - Soil	**Date Received:**	04/01/00
Method:	FLORIDA-PRO	**Percent Solids:**	84.9
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP07764.D	2	04/07/00	ME	04/05/00	OP1417	GOP353
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	50.3	20	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	107%		40-140%

ND = Not detected
RL = Reporting 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

APPENDIX C

SUPPORT DOCUMENTATION

HOLDING TIME
05/08/00

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/KG	07SB00120	F6186-1	NORMAL	F6186	CN	03/31/00	04/06/00	04/11/00	6	5	11
MG/KG	07SB00210	F6186-2	NORMAL	F6186	CN	03/31/00	04/06/00	04/11/00	6	5	11
MG/KG	07SB00120	F6186-1	NORMAL	F6186	M	03/31/00	04/04/00	04/06/00	4	2	6
MG/KG	07SB00210	F6186-2	NORMAL	F6186	M	03/31/00	04/04/00	04/06/00	4	2	6
UG/KG	07SB00120	F6186-1	NORMAL	F6186	OS	03/31/00	04/06/00	04/07/00	6	1	7
UG/KG	07SB00210	F6186-2	NORMAL	F6186	OS	03/31/00	04/06/00	04/07/00	6	1	7
UG/KG	07SB00120	F6186-1	NORMAL	F6186	OV	03/31/00	/ /	04/14/00	0	0	14
UG/KG	07SB00210	F6186-2	NORMAL	F6186	OV	03/31/00	/ /	04/14/00	0	0	14
UG/KG	07SB00120	F6186-1	NORMAL	F6186	PAH	03/31/00	04/07/00	04/07/00	7	0	7
UG/KG	07SB00210	F6186-2	NORMAL	F6186	PAH	03/31/00	04/07/00	04/07/00	7	0	7
MG/KG	07SB00120	F6186-1	NORMAL	F6186	TPH	03/31/00	04/05/00	04/07/00	5	2	7
MG/KG	07SB00210	F6186-2	NORMAL	F6186	TPH	03/31/00	04/05/00	04/07/00	5	2	7

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: F6186
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
F6263-1MS	H007008.D	50	04/18/00	CJP	n/a	n/a	VH66
F6263-1MSD	H007009.D	50	04/18/00	CJP	n/a	n/a	VH66
F6263-1	H006988.D	50	04/18/00	CJP	n/a	n/a	VH66

(not in SDG

The QC reported here applies to the following samples: **Method:** SW846 8260B

F6186-1, F6186-2

CAS No.	Compound	F6263-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		12500	10200	82	9160	73	11	17-172/27
71-43-2	Benzene	ND		2500	2170	87	2280	91	5	40-125/27
75-27-4	Bromodichloromethane	ND		2500	2020	81	2170	87	7	37-130/30
75-25-2	Bromoform	ND		2500	2240	90	2200	88	2	27-125/32
108-90-7	Chlorobenzene	ND		2500	2220	89	2300	92	4	34-129/34
75-00-3	Chloroethane	ND		2500	320	13*	328	13*	2	33-145/32
67-66-3	Chloroform	ND		2500	1940	78	2020	81	4	40-127/30
75-15-0	Carbon disulfide	ND		12500	12000	96	11800	94	2	33-139/28
56-23-5	Carbon tetrachloride	ND		2500	1960	78	2100	84	7	30-131/32
75-34-3	1,1-Dichloroethane	ND		2500	2230	89	2240	90	0	44-134/29
75-35-4	1,1-Dichloroethylene	ND		2500	2020	81	2020	81	0	36-130/34
107-06-2	1,2-Dichloroethane	ND		2500	1900	76	1950	78	2	39-129/27
78-87-5	1,2-Dichloropropane	ND		2500	2380	95	2530	101	6	42-130/28
124-48-1	Dibromochloromethane	ND		2500	2200	88	2330	93	6	32-135/37
10061-01-5	cis-1,3-Dichloropropene	ND		2500	2210	88	2380	95	7	35-125/28
540-59-0	1,2-Dichloroethene (total)	ND		5000	4430	89	4420	88	0	39-125/30
10061-02-6	trans-1,3-Dichloropropene	ND		2500	2260	90	2480	99	9	36-129/32
100-41-4	Ethylbenzene	ND		2500	2200	88	2350	94	6	18-139/34
591-78-6	2-Hexanone	ND		12500	12400	99	12000	96	3	37-147/24
108-10-1	4-Methyl-2-pentanone	ND		12500	11600	93	11300	90	3	38-135/25
74-83-9	Methyl bromide	ND		2500	468	19*	498	20*	6	34-143/32
74-87-3	Methyl chloride	ND		2500	1650	66	1700	68	3	33-146/29
75-09-2	Methylene chloride	ND		2500	2230	89	2150	86	4	39-142/24
78-93-3	Methyl ethyl ketone	ND		12500	13400	107	12000	96	11	35-143/31
100-42-5	Styrene	ND		2500	2320	93	2430	97	5	21-131/34
71-55-6	1,1,1-Trichloroethane	ND		2500	1940	78	2030	81	4	37-126/33
79-34-5	1,1,2,2-Tetrachloroethane	ND		2500	2340	94	2350	94	0	35-132/38
79-00-5	1,1,2-Trichloroethane	ND		2500	2310	92	2450	98	6	46-130/33
127-18-4	Tetrachloroethylene	ND		2500	2110	84	2290	92	8	27-135/37
108-88-3	Toluene	ND		2500	2290	92	2480	99	8	24-138/30
79-01-6	Trichloroethylene	ND		2500	2140	86	2310	92	8	40-125/33
75-01-4	Vinyl chloride	ND		2500	1930	77	2000	80	4	42-131/39
1330-20-7	Xylene (total)	157	J	7500	6700	87	7040	92	5	32-137/34

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: F6186
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
F6263-1MS	H007008.D	50	04/18/00	CJP	n/a	n/a	VH66
F6263-1MSD	H007009.D	50	04/18/00	CJP	n/a	n/a	VH66
F6263-1	H006988.D	50	04/18/00	CJP	n/a	n/a	VH66

The QC reported here applies to the following samples: **Method:** SW846 8260B

F6186-1, F6186-2

CAS No.	Surrogate Recoveries	MS	MSD	F6263-1	Limits
1868-53-7	Dibromofluoromethane	92%	90%	99%	71-122%
2037-26-5	Toluene-D8	101%	106%	102%	73-128%
460-00-4	4-Bromofluorobenzene	103%	107%	101%	53-158%
17060-07-0	1,2-Dichloroethane-D4	90%	88%	108%	71-122%

Instrument Performance Check (BFB)

Job Number: F6186
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: VH66-BFB
Lab File ID: H006878.D
Instrument ID: GCMSH
Injection Date: 04/11/00
Injection Time: 09:55

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	38852	26.3		Pass
75	30.0 - 60.0% of mass 95	86680	58.7		Pass
95	Base peak, 100% relative abundance	147552	100.0		Pass
96	5.0 - 9.0% of mass 95	10550	7.2		Pass
173	Less than 2.0% of mass 174	0	0.0	(0.0) [a]	Pass
174	50.0 - 100.0% of mass 95	100312	68.0		Pass
175	5.0 - 9.0% of mass 174	8038	5.4	(8.0) [a]	Pass
176	95.0 - 101.0% of mass 174	98708	66.9	(98.4) [a]	Pass
177	5.0 - 9.0% of mass 176	6566	4.4	(6.7) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VH66-IC66	H006880.D	04/11/00	10:52	00:57	Initial cal 5
VH66-IC66	H006881.D	04/11/00	11:31	01:36	Initial cal 20
VH66-ICC66	H006882.D	04/11/00	12:11	02:16	Initial cal 40
VH66-IC66	H006883.D	04/11/00	12:52	02:57	Initial cal 60
VH66-IC66	H006884.D	04/11/00	13:31	03:36	Initial cal 80
VH66-IC66	H006885.D	04/11/00	14:11	04:16	Initial cal 100
VH60-BS5	H006886.D	04/11/00	14:51	04:56	Blank Spike
VH66-BS	H006886.D	04/11/00	14:51	04:56	Blank Spike
F6175-12MS	H006888.D	04/11/00	16:11	06:16	Matrix Spike
F6175-12MSD	H006889.D	04/11/00	16:50	06:55	Matrix Spike Duplicate
ZZZZZZ	H006890.D	04/11/00	17:30	07:35	(unrelated sample)
ZZZZZZ	H006891.D	04/11/00	18:10	08:15	(unrelated sample)
ZZZZZZ	H006892.D	04/11/00	18:50	08:55	(unrelated sample)
ZZZZZZ	H006893.D	04/11/00	19:30	09:35	(unrelated sample)
ZZZZZZ	H006895.D	04/11/00	20:50	10:55	(unrelated sample)
VH60-MB5	H006896.D	04/11/00	21:30	11:35	Method Blank
VH66-MB	H006896.D	04/11/00	21:30	11:35	Method Blank

Instrument Performance Check (BFB)

Job Number: F6186
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: VH66-BFB
Lab File ID: H006953.D
Instrument ID: GCMSH
Injection Date: 04/14/00
Injection Time: 10:03

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	45408	24.2		Pass
75	30.0 - 60.0% of mass 95	104230	55.6		Pass
95	Base peak, 100% relative abundance	187616	100.0		Pass
96	5.0 - 9.0% of mass 95	13061	7.0		Pass
173	Less than 2.0% of mass 174	0	0.0	(0.0) [a]	Pass
174	50.0 - 100.0% of mass 95	130034	69.3		Pass
175	5.0 - 9.0% of mass 174	10094	5.4	(7.8) [a]	Pass
176	95.0 - 101.0% of mass 174	127762	68.1	(98.3) [a]	Pass
177	5.0 - 9.0% of mass 176	9159	4.9	(7.2) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VH66-CC66	H006954.D	04/14/00	10:19	00:16	Continuing cal 40
VH66-BS3	H006955.D	04/14/00	10:59	00:56	Blank Spike
VH66-MB3	H006956.D	04/14/00	11:39	01:36	Method Blank
ZZZZZZ	H006957.D	04/14/00	12:20	02:17	(unrelated sample)
ZZZZZZ	H006958.D	04/14/00	13:00	02:57	(unrelated sample)
F6186-2	H006960.D	04/14/00	14:21	04:18	07SB00210
ZZZZZZ	H006961.D	04/14/00	15:01	04:58	(unrelated sample)
ZZZZZZ	H006962.D	04/14/00	15:41	05:38	(unrelated sample)
F6186-1	H006963.D	04/14/00	16:21	06:18	07SB00120
ZZZZZZ	H006964.D	04/14/00	17:01	06:58	(unrelated sample)
ZZZZZZ	H006965.D	04/14/00	17:41	07:38	(unrelated sample)
ZZZZZZ	H006966.D	04/14/00	18:21	08:18	(unrelated sample)
ZZZZZZ	H006967.D	04/14/00	19:01	08:58	(unrelated sample)
ZZZZZZ	H006968.D	04/14/00	19:41	09:38	(unrelated sample)

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\041400\H006954.D
Acq On : 14 Apr 2000 10:19 am
Sample : CC66-40
Misc : ms479,vh48,,,,,
MS Integration Params: RTEINT.P

Vial: 1
Operator: ClaudiaP
Inst : MSVOA3
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\8260S.M (RTE Integrator)
Title : SWA 5035/8260B
Last Update : Tue Apr 11 14:55:25 2000
Response via : Multiple Level Calibration

CP

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorobenzene	1.000	1.000	0.0	101	0.03
2		Dichlorodifluoromethane	0.203	0.113	44.3#	56	0.02
3	P	Chloromethane	0.323	0.234	27.6	76	0.02
4	C	Vinyl Chloride	0.331	0.275	16.9	84	0.02
5		Bromomethane	0.174	0.160	8.0	98	0.02
6		Chloroethane	0.202	0.195	3.5	97	0.03
7		Trichlorofluoromethane	0.462	0.458	0.9	98	0.03
8		Acrolein	0.050	0.062	-24.0	121	0.02
9	C	1,1-Dichloroethene	0.538	0.609	-13.2	112	0.02
0		Freon 113	0.288	0.334	-16.0	111	0.03
1		Acetone	0.139	0.165	-18.7	124	0.02
2		Carbon Disulfide	0.973	1.113	-14.4	113	0.02
3		Methylene Chloride	0.480	0.542	-12.9	119	0.03
4		trans-1,2-Dichloroethene	0.537	0.609	-13.4	115	0.03
5		Acrylonitrile	0.149	0.162	-8.7	115	0.02
5		Methyl Tert Butyl Ether	0.883	0.988	-11.9	116	0.02
7	P	1,1-Dichloroethane	0.593	0.645	-8.8	110	0.03
8		Vinyl acetate	0.109	0.118	-8.3	111	0.03
9		Di-isopropyl ether	1.047	1.167	-11.5	114	0.03
0		2,2-Dichloropropane	0.361	0.409	-13.3	111	0.02
1		cis-1,2-Dichloroethene	0.293	0.321	-9.6	107	0.03
2		2-Butanone	0.156	0.180	-15.4	121	0.02
3		Bromochloromethane	0.139	0.157	-12.9	111	0.02
4	C	Chloroform	0.628	0.668	-6.4	107	0.03
5		1,1,1-Trichloroethane	0.497	0.547	-10.1	107	0.02
5	S	Dibromofluoromethane	0.253	0.262	-3.6	104	0.02
7		1,1-Dichloropropene	0.432	0.491	-13.7	111	0.03
8		Carbon Tetrachloride	0.368	0.395	-7.3	105	0.02
9	S	1,2-Dichloroethane-d4	0.390	0.414	-6.2	107	0.02
0		Benzene	1.164	1.278	-9.8	108	0.02
1		1,2-Dichloroethane	0.543	0.594	-9.4	108	0.03
2		Trichloroethene	0.326	0.356	-9.2	108	0.03
3	C	1,2-Dichloropropane	0.317	0.337	-6.3	106	0.03
4		Dibromomethane	0.177	0.198	-11.9	110	0.03
5		1,4-Dioxane	0.004	0.003	25.0	104	0.03
5		Bromodichloromethane	0.435	0.458	-5.3	104	0.02
7		2-Nitropropane	0.106	0.112	-5.7	114	0.03
8		2-Chloroethyl vinyl ether	0.131	0.145	-10.7	127	0.02
9		4-Methyl-2-pentanone	0.367	0.423	-15.3	120	0.03
0		cis-1,3-Dichloropropene	0.455	0.478	-5.1	108	0.03

#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\041400\H006954.D Vial: 1
Acq On : 14 Apr 2000 10:19 am Operator: ClaudiaP
Sample : CC66-40 Inst : MSVOA3
Misc : ms479,vh48,,,,, Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\HPCHEM\1\METHODS\8260S.M (RTE Integrator)
Title : SWA 5035/8260B
Last Update : Tue Apr 11 14:55:25 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
	S	Toluene-d8	1.375	1.355	1.5	103	0.02
	C	Toluene	1.689	1.782	-5.5	107	0.02
		trans-1,3-Dichloropropene	0.547	0.545	0.4	106	0.02
		1,1,2-Trichloroethane	0.325	0.335	-3.1	107	0.02
		Tetrachloroethene	0.415	0.464	-11.8	113	0.03
		2-hexanone	0.366	0.405	-10.7	119	0.03
		1,3-Dichloropropane	0.626	0.662	-5.8	109	0.03
		Dibromochloromethane	0.393	0.391	0.5	106	0.03
		1,2-Dibromoethane	0.341	0.349	-2.3	106	0.02
		1-Chlorohexane	0.495	0.561	-13.3	114	0.02
	P	Chlorobenzene	1.036	1.083	-4.5	108	0.03
		1,1,1,2-Tetrachloroethane	0.368	0.383	-4.1	108	0.03
	C	Ethylbenzene	1.891	2.036	-7.7	109	0.02
		m,p-Xylene	1.535	1.674	-9.1	111	0.03
		o-Xylene	1.562	1.712	-9.6	126	0.03
		Styrene	1.073	1.195	-11.4	127	0.02
	P	Bromoform	0.246	0.251	-2.0	121	0.02
	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	109	0.02
		Isopropylbenzene	3.145	3.861	-22.8	128	0.02
	S	4-Bromofluorobenzene	1.063	1.062	0.1	108	0.02
		Bromobenzene	0.779	0.808	-3.7	110	0.02
	P	1,1,2,2-Tetrachloroethane	0.932	0.964	-3.4	113	0.02
		1,2,3-Trichloropropane	0.272	0.286	-5.1	115	0.02
		n-Propylbenzene	3.936	4.221	-7.2	111	0.02
		2-Chlorotoluene	2.569	2.725	-6.1	111	0.02
		4-Chlorotoluene	2.636	2.831	-7.4	112	0.02
		1,3,5-Trimethylbenzene	2.765	2.964	-7.2	113	0.03
		sec-Butylbenzene	3.237	3.498	-8.1	113	0.02
		1,3-Dichlorobenzene	1.480	1.569	-6.0	114	0.03
		4-Isopropyltoluene	2.536	2.782	-9.7	116	0.03
		1,4-Dichlorobenzene	1.485	1.589	-7.0	116	0.03
		tert-Butylbenzene	1.867	1.975	-5.8	111	0.02
		n-Butylbenzene	2.631	2.995	-13.8	120	0.02
		1,2-Dichlorobenzene	1.383	1.473	-6.5	115	0.03
		1,2,4-Trimethylbenzene	2.805	2.949	-5.1	111	0.02
		1,2-Dibromo-3-Chloropropane	0.186	0.192	-3.2	118	0.02
		1,2,4-Trichlorobenzene	0.898	0.996	-10.9	121	0.02
		Hexachlorobutadiene	0.509	0.583	-14.5	126	0.02
		Naphthalene	2.019	2.201	-9.0	123	0.02
		1,2,3-Trichlorobenzene	0.861	0.937	-8.8	122	0.02

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Sequence Name: C:\HPCHEM\1\OLDDATA\041400.S
Comment:
Operator: ClaudiaP
Data Path: C:\HPCHEM\1\DATA\041400\
Pre-Seq Cmd:
Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	BFB	100	H006953	BFB	BFB
2	Calibration	1	H006954	8260S	CC66-40
3	Spike	2	H006955	8260S	BS
4	Blank	3	H006956	8260S	MB
5	Sample	4	H006957	8260S	F6184-1,5.20g
6	Sample	5	H006958	8260S	F6184-2,4.98g
7	Sample	6	H006959	8260S	F6186-1,5.55g
8	Sample	7	H006960	8260S	F6186-2,4.78g/5ml-10ul
9	Sample	8	H006961	8260S	F6184-1,5.13g/5ml-100ul
10	Sample	9	H006962	8260S	F6184-2,5.16g/5ml-100ul
11	Sample	10	H006963	8260S	F6186-1,5.40g/5ml-100ul
12	Sample	11	H006964	8260S	F6219-4,5.32g
13	Sample	12	H006965	8260S	F6219-6,5.11g
14	Sample	13	H006966	8260S	F6219-7,5.18g/5ml-100ul
15	Sample	14	H006967	8260S	F6227-4,5.15g
16	Sample	15	H006968	8260S	F6237-5,4.51g
17	Sample	16	H006969	8260S	F6263-1,6.10g/5ml-100ul
18	Spike	17	H006970	8260S	F6164-1ms
19	Duplicate	18	H006971	8260S	F6164-1msd

000116

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\041400\H006960.D Vial: 7
Acq On : 14 Apr 2000 2:21 pm Operator: ClaudiaP
Sample : F6186-2,4.78g/5ml-10ul Inst : MSVOA3
Misc : ms520,vh66,,,,,500 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 14 15:00 2000 Quant Results File: 8260S.RES

Quant Method : C:\HPCHEM\1\METHODS\8260S.M (RTE Integrator)
Title : SWA 5035/8260B
Last Update : Tue Apr 11 15:04:30 2000
Response via : Initial Calibration
DataAcq Meth : 8260S

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	14.39	96	1170638	50.00	ug/Kg	0.05
41) Chlorobenzene-d5	19.61	117	822378	50.00	ug/Kg	0.04
59) 1,4-Dichlorobenzene-d4	23.98	152	459081	50.00	ug/Kg	0.04
System Monitoring Compounds						
26) Dibromofluoromethane	13.21	113	267901	45.14	ug/Kg	0.04
Spiked Amount 50.000	Range 71 - 122		Recovery = 90.28%			
29) 1,2-Dichloroethane-d4	13.81	65	428346	46.90	ug/Kg	0.04
Spiked Amount 50.000	Range 71 - 122		Recovery = 93.80%			
42) Toluene-d8	17.06	98	1199062	53.03	ug/Kg	0.04
Spiked Amount 50.000	Range 73 - 128		Recovery = 106.06%			
61) 4-Bromofluorobenzene	21.70	95	492437	50.45	ug/Kg	0.04
Spiked Amount 50.000	Range 53 - 158		Recovery = 100.90%			

Target Compounds						Qvalue
13) Methylene Chloride	10.00	49	56583	5.03	ug/Kg#	1
37) 2-Nitropropane	16.26	41	4785902	1927.00	ug/Kg#	1 } >d.l.
38) 2-Chloroethyl vinyl ether	16.26	63	34199	11.15	ug/Kg#	1 }
43) Toluene	17.18	91	24982	0.90	ug/Kg	92
54) Ethylbenzene	19.80	91	873175	28.07	ug/Kg	99
55) m,p-Xylene	20.00	91	1525344	60.42	ug/Kg	98
60) Isopropylbenzene	21.37	105	20436	0.71	ug/Kg	97
65) n-Propylbenzene	22.13	91	40644	1.12	ug/Kg	97
68) 1,3,5-Trimethylbenzene	22.43	105	61050	2.40	ug/Kg	98
76) 1,2,4-Trimethylbenzene	23.18	105	120365	4.67	ug/Kg	96

(#) = qualifier out of range (m) = manual integration

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE ____ OF ____

CLIENT CTO 79 NAS Whiting Field		JOB NUMBER F6186	
SUBJECT VOA			
BASED ON SW-846 8260B		DRAWING NUMBER	
BY	CHECKED BY	APPROVED BY	DATE

078800210 ethylbenzene 17300 µg/kg

~~$\frac{873175}{822378} \times \frac{50}{1.891} = \frac{28.07}{.849} \times 500 = 10500$ µg/kg~~

$$\frac{873175}{822378} \times \frac{50}{1.891} = 28.07 \times \frac{5000\ \mu l}{10\ \mu l \cdot 4.78g \cdot .849} * 5 = 17300\ \mu g/kg$$

Instrument Performance Check (DFTPP)

Job Number: F6186
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: SL226-DFTPP
Lab File ID: L003491.D
Instrument ID: GCMSL
Injection Date: 04/07/00
Injection Time: 12:54

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	51360	44.2		Pass
68	Less than 2.0% of mass 69	0	0.0	(0.0) [a]	Pass
69	Mass 69 relative abundance	44921	38.6		Pass
70	Less than 2.0% of mass 69	195	0.17	(0.43) [a]	Pass
127	40.0 - 60.0% of mass 198	56909	49.0		Pass
197	Less than 1.0% of mass 198	0	0.0		Pass
198	Base peak, 100% relative abundance	116256	100.0		Pass
199	5.0 - 9.0% of mass 198	7687	6.6		Pass
275	10.0 - 30.0% of mass 198	22997	19.8		Pass
365	1.0 - 100.0% of mass 198	2376	2.0		Pass
441	Present, but less than mass 443	11550	9.9	(72.1) [b]	Pass
442	40.0 - 100.0% of mass 198	81475	70.1		Pass
443	17.0 - 23.0% of mass 442	16017	13.8	(19.7) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
SL226-CC222	L003492.D	04/07/00	13:43	00:49	Continuing cal 75
OP1427-BS	L003493.D	04/07/00	14:14	01:20	Blank Spike
OP1427-MB	L003494.D	04/07/00	14:45	01:51	Method Blank
F6186-1	L003495.D	04/07/00	15:16	02:22	07SB00120
F6186-2	L003496.D	04/07/00	15:48	02:54	07SB00210
ZZZZZZ	L003497.D	04/07/00	16:19	03:25	(unrelated sample)
F6202-1	L003499.D	04/07/00	17:22	04:28	(used for QC only; not part of job F6186)
OP1427-MS	L003500.D	04/07/00	17:53	04:59	Matrix Spike
OP1427-MSD	L003501.D	04/07/00	18:25	05:31	Matrix Spike Duplicate
ZZZZZZ	L003503.D	04/07/00	19:27	06:33	(unrelated sample)
ZZZZZZ	L003504.D	04/07/00	19:58	07:04	(unrelated sample)
ZZZZZZ	L003505.D	04/07/00	20:28	07:34	(unrelated sample)
ZZZZZZ	L003506.D	04/07/00	21:00	08:06	(unrelated sample)
ZZZZZZ	L003507.D	04/07/00	21:31	08:37	(unrelated sample)
ZZZZZZ	L003508.D	04/07/00	22:01	09:07	(unrelated sample)
ZZZZZZ	L003509.D	04/07/00	22:32	09:38	(unrelated sample)
ZZZZZZ	L003510.D	04/07/00	23:03	10:09	(unrelated sample)

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\040700\L003492.D Vial: 2
Acq On : 7 Apr 2000 1:43 pm Operator: marke
Sample : cc222-75 Inst : MSBNA02
Misc : op1427,sl226,soil,,,1, Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Wed Apr 05 12:28:56 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	80	-0.02
2		1,4-Dioxane	0.512	0.545	-6.4	81	-0.11
3		N-nitrosodimethylamine	0.733	0.710	3.1	73	-0.07
4		Pyridine	1.423	1.356	4.7	74	-0.07
5		Aniline	2.001	1.973	1.4	83	-0.02
6	S	2-Fluorophenol	1.311	1.305	0.5	80	-0.02
7		bis(2-Chloroethyl)ether	1.502	1.523	-1.4	81	-0.02
8	S	Phenol-d5	1.585	1.550	2.2	79	-0.02
9	C	Phenol	1.766	1.710	3.2	80	-0.02
0		2-Chlorophenol	1.504	1.529	-1.7	80	-0.02
1		1,3-Dichlorobenzene	1.632	1.658	-1.6	81	-0.01
2	C	1,4-Dichlorobenzene	1.532	1.555	-1.5	81	-0.02
3		1,2-Dichlorobenzene	1.521	1.538	-1.1	81	-0.02
4		Benzyl alcohol	0.965	0.954	1.1	78	-0.02
5		bis(2-chloroisopropyl)ether	2.539	2.455	3.3	77	-0.01
6		2-Methylphenol	1.318	1.305	1.0	79	0.00
7		Hexachloroethane	0.558	0.569	-2.0	81	-0.02
8	P	N-Nitroso-di-n-propylamine	1.017	0.999	1.8	79	-0.02
9		3&4-Methylphenol	1.250	1.265	-1.2	80	-0.01
0	I	Naphthalene-d8	1.000	1.000	0.0	79	-0.02
1	S	Nitrobenzene-d5	0.371	0.376	-1.3	79	-0.03
2		Nitrobenzene	0.385	0.387	-0.5	78	-0.03
3		Isophorone	0.718	0.704	1.9	78	-0.03
4	C	2-Nitrophenol	0.193	0.204	-5.7	79	-0.02
5		2,4-Dimethylphenol	0.348	0.355	-2.0	82	-0.02
6		bis(2-Chloroethoxy)methane	0.449	0.452	-0.7	81	-0.02
7		Benzoic Acid	0.209	0.227	-8.6	79	-0.04
8	C	2,4-Dichlorophenol	0.282	0.293	-3.9	81	-0.03
9		1,2,4-Trichlorobenzene	0.336	0.343	-2.1	81	-0.02
0		Naphthalene	1.026	1.041	-1.5	81	-0.02
1		4-Chloroaniline	0.442	0.450	-1.8	82	-0.02
2		2,6-Dichlorophenol	0.272	0.276	-1.5	80	-0.02
3	C	Hexachlorobutadiene	0.177	0.182	-2.8	81	-0.02
4	C	4-Chloro-3-methylphenol	0.290	0.289	0.3	78	-0.01
5		2-Methylnaphthalene	0.680	0.687	-1.0	80	-0.03
6		1-Methylnaphthalene	0.594	0.598	-0.7	80	-0.02
7	I	Acenaphthene-d10	1.000	1.000	0.0	78	-0.02
8	P	Hexachlorocyclopentadiene	0.315	0.351	-11.4	79	-0.02
9	C	2,4,6-Trichlorophenol	0.374	0.401	-7.2	81	-0.02
0		2,4,5-Trichlorophenol	0.400	0.430	-7.5	81	-0.02
1	S	2-Fluorobiphenyl	1.383	1.439	-4.0	81	-0.02
2		2-Chloronaphthalene	1.193	1.229	-3.0	80	-0.03
3		2-Nitroaniline	0.370	0.381	-3.0	77	-0.03

Blank Spike Summary

Job Number: F6186
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1427-BS	L003493.D	1	04/07/00	ME	04/06/00	OP1427	SL226

The QC reported here applies to the following samples: **Method:** SW846 3550B/8270C

F6186-1, F6186-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
65-85-0	Benzoic acid	1660	1660	100	5-125
95-57-8	2-Chlorophenol	1660	1520	91	56-125
59-50-7	4-Chloro-3-methyl phenol	1660	1580	95	56-125
120-83-2	2,4-Dichlorophenol	1660	1620	97	59-125
105-67-9	2,4-Dimethylphenol	1660	1320	79	30-139
51-28-5	2,4-Dinitrophenol	1660	1630	98	5-125
534-52-1	4,6-Dinitro-o-cresol	1660	1400	84	16-125
95-48-7	2-Methylphenol	1660	1500	90	57-125
	3&4-Methylphenol	3330	3200	96	49-125
88-75-5	2-Nitrophenol	1660	1680	101	56-125
100-02-7	4-Nitrophenol	1660	1590	95	25-141
87-86-5	Pentachlorophenol	1660	1640	98	20-126
108-95-2	Phenol	1660	1560	94	48-125
95-95-4	2,4,5-Trichlorophenol	1660	1740	104	59-125
88-06-2	2,4,6-Trichlorophenol	1660	1700	102	54-125
83-32-9	Acenaphthene	1660	1650	99	62-125
208-96-8	Acenaphthylene	1660	1790	108	75-137
120-12-7	Anthracene	1660	1730	104	68-125
56-55-3	Benzo(a)anthracene	1660	1650	99	64-126
50-32-8	Benzo(a)pyrene	1660	1820	109	60-133
205-99-2	Benzo(b)fluoranthene	1660	1720	103	54-130
191-24-2	Benzo(g,h,i)perylene	1660	1950	117	34-174
207-08-9	Benzo(k)fluoranthene	1660	1710	103	55-128
101-55-3	4-Bromophenyl phenyl ether	1660	1660	100	56-125
85-68-7	Butyl benzyl phthalate	1660	1330	80	68-134
100-51-6	Benzyl Alcohol	1660	1480	89	52-125
91-58-7	2-Chloronaphthalene	1660	1700	102	64-125
106-47-8	4-Chloroaniline	1660	1140	68	49-125
86-74-8	Carbazole	1660	1630	98	46-141
218-01-9	Chrysene	1660	1650	99	57-130
111-91-1	bis(2-Chloroethoxy)methane	1660	1460	88	43-138
111-44-4	bis(2-Chloroethyl)ether	1660	1460	88	39-136
108-60-1	bis(2-Chloroisopropyl)ether	1660	1420	85	59-125
7005-72-3	4-Chlorophenyl phenyl ether	1660	1510	91	66-125
95-50-1	1,2-Dichlorobenzene	1660	1500	90	57-125
541-73-1	1,3-Dichlorobenzene	1660	1480	89	55-125

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\040700\L003493.D
Acq On : 7 Apr 2000 2:14 pm
Sample : op1427-bs
Misc : op1427,sl226,soil,,,1,
MS Integration Params: RTEINT.P
Quant Time: Apr 7 16:23 2000

Vial: 3
Operator: marke
Inst : MSBNA02
Multiplr: 1.00

Quant Results File: 8270C.RES

Quant Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Wed Apr 05 12:28:56 2000
Response via : Initial Calibration
DataAcq Meth : 8270C

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.16	152	144061	40.00	ppm	-0.01
20) Naphthalene-d8	6.38	136	521826	40.00	ppm	-0.02
37) Acenaphthene-d10	8.75	164	241272	40.00	ppm	-0.02
58) Phenanthrene-d10	11.22	188	330002	40.00	ppm	-0.02
71) Chrysene-d12	16.13	240	180680	40.00	ppm	-0.03
80) Perylene-d12	18.63	264	136798	40.00	ppm	-0.03
System Monitoring Compounds						
6) 2-Fluorophenol	4.10	112	443257	93.90	ppm	-0.02
Spiked Amount 100.000	Range 36 - 129		Recovery = 93.90%			
8) Phenol-d5	4.89	99	557026	97.56	ppm	-0.02
Spiked Amount 100.000	Range 38 - 135		Recovery = 97.56%			
21) Nitrobenzene-d5	5.67	82	236450	48.85	ppm	-0.03
Spiked Amount 50.000	Range 36 - 135		Recovery = 97.70%			
41) 2-Fluorobiphenyl	7.75	172	427247	51.21	ppm	-0.02
Spiked Amount 50.000	Range 44 - 135		Recovery = 102.42%			
62) 2,4,6-Tribromophenol	10.05	330	65612	110.23	ppm	-0.04
Spiked Amount 100.000	Range 37 - 144		Recovery = 110.23%			
74) Terphenyl-d14	14.24	244	267954	51.29	ppm	-0.04
Spiked Amount 50.000	Range 42 - 149		Recovery = 102.58%			

Target Compounds						Qvalue
3) N-nitrosodimethylamine	2.49	42	104493	39.57	ppm	93
4) Pyridine	2.52	79	119715m	23.35	ppm	
5) Aniline	4.90	93	244765	33.96	ppm	87
7) bis(2-Chloroethyl)ether	4.95	93	236956	43.81	ppm	99
9) Phenol	4.90	94	297119	46.73	ppm	90
10) 2-Chlorophenol	5.01	128	247716	45.74	ppm	99
11) 1,3-Dichlorobenzene	5.13	146	261852	44.54	ppm	98
12) 1,4-Dichlorobenzene	5.17	146	263540	47.76	ppm	100
13) 1,2-Dichlorobenzene	5.34	146	245985	44.91	ppm	99
14) Benzyl alcohol	5.29	108	153951	44.30	ppm	99
15) bis(2-chloroisopropyl)ethe	5.43	45	391611	42.82	ppm	91
16) 2-Methylphenol	5.41	108	214143	45.13	ppm	98
17) Hexachloroethane	5.62	117	98036	48.78	ppm	92
18) N-Nitroso-di-n-propylamine	5.55	70	159014	43.42	ppm	99
19) 3&4-Methylphenol	5.53	108	433019	96.17	ppm	89
22) Nitrobenzene	5.68	77	233603	46.50	ppm	99
23) Isophorone	5.91	82	407444	43.50	ppm	99
24) 2-Nitrophenol	6.00	139	127395	50.58	ppm	93
25) 2,4-Dimethylphenol	6.03	107	180368	39.74	ppm	99
26) bis(2-Chloroethoxy)methane	6.13	93	256332	43.80	ppm	99

(#) = qualifier out of range (m) = manual integration

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE ____ OF ____

CLIENT CTO 79 NAS Whiting Field		JOB NUMBER F61816	
SUBJECT SVOA			
BASED ON SW-846 8270C		DRAWING NUMBER	
BY	CHECKED BY	APPROVED BY	DATE

BS 2-chlorophenol 1520 µg/kg

$$\frac{247716}{144061} \times \frac{40}{1.004} = 45.73 \times \frac{1000\ \mu l}{30g} = 1524\ \mu g/kg$$

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: F6186
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1431-MS	AA000643.D	40	04/11/00	CCJ	04/07/00	OP1431	GAA33
OP1431-MSD	AA000644.D	40	04/11/00	CCJ	04/07/00	OP1431	GAA33
F6217-2 [a]	AA000630.D	40	04/10/00	CCJ	04/07/00	OP1431	GAA32

not in SDG

The QC reported here applies to the following samples: **Method:** EPA 8310

F6186-1, F6186-2

CAS No.	Compound	F6217-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		3800	6810	179*	6680	176*	2	51-130/30
208-96-8	Acenaphthylene	ND		3800	4650	122	4050	107	14	49-130/30
120-12-7	Anthracene	ND		3800	13700	361*	12200	321*	12	46-130/30
56-55-3	Benzo(a)anthracene	ND		1900	3270	172*	2810	148*	15	51-130/30
50-32-8	Benzo(a)pyrene	ND		1900	1410	74	1320	70	6	44-130/34
205-99-2	Benzo(b)fluoranthene	ND		1900	1530	81	1600	84	4	53-130/37
191-24-2	Benzo(g,h,i)perylene	ND		1900	1420	75	1390	73	2	39-130/30
207-08-9	Benzo(k)fluoranthene	ND		1900	1460	77	1490	78	2	55-130/32
218-01-9	Chrysene	ND		1900	1710	90	1700	90	0	52-130/30
53-70-3	Dibenzo(a,h)anthracene	ND		1900	1750	92	1780	94	2	42-133/30
206-44-0	Fluoranthene	ND		3800	4080	107	4220	111	3	54-130/30
86-73-7	Fluorene	4720	J	3800	9010	117	9080	119	1	49-130/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		1900	1510	80	1460	77	3	31-130/30
91-20-3	Naphthalene	4040	J	3800	7240	88	6780	76	6	43-130/36
90-12-0	1-Methylnaphthalene	18700		3800	22400	116	22400	116	0	42-130/32
91-57-6	2-Methylnaphthalene	22900		3800	27300	134* [b]	27300	134* [b]	0	44-130/30
85-01-8	Phenanthrene	ND		3800	9850	259*	9780	258*	1	49-130/32
129-00-0	Pyrene	ND		3800	6550	172*	6330	167*	3	45-130/30

CAS No.	Surrogate Recoveries	MS	MSD	F6217-2	Limits
84-15-1	o-Terphenyl	86%	91%	94%	35-135%
92-94-4	p-Terphenyl	71%	64%	89%	50-150%

(a) Dilution required due to matrix interference.
(b) Outside control limits due to high level in sample relative to spike amount.

Blank Spike Summary

Job Number: F6186
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1431-BS	AA000576.D	1	04/07/00	CCJ	04/07/00	OP1431	GAA31

The QC reported here applies to the following samples: **Method:** EPA 8310

F6186-1, F6186-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	3330	2540	76	51-130
208-96-8	Acenaphthylene	3330	2680	80	49-130
120-12-7	Anthracene	3330	2660	80	46-130
56-55-3	Benzo(a)anthracene	1660	1450	87	51-130
50-32-8	Benzo(a)pyrene	1660	1260	76	44-130
205-99-2	Benzo(b)fluoranthene	1660	1440	86	53-130
191-24-2	Benzo(g,h,i)perylene	1660	1400	84	39-130
207-08-9	Benzo(k)fluoranthene	1660	1400	84	55-130
218-01-9	Chrysene	1660	1430	86	52-130
53-70-3	Dibenzo(a,h)anthracene	1660	1620	97	42-133
206-44-0	Fluoranthene	3330	2870	86	54-130
86-73-7	Fluorene	3330	2710	81	49-130
193-39-5	Indeno(1,2,3-cd)pyrene	1660	1430	86	31-130
91-20-3	Naphthalene	3330	2330	70	43-130
90-12-0	1-Methylnaphthalene	3330	2370	71	42-130
91-57-6	2-Methylnaphthalene	3330	2440	73	44-130
85-01-8	Phenanthrene	3330	2590	78	49-130
129-00-0	Pyrene	3330	2610	78	45-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	90%	35-135%
92-94-4	p-Terphenyl	95%	50-150%

Quantitation Report (QT Reviewed)

Signal #1 : D:\HPCHEM\1\DATA\0407PAH\AA000576.D\DAD1B.CH Vial: 6
Signal #2 : D:\HPCHEM\1\DATA\0407PAH\AA000576.D\DAD1A.CH
Acq On : 07-Apr-2000, 14:10:08 Operator: ChelseaJ
Sample : OP1431-BS Inst : DAD
Misc : op1431,gaa31,soil,,,5, Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e
Quant Time: Apr 7 14:32 2000 Quant Results File: 8310_46.RES

Quant Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Wed Apr 05 09:08:01 2000
Response via : Initial Calibration
DataAcq Meth : 8310_46.M

CF = 166.5

Volume Inj. : 10ul
Signal #1 Phase : Pinnacle PAH Signal #2 Phase: Pinnacle PAH
Signal #1 Info : DAD 270nm Signal #2 Info : DAD 254nm

Compound	RT#1	RT#2	Resp#1	Resp#2	ppm	ppm
System Monitoring Compounds						
S O-Terphenyl	8.44	8.44	5933685	10172398	17.971	17.805
Spiked Amount	20.000	Range	35 - 135	Recovery =	89.85%	89.03%
S P-Terphenyl	10.45	10.45	27791244	13977978	19.083	19.217
Spiked Amount	20.000	Range	50 - 150	Recovery =	95.41%	96.08%
Target Compounds						
Naphthalene	6.03	6.03	6607855	4282806	13.973	14.909
Acenaphthylene	6.58	6.58	2681219	2859163	16.128	16.953
1-Methyl Naphtha	6.93	6.93	5874599	2608838	14.215	14.751
2-Methyl Naphtha	7.14	7.14	5727975	3444092	14.635	14.948
Acenaphthene	7.33	7.38	4712940	1688290	15.229	15.952
Fluorene	7.54	7.54	16564736	20061813	16.281	16.226
Phenanthrene	8.10	8.10	14593529	49169005	15.532	15.575
Anthracene	8.68	8.68	941917	67432749	16.001	16.518
Fluoranthene	9.21	9.21	13508171	13529363	17.237	17.168
Pyrene	9.68	9.69	27169075	13633542	15.654	15.693
Benzo(a)Anthrace	10.97	10.97	19911537	14897708	8.735	8.750
Chrysene	11.34	11.34	26654561	22736641	8.573	8.624
Benzo(b)Fluorant	12.30	12.30	9902834	15535600	8.672	8.585
Benzo(k)Fluorant	12.86	12.86	6459679	11138485	8.415	8.392
Benzo(a) Pyrene	13.47	13.47	9756811	11570689	7.559	7.593
Dibenzo(a,h)anth	14.27	14.27	10358030	3229386	9.759	9.868
Benzo(g,h,i) Per	15.06	15.06	6931608	4936224	8.433	8.574
Indeno(1,2,3-cd)	15.63f	15.63f	5435519	10901478	8.589	8.577

000294

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

Response Factor Report DAD

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Tue Apr 04 15:15:11 2000

Calibration Files
L1 =AA000535.D L2 =AA000536.D L3 =AA000537.D
L4 =AA000538.D L5 =AA000539.D L6 =AA000540.D

		Compound	L1	L2	L3	L4	L5	L6	Avg		%RSD
)		Naphthalene	4.744	4.785	4.700	4.747	4.707	4.693	4.729	E5	0.75
)		Acenaphthylene	1.652	1.694	1.638	1.664	1.664	1.664	1.662	E5	1.11
)		1-Methyl Naphthalen	4.232	4.181	4.075	4.114	4.096	4.098	4.133	E5	1.47
)		2-Methyl Naphthalen	4.016	3.946	3.853	3.902	3.881	3.886	3.914	E5	1.50
)		Acenaphthene	3.289	3.091	3.027	3.066	3.035	3.060	3.095	E5	3.16
)		Fluorene	1.054	1.036	1.003	1.011	0.997	1.004	1.017	E6	2.22
)		Phenanthrene	9.528	9.600	9.254	9.371	9.274	9.348	9.396	E5	1.49
)	S	O-Terphenyl	3.385	3.382	3.234	3.276	3.248	3.285	3.302	E5	1.99
)		Anthracene	7.612	7.107	6.070	5.880	5.668	5.915	6.375	E4	12.38
)		Fluoranthene	8.123	7.968	7.752	7.790	7.698	7.688	7.837	E5	2.21
)		Pyrene	1.878	1.827	1.739	1.706	1.649	1.615	1.736	E6	5.85
)	S	P-Terphenyl	1.493	1.477	1.435	1.447	1.442	1.444	1.456	E6	1.59
)		Benzo(a)Anthracene	2.363	2.332	2.251	2.255	2.240	2.235	2.279	E6	2.37
)		Chrysene	3.545	3.422	3.173	3.004	2.820	2.690	3.109	E6	10.78
)		Benzo(b)Fluoranthen	1.187	1.141	1.117	1.130	1.134	1.142	1.142	E6	2.07
)		Benzo(k)Fluoranthen	8.376	7.598	7.398	7.535	7.544	7.609	7.677	E5	4.57
)		Benzo(a) Pyrene	1.421	1.268	1.248	1.260	1.270	1.278	1.291	E6	5.02
)		Dibenzo(a,h)anthrac	1.120	1.057	1.038	1.050	1.051	1.053	1.061	E6	2.78
)		Benzo(g,h,i) Peryle	8.423	8.198	8.126	8.178	8.198	8.191	8.219	E5	1.26
)		Indeno(1,2,3-cd)pyr	6.697	6.340	6.168	6.233	6.264	6.272	6.329	E5	2.98

ignal #2 Calibration Files
L1 =AA000535.D L2 =AA000536.D L3 =AA000537.D
L4 =AA000538.D L5 =AA000539.D L6 =AA000540.D

		Compound	L1	L2	L3	L4	L5	L6	Avg		%RSD
		Naphthalene	2.811	2.906	2.863	2.926	2.862	2.867	2.873	E5	1.39
		Acenaphthylene	1.617	1.708	1.712	1.700	1.685	1.697	1.686	E5	2.09
		1-Methyl Naphthalen	1.755	1.761	1.791	1.778	1.759	1.769	1.769	E5	0.76
		2-Methyl Naphthalen	2.257	2.247	2.332	2.344	2.318	2.327	2.304	E5	1.79
		Acenaphthene	1.410	0.979	1.091	1.086	1.058	1.078	1.117	E5	13.37
		Fluorene	1.308	1.242	1.224	1.223	1.207	1.214	1.236	E6	2.98
		Phenanthrene	3.368	3.325	3.197	3.122	2.997	2.932	3.157	E6	5.51
	S	O-Terphenyl	6.101	5.699	5.612	5.647	5.589	5.632	5.713	E5	3.38
		Anthracene	6.762	6.402	4.942	3.849	3.169	2.773	4.649	E6	35.95
		Fluoranthene	8.035	8.056	7.775	7.849	7.763	7.805	7.880	E5	1.67
		Pyrene	9.042	8.855	8.568	8.622	8.498	8.542	8.688	E5	2.46
	S	P-Terphenyl	7.409	7.329	7.200	7.288	7.171	7.246	7.274	E5	1.20
		Benzo(a)Anthracene	1.710	1.718	1.686	1.704	1.694	1.705	1.703	E6	0.66
		Chrysene	2.740	2.697	2.617	2.618	2.575	2.570	2.636	E6	2.59
		Benzo(b)Fluoranthen	1.851	1.814	1.787	1.803	1.793	1.809	1.810	E6	1.25
		Benzo(k)Fluoranthen	1.462	1.325	1.288	1.302	1.289	1.297	1.327	E6	5.09
		Benzo(a) Pyrene	1.650	1.507	1.475	1.495	1.492	1.523	1.524	E6	4.21
		Dibenzo(a,h)anthrac	3.180	3.295	3.231	3.282	3.272	3.376	3.272	E5	2.01

= Out of Range

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE ____ OF ____

CLIENT CTO 79 Nas Whiting Field	JOB NUMBER FU186
SUBJECT PAH	
BASED ON QW-8468310	DRAWING NUMBER
BY	CHECKED BY / APPROVED BY / DATE

BS Acenaphthene 2540 µg/kg

$$\frac{4712940}{3.095E\,5} = 152 \times \frac{5000\,\mu l}{30g} = 2533\ \mu g/kg$$

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\0406PRO\OP07745.D Vial: 28
Acq On : 7 Apr 2000 12:42 am Operator: marke
Sample : 1020ppm TPHS ccv Inst : FID 2
Misc : op1417,gop352,soil,,,1, Multiplr: 1.00
IntFile : events.e

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Tue Feb 22 10:33:01 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	S	O-TERPHENYL	34.017	37.638 E3	-10.6	112	-0.01
2	H	TPH (C8-C40)	30.371	30.979 E3	-2.0	102	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

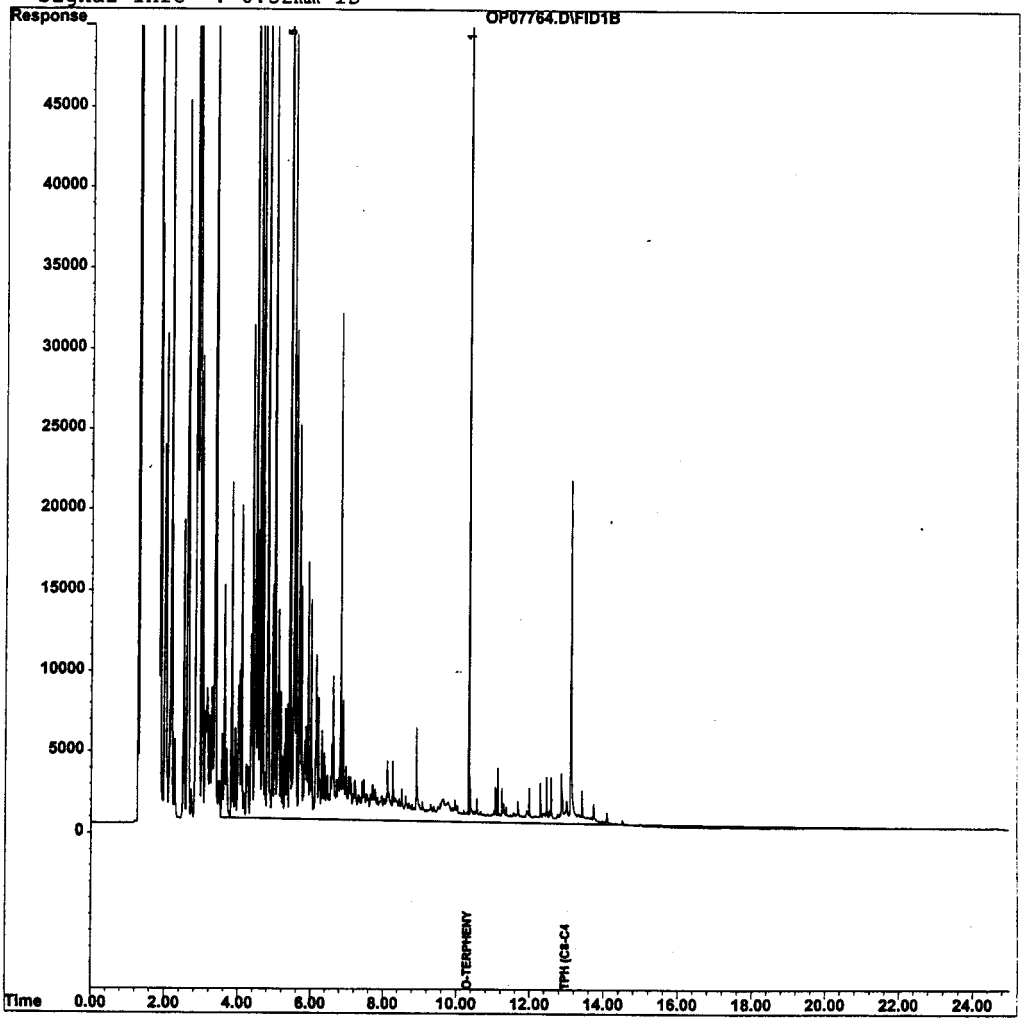
Quantitation Report

Data File : C:\HPCHEM\2\DATA\0407PRO\OP07764.D
Acq On : 7 Apr 2000 5:36 pm
Sample : f6186-2,2
Misc : op1417,gop353,soil,,,1,
IntFile : events.e
Quant Time: Apr 8 16:23 2000 Quant Results File: FL_PRO.RES

Vial: 12
Operator: marke
Inst : FID 2
Multiplr: 1.00

Quant Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Tue Feb 22 10:33:01 2000
Response via : Multiple Level Calibration
DataAcq Meth : FL_PRO.M

Volume Inj. : 2uL
Signal Phase : DB-5
Signal Info : 0.32mm ID



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\0407PRO\OP07764.D
Acq On : 7 Apr 2000 5:36 pm
Sample : f6186-2,2
Misc : op1417,gop353,soil,,,1,
IntFile : events.e
Quant Time: Apr 8 16:23 2000 Quant Results File: FL_PRO.RES

Vial: 12
Operator: marke
Inst : FID 2
Multiplr: 1.00

Quant Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Tue Feb 22 10:33:01 2000
Response via : Initial Calibration
DataAcq Meth : FL_PRO.M

Volume Inj. : 2uL
Signal Phase : DB-5
Signal Info : 0.32mm ID

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
1) S O-TERPHENYL	10.34	912347	26.820 PPM m
Spiked Amount 50.000	Range 40 - 140	Recovery =	53.64%
Target Compounds			
2) H TPH (C8-C40)	13.00	19470871	641.109 PPM

3000
TPH = 21(2)

f)=RT Delta > 1/2 Window (m)=manual int.

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE ____ OF ____

CLIENT CTO 79 NAS Whiting Field		JOB NUMBER F6186	
SUBJECT PETN			
BASED ON Florida PRO		DRAWING NUMBER	
BY	CHECKED BY	APPROVED BY	DATE

07B00210 TPH 50.3 mg/kg

$$\frac{19470871}{3.037E4} = 641 \times \frac{1ml}{30g \cdot .849} \times 2 = 50.3 \text{ mg/kg}$$

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**T. HANSEN**	**DATE:**	**NOVEMBER 6, 2000**
FROM:	**JENNIFER MALLE**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION-TAL METALS AND CYANIDE**
CTO 079 –NAS WHITING FIELD
SDG – F6186

SAMPLES: 2/Soil/

07SB00120 07SB00210

Overview

The sample set for CTO 079, NAS Whiting Field, SDG F6186 consists of two (2) soil environmental samples. No field duplicate pairs were included within this SDG.

All samples were analyzed for Target Analyte List (TAL) metals and cyanide. The samples were collected by Tetra Tech NUS on March 31, 2000 and analyzed by Accutest Laboratories under Naval Facilities Engineering Service Center (NFESC) Guidance Document, "Navy Installation Restoration Chemical Data Quality Manual" (September 1999). All metal analyses were conducted under analytical method SW846 6010B. Analyses for cyanide were conducted under SW846 method 9010.

The data was evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- Calibration Verification
- Laboratory Blank Analysis
- ICP Interference Check Sample Results
- Matrix Spike/Matrix Spike Duplicate Recoveries
- * Laboratory Duplicate Precision
- * Laboratory Control Sample Recoveries
- * ICP Serial Dilution Recoveries
- * Sample Quanitation
- * Detection Limits

* - All quality control criteria were met for this parameter.

Laboratory Blank Analyses

The following contaminants were detected in the laboratory method/preparation blanks at the following maximum concentrations:

Affected samples : All

Analyte	Maximum Concentration	Action Level (soil)
Antimony	2.5 ug/L	1.25 mg/kg
Arsenic	3.5 ug/L	1.75 mg/kg
Barium (1)	0.10 mg/kg	0.50 mg/kg
Beryllium	0.56 ug/L	0.28 mg/kg
Calcium	47.3 ug/L	23.65 mg/kg
Chromium	0.68 ug/L	0.34 mg/kg
Lead	1.8 ug/L	0.90 mg/kg
Magnesium	24.8 ug/L	12.4 mg/kg
Manganese	0.26 ug/L	0.13 mg/kg
Mercury	0.17 ug/L	0.142 mg/kg
Potassium	732 ug/L	366 mg/kg
Selenium	4.0 ug/L	2.0 mg/kg
Thallium	3.1 ug/L	1.55 mg/kg
Vanadium	0.77 ug/L	0.385 mg/kg
Zinc (1)	0.31 mg/kg	1.55 mg/kg

An action level of 5X the maximum concentration was used to evaluate the sample data for blank contamination. Sample aliquot, percent solids and dilution factors were taken into consideration in evaluation for blank contamination. Positive results less than the action level for antimony, beryllium, mercury and potassium were qualified as nondetected, "U", due to laboratory blank contamination. No validation action was required for the remaining analytes since the results reported for these analytes were either greater than the action level or nondetected.

ICP Intereference Check Sample Results

The interfering analyte iron was present in sample 07SB00120 at a concentration which was comparable to the level of iron in the Interference Check Sample (ICS) solution. Several analytes namely antimony, beryllium, cadmium, chromium, copper, lead, manganese, nickel, potassium, selenium, sodium and vanadium were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for cadmium, nickel, selenium and sodium in the affected sample. The nondetected result reported for cadmium was qualified as estimated, "UJ". The positive results reported for nickel, selenium and sodium were qualified as estimated, "J".

The interfering analyte iron was present in sample 07SB00210 at a concentration which was comparable to the level of iron in the Interference Check Sample (ICS) solution. Several analytes namely antimony, beryllium, cadmium, chromium, copper, lead, manganese, nickel, potassium, selenium, sodium and vanadium were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for antimony, cadmium, lead, nickel, selenium and sodium in the affected sample. The nondetected result reported for cadmium was qualified as estimated, "UJ". The positive results reported for antimony, cadmium, lead, nickel, selenium and sodium were qualified as estimated, "J".

Matrix Spike/Matrix Spike Duplicate Recoveries

The Matrix Spike (MS) Percent Recoveries (%Rs) for antimony and manganese were less than the 75% quality control limits. Positive results reported for antimony and manganese were qualfied as estimated, "J".

Notes

The Contract Required Detection Limit (CRDL) Percent Recoveries for antimony were less than the 80% quality control limt. However, validation action was not required as per regional guidance.

The Contract Required Detection Limit (CRDL) Percent Recoveries for calcium and mercury were greater than the 120% quality control limt. However, validation action was not required as per regional guidance.

Laboratory Performance: Several contaminants were present in the laboratory method/preparation blanks.

Other Factors Affecting Data Quality: MS noncompliance was noted for antimony and manganese.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994 and the NFESC document entitled "Navy IRCDQM" (NFESC 9/99).

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)."

Jennifer Malle

Tetra Tech NUS
Jennifer Malle
Environmental Scientist

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

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

APPENDIX A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

SOIL DATA
Accutest, NJ
SDG: F6186

SAMPLE NUMBER:	07SB00120			07SB00210								
SAMPLE DATE:	03/31/00			03/31/00			/ /			/ /		
LABORATORY ID:	F6186-1			F6186-2								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	84.9 %			84.9 %			100.0 %			100.0 %		
UNITS:	MG/KG			MG/KG								
FIELD DUPLICATE OF:												
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
INORGANICS												
ALUMINUM	24000			22000								
ANTIMONY	0.51	U	A	1.8	J	DK						
ARSENIC	5.0			5.7								
BARIUM	16.2			8.0								
BERYLLIUM	0.11	U	A	0.18	U	A						
CADMIUM	0.04	UJ	K	0.04	UJ	K						
CALCIUM	196			167								
CHROMIUM	28.2			20.7								
COBALT	1.6			2.6								
COPPER	11.0			12.1								
IRON	26200			98500								
LEAD	6.2			13.5	J	K						
MAGNESIUM	200			122								
MANGANESE	338	J	D	85.7	J	D						
MERCURY	0.06	U	A	0.06	U	A						
NICKEL	5.0	J	K	3.4	J	K						
POTASSIUM	195	U	A	158	U	A						
SELENIUM	5.3	J	K	23.3	J	K						
SILVER	0.12	U		0.11	U							
SODIUM	134	J	K	106	J	K						
THALLIUM	0.34	U		0.32	U							
VANADIUM	45.4			41.4								
ZINC	9.9			4.0								

SOIL DATA
Accutest, NJ
SDG: F6186

SAMPLE NUMBER:	07SB00120			07SB00210								
SAMPLE DATE:	03/31/00			03/31/00			/ /			/ /		
LABORATORY ID:	F6186-1			F6186-2								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	84.9 %			84.9 %			100.0 %			100.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
CYANIDE, TOTAL(MG/KG)	0.589	U		0.589	U							

APPENDIX B

Results as Reported by the Laboratory

Report of Analysis

Client Sample ID: 07SB00120
Lab Sample ID: F6186-1
Matrix: SO - Soil
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Date Sampled: 03/31/00
Date Received: 04/01/00
Percent Solids: 84.9

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	24000	25.1	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Antimony	0.51 B	7.5	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Arsenic	5.0	0.63	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Barium	16.2 B	25.1	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Beryllium	0.11 B	0.63	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Cadmium	0.04 U	0.50	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Calcium	196 B	627	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Chromium	28.2	1.3	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Cobalt	1.6 B	6.3	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Copper	11.0	3.1	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Iron	26200	12.5	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Lead	6.2 B	12.5	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Magnesium	200 B	627	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Manganese	338	1.9	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Mercury	0.06 B	0.20	mg/kg	1	04/10/00	04/11/00	JK	SW846 7471A
Nickel	5.0	5.0	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Potassium	195 B	627	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Selenium	5.3 B	12.5	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Silver	0.12 U	1.3	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Sodium	134 B	627	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Thallium	0.34 U	1.3	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Vanadium	45.4	6.3	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Zinc	9.9	2.5	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID: 07SB00210
Lab Sample ID: F6186-2
Matrix: SO - Soil
Date Sampled: 03/31/00
Date Received: 04/01/00
Percent Solids: 84.9
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	22000	23.8	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Antimony	1.8 B	7.1	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Arsenic	5.7	0.59	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Barium	8.0 B	23.8	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Beryllium	0.18 B	0.59	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Cadmium	0.04 U	0.48	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Calcium	167 B	595	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Chromium	20.7	1.2	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Cobalt	2.6 B	5.9	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Copper	12.1	3.0	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Iron	98500	11.9	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Lead	13.5	11.9	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Magnesium	122 B	595	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Manganese	85.7	1.8	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Mercury	0.06 B	0.17	mg/kg	1	04/13/00	04/14/00	JK	SW846 7471A
Nickel	3.4 B	4.8	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Potassium	158 B	595	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Selenium	23.3	11.9	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Silver	0.11 U	1.2	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Sodium	106 B	595	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Thallium	0.32 U	1.2	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Vanadium	41.4	5.9	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A
Zinc	4.0	2.4	mg/kg	1	04/04/00	04/06/00	JK	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	07SB00120		
Lab Sample ID:	F6186-1	**Date Sampled:**	03/31/00
Matrix:	SO - Soil	**Date Received:**	04/01/00
		Percent Solids:	84.9
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed By	Method
Cyanide, Total	<0.59	0.59	mg/kg	1	04/11/00 JK	SW846 9010
Solids, Percent	84.9		%	1	04/04/00 SJL	EPA 160.3 M

RL = Reporting Limit

Report of Analysis

Client Sample ID:	07SB00210		
Lab Sample ID:	F6186-2	**Date Sampled:**	03/31/00
Matrix:	SO - Soil	**Date Received:**	04/01/00
		Percent Solids:	84.9
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed By	Method
Cyanide, Total	<0.59	0.59	mg/kg	1	04/11/00 JK	SW846 9010
Solids, Percent	84.9		%	1	04/04/00 SJL	EPA 160.3 M

RL = Reporting Limit

APPENDIX C

Support Documentation

ACCUTEST

CHAIN OF CUSTODY

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: Tetra Tech NUS
ADDRESS: 1401 Oven Park Dr. Suite 102
CITY: Tallahassee STATE: FL ZIP: 32312
SEND REPORT TO:
PHONE #: 850 385-9899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting Field
LOCATION: Site 7
PROJECT NO.: N0052
FAX #:

ANALYTICAL INFORMATION

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	VOCs	SVOCs	TRPH	metals	SPLP	LAB USE ONLY
161886-1	07SB00120	3/31/00	0950	BDH	S	6					✓	✓	✓	✓	✓	✓	
-2	07SB00210	3/31/00	1135	BDH	S	6					✓	✓	✓	✓	✓	✓	

DATA TURNAROUND INFORMATION

STANDARD
HOUR RUSH
UR EMERGENCY
SH IS FAX DATA
APPROVED

APPROVED BY:

DATA DELIVERABLE INFORMATION

- ☐ STANDARD
- ☐ COMMERCIAL "B"
- ☐ DISK DELIVERABLE
- ☐ STATE FORMS
- ☐ OTHER (SPECIFY)

COMMENTS/REMARKS

S = soil

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
3/31/00 1800	[illegible]	2.		2.
TIME:	RECEIVED BY: 3. 4/1/00 1000	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
	RECEIVED BY: 5.	SEAL #	PRESERVE WHERE APPLICABLE ☐	ON ICE ☐ TEMPERATURE 3.4 C

HOLDING TIME
05/08/00

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/KG	07SB00120	F6186-1	NORMAL	F6186	CN	03/31/00	04/06/00	04/11/00	6	5	11
MG/KG	07SB00210	F6186-2	NORMAL	F6186	CN	03/31/00	04/06/00	04/11/00	6	5	11
MG/KG	07SB00120	F6186-1	NORMAL	F6186	M	03/31/00	04/04/00	04/06/00	4	2	6
MG/KG	07SB00210	F6186-2	NORMAL	F6186	M	03/31/00	04/04/00	04/06/00	4	2	6
UG/KG	07SB00120	F6186-1	NORMAL	F6186	OS	03/31/00	04/06/00	04/07/00	6	1	7
UG/KG	07SB00210	F6186-2	NORMAL	F6186	OS	03/31/00	04/06/00	04/07/00	6	1	7
UG/KG	07SB00120	F6186-1	NORMAL	F6186	OV	03/31/00	/ /	04/14/00	0	0	14
UG/KG	07SB00210	F6186-2	NORMAL	F6186	OV	03/31/00	/ /	04/14/00	0	0	14
UG/KG	07SB00120	F6186-1	NORMAL	F6186	PAH	03/31/00	04/07/00	04/07/00	7	0	7
UG/KG	07SB00210	F6186-2	NORMAL	F6186	PAH	03/31/00	04/07/00	04/07/00	7	0	7
MG/KG	07SB00120	F6186-1	NORMAL	F6186	TPH	03/31/00	04/05/00	04/07/00	5	2	7
MG/KG	07SB00210	F6186-2	NORMAL	F6186	TPH	03/31/00	04/05/00	04/07/00	5	2	7

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0406M3.ASC Date Analyzed: 04/06/00 Methods: SW846 6010A
QC Limits: 70 to 130 % Recovery Run ID: MA1813 Units: ug/l

Metal	CRI True	CRIA True	CRI Results	% Rec	CRIA Results	% Rec
Aluminum	200		203	101.5		
Antimony		5.0			2.6	52.0*(a)
Arsenic		10			10.6	106.0
Barium	200		200	100.0		
Beryllium	5.0		5.2	104.0		
Cadmium	5.0		5.1	102.0		
Calcium	1000		1220	122.0		
Chromium	10		10.7	107.0		
Cobalt	50		50.2	100.4		
Copper	25		24.3	97.2		
Iron	400		409	102.0		
Lead		6.0			6.6	110.0
Magnesium	5000		5750	115.0		
Manganese	15		15.4	102.7		
Molybdenum	50		anr			
Nickel	40		42.8	107.0		
Potassium	5000		4790	95.8		
Selenium		10			10.8	108.0
Silver	10		10.1	101.0		
Sodium	600		694	116.0		
Thallium		10			11.8	118.0
Tin	50		anr			
Vanadium	50		52.1	104.2		
Zinc	20		21.2	106.0		

(*) Outside of QC limits
(anr) Analyte not requested
(a) Reportable samples are below RDL.

000037

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0411S1.HGX
QC Limits: to % Recovery

Date Analyzed: 04/11/00
Run ID: MA1818

Methods: SW846 7471A
Units: ug/l

Metal	CRI True	CRIA True	CRI Results	% Rec
Mercury	0.50		0.61	122.0

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0406M3.ASC
QC Limits: result < RL

Date Analyzed: 04/06/00
Run ID: MA1813

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	3.9	<200	4.6	<200	20.2	<200	-1.3	<200
Antimony	5.0	2.39	0.34	<5.0	0.050	<5.0	0.26	<5.0	-0.84	<5.0
Arsenic	10	3.45	2.8	<10	1.8	<10	1.5	<10	-0.19	<10
Barium	200	.39	0.30	<200	0.29	<200	0.20	<200	0.16	<200
Beryllium	5.0	.363	0.15	<5.0	0.28	<5.0	0.56	<5.0	0.26	<5.0
Cadmium	5.0	.33	0.26	<5.0	0.26	<5.0	0.22	<5.0	0.15	<5.0
Calcium	1000	19.5	3.5	<1000	3.1	<1000	18.3	<1000	3.8	<1000
Chromium	10	.637	0.64	<10	0.21	<10	0.35	<10	0.25	<10
Cobalt	50	.797	0.35	<50	0.040	<50	0.36	<50	0.0	<50
Copper	25	.747	0.51	<25	0.0	<25	-0.27	<25	0.080	<25
Iron	300	32	14.5	<300	1.8	<300	17.6	<300	9.4	<300
Lead	5.0	1.59	0.70	<5.0	1.4	<5.0	1.4	<5.0	1.7	<5.0
Magnesium	5000	17.6	8.3	<5000	4.9	<5000	24.8	<5000	5.3	<5000
Manganese	15	.16	0.21	<15	0.20	<15	0.11	<15	0.12	<15
Molybdenum	50	.68	anr							
Nickel	40	1	0.57	<40	0.080	<40	0.56	<40	0.68	<40
Potassium	5000	28.2	730	<5000<	672	<5000<	716	<5000<	699	<5000<
Selenium	10	2.04	4.0	<10	2.1	<10	2.4	<10	2.4	<10
Silver	10	.963	0.12	<10	-0.060	<10	0.36	<10	0.090	<10
Sodium	5000	153	-54	<5000	-260	<5000	-140	<5000	-240	<5000
Thallium	10	2.69	1.8	<10	1.8	<10	1.3	<10	1.2	<10
Tin	50	2.23	anr							
Vanadium	50	.717	0.77	<50	0.29	<50	0.44	<50	0.38	<50
Zinc	20	.83	0.090	<20	0.16	<20	-0.040	<20	0.0	<20

(*) Outside of QC limits
(anr) Analyte not requested

000344

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0406M3.ASC
QC Limits: result < RL

Date Analyzed: 04/06/00
Run ID: MA1813

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	4.5	<200	16.3	<200	15.0	<200
Antimony	5.0	2.39	2.5	<5.0	0.73	<5.0	0.25	<5.0
Arsenic	10	3.45	3.5	<10	0.83	<10	1.7	<10
Barium	200	.39	0.31	<200	0.38	<200	0.32	<200
Beryllium	5.0	.363	0.090	<5.0	0.35	<5.0	0.41	<5.0
Cadmium	5.0	.33	0.31	<5.0	0.26	<5.0	0.20	<5.0
Calcium	1000	19.5	10.2	<1000	47.3	<1000	16.2	<1000
Chromium	10	.637	0.53	<10	0.56	<10	0.68	<10
Cobalt	50	.797	0.24	<50	0.63	<50	0.16	<50
Copper	25	.747	0.50	<25	0.13	<25	-0.15	<25
Iron	300	32	13.7	<300	16.6	<300	11.7	<300
Lead	5.0	1.59	1.1	<5.0	1.1	<5.0	1.8	<5.0
Magnesium	5000	17.6	10.7	<5000	9.3	<5000	8.0	<5000
Manganese	15	.16	0.18	<15	0.26	<15	0.22	<15
Molybdenum	50	.68	anr					
Nickel	40	1	0.54	<40	0.49	<40	0.28	<40
Potassium	5000	28.2	732	<5000<	704	<5000<	689	<5000<
Selenium	10	2.04	2.7	<10	2.6	<10	3.2	<10
Silver	10	.963	0.37	<10	-0.060	<10	0.28	<10
Sodium	5000	153	-7.6	<5000	-47	<5000	-230	<5000
Thallium	10	2.69	3.1	<10	1.5	<10	-0.35	<10
Tin	50	2.23	anr					
Vanadium	50	.717	0.57	<50	0.50	<50	0.57	<50
Zinc	20	.83	0.10	<20	0.50	<20	0.080	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG041151.HGX
QC Limits: result < RL

Date Analyzed: 04/11/00
Run ID: MA1818

Methods: SW846 7471A
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Mercury	1.0	.06	0.13	<1.0	0.17	<1.0	0.10	<1.0B	0.13	<1.0

(*) Outside of QC limits
(anr) Analyte not requested

000548

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0414S1.HGX
QC Limits: result < RL

Date Analyzed: 04/14/00
Run ID: MA1822

Methods: SW846 7471A
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Mercury	1.0	.06	0.1	<1.0	0	<1.0	0	<1.0	0.013	<1.0

(*) Outside of QC limits
(anr) Analyte not requested

000347

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2601
Matrix Type: SOLID

Methods: SW846 6010A
Units: mg/kg

Prep Date: 04/04/00

Metal	RL	IDL	MB raw	final
Aluminum	20.0	3	0.53	<20.0
Antimony	6.0	.24	-0.18	<6.0
Arsenic	0.50	.34	0.02	<0.50
Barium	20.0	.04	0.1	<20.0
Beryllium	0.50	.04	0.006	<0.50
Cadmium	0.40	.03	-0.03	<0.40
Calcium	500	2	3.0	<500
Chromium	1.0	.06	0.01	<1.0
Cobalt	5.0	.08	-0.02	<5.0
Copper	2.5	.07	-0.05	<2.5
Iron	10.0	3.2	0.40	<10.0
Lead	10.0	.16	0.04	<10.0
Magnesium	500	1.8	0.29	<500
Manganese	1.5	.02	-0.01	<1.5
Molybdenum	5.0	.07	anr	
Nickel	4.0	.1	0.02	<4.0
Potassium	500	2.8	70.0	<500
Selenium	10.0	.2	0.05	<10.0
Silver	1.0	.1	0.03	<1.0
Sodium	500	15.3	-12.9	<500
Thallium	1.0	.27	0.24	<1.0
Tin	5.0	.22	anr	
Vanadium	5.0	.07	0.01	<5.0
Zinc	2.0	.08	0.31	<2.0

Associated samples MP2601: F6186-1, F6186-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2611
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 04/10/00

Metal	RL	IDL	MB raw	final
Mercury	0.17	.01	0.02	<0.17

Associated samples MP2611: F6186-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2621
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 04/13/00

Metal	RL	IDL	MB raw	final
Mercury	0.17	.01	0.002	<0.17

Associated samples MP2621: F6186-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0406M3.ASC Date Analyzed: 04/06/00 Methods: SW846 6010A
QC Limits: 80 to 120 % Recovery Run ID: MA1813 Units: ug/l

Metal	ICSA True	ICSAB True	ICSA Results	% Rec	ICSAB Results	% Rec
Aluminum	500000	500000	483000	96.6	487000	97.4
Antimony		1000	-8.1<		1040	104.0
Arsenic		1000	2.6		1040	104.0
Barium		500	0.33		569	113.8
Beryllium		500	-0.80		508	101.6
Cadmium		1000	-3.6		980	98.0
Calcium	500000	500000	469000	93.8	468000	93.6
Chromium		500	-2.6		493	98.6
Cobalt		500	0.15		478	95.6
Copper		500	1.3		534	106.8
Iron	200000	200000	194000	97.0	194000	97.0
Lead		1000	-3.6		976	97.6
Magnesium	500000	500000	542000	108.4	539000	107.8
Manganese		500	-3.5		508	101.6
Molybdenum		1000	-3.8		-5.3	0.0*
Nickel		1000	-9.4		942	94.2
Potassium			675		316	
Selenium		1000	-8.7		965	96.5
Silver		1000	0.93		1050	105.0
Sodium			-200		-16	
Thallium		1000	-2.6		973	97.3
Tin		1000	-0.53		2.0	0.0*
Vanadium		500	5.3		528	105.6
Zinc		1000	-0.75		934	93.4

(*) Outside of QC limits
(anr) Analyte not requested

000051

Affected Analyte	Sample	Reported Result mg/kg	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level Sample	Est. Interference	Validation Action
Antimony	07SB00210	1.8	Aluminum	483000	-8.1	22000	-0.37	L
Beryllium	07SB00120	0.18x	Aluminum	483000	-0.8	22000	-0.04	—
Cadmium	07SB00120	0.04u	Aluminum	483000	-3.6	22000	-0.16	UL
Chromium	07SB00120	20.7	Aluminum	483000	-2.6	22000	-0.12	—
Copper	07SB00120	12.1	Aluminum	483000	1.3	22000	0.06	—
Lead	07SB00120	13.5	Aluminum	483000	-3.6	22000	-0.16	—
Manganese	07SB00120	85.7	Aluminum	483000	-3.5	22000	-0.16	—
Nickel	07SB00120	3.4	Aluminum	483000	-9.4	22000	-0.43	L
Potassium	07SB00120	158x	Aluminum	483000	675	22000	30.75	—
Selenium	07SB00120	23.3	Aluminum	483000	-8.7	22000	-0.40	—
Sodium	07SB00120	106	Aluminum	483000	-200	22000	-9.11	—
Vanadium	07SB00120	41.4	Aluminum	483000	5.3	22000	0.24	—

Affected Analyte	Sample	Reported Result mg/kg	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level Sample	Est. Interference	Validation Action
Antimony	07SB00210	1.8	Iron	194000	-8.1	98500	-4.11	J
Beryllium	07SB00120	0.18x	Iron	194000	-0.8	98500	-0.41	—
Cadmium	07SB00120	0.04u	Iron	194000	-3.6	98500	-1.83	UJ
Chromium	07SB00120	20.7	Iron	194000	-2.6	98500	-1.32	—
Copper	07SB00120	12.1	Iron	194000	1.3	98500	0.66	—
Lead	07SB00120	13.5	Iron	194000	-3.6	98500	-1.83	J
Manganese	07SB00120	85.7	Iron	194000	-3.5	98500	-1.78	—
Nickel	07SB00120	3.4	Iron	194000	-9.4	98500	-4.77	J
Potassium	07SB00120	158x	Iron	194000	675	98500	342.72	—
Selenium	07SB00120	23.3	Iron	194000	-8.7	98500	-4.42	J
Sodium	07SB00120	106	Iron	194000	-200	98500	-101.55	J
Vanadium	07SB00120	41.4	Iron	194000	5.3	98500	2.69	—

Comparision of ICP Interference Affects
SDG F6186
Whiting Field

Affected Analyte	Sample	Reported Result mg/kg	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level Sample	Est. Interference	Validation Action
Antimony	07SB00120	0.51x	Aluminum	483000	-8.1	24000	-0.40	—
Beryllium	07SB00120	.11x	Aluminum	483000	-0.8	24000	-0.04	—
Cadmium	07SB00120	0.04u	Aluminum	483000	-3.6	24000	-0.18	UL
Chromium	07SB00120	28.2	Aluminum	483000	-2.6	24000	-0.13	—
Copper	07SB00120	11	Aluminum	483000	1.3	24000	0.06	—
Lead	07SB00120	6.2	Aluminum	483000	-3.6	24000	-0.18	—
Manganese	07SB00120	338	Aluminum	483000	-3.5	24000	-0.17	—
Nickel	07SB00120	5	Aluminum	483000	-9.4	24000	-0.47	—
Potassium	07SB00120	195x	Aluminum	483000	675	24000	33.54	—
Selenium	07SB00120	5.3	Aluminum	483000	-8.7	24000	-0.43	—
Sodium	07SB00120	134	Aluminum	483000	-200	24000	-9.94	—
Vanadium	07SB00120	45.4	Aluminum	483000	5.3	24000	0.26	—

Affected Analyte	Sample	Reported Result mg/kg	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level Sample	Est. Interference	Validation Action
Antimony	07SB00120	0.51x	Iron	194000	-8.1	26200	-1.09	—
Beryllium	07SB00120	.11x	Iron	194000	-0.8	26200	-0.11	—
Cadmium	07SB00120	0.04u	Iron	194000	-3.6	26200	-0.49	UJ
Chromium	07SB00120	28.2	Iron	194000	-2.6	26200	-0.35	—
Copper	07SB00120	11	Iron	194000	1.3	26200	0.18	—
Lead	07SB00120	6.2	Iron	194000	-3.6	26200	-0.49	—
Manganese	07SB00120	338	Iron	194000	-3.5	26200	-0.47	—
Nickel	07SB00120	5	Iron	194000	-9.4	26200	-1.27	J
Potassium	07SB00120	195x	Iron	194000	675	26200	91.16	—
Selenium	07SB00120	5.3	Iron	194000	-8.7	26200	-1.17	J
Sodium	07SB00120	134	Iron	194000	-200	26200	-27.01	J
Vanadium	07SB00120	45.4	Iron	194000	5.3	26200	0.72	—

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2601
Matrix Type: SOLID

Methods: SW846 6010A
Units: mg/kg

Prep Date: 04/04/00 04/04/00

Metal	F6186-1 Original	DUP	RPD	QC Limits	F6186-1 Original	MS	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	24000	24500	1.9	0-20	24000	28000	3485.49	115.3	80-120
Antimony	0.51	0.62	17.8	0-20	0.51	80.1	120.19	66.2N	80-120
Arsenic	5.0	4.9	1.5	0-28	5.0	434	480.76	89.3	72-110
Barium	16.2	16.5	2.1	0-14	16.2	469	480.76	94.3	64-116
Beryllium	0.11	0.12	11.2	0-20	0.11	11.7	12.02	96.5	80-120
Cadmium	0.0	0.0	NC	0-16	0.0	10.6	12.02	88.6	64-120
Calcium	196	200	2.3	0-20	196	2990	3004.74	92.9	80-120
Chromium	28.2	28.8	2.1	0-33	28.2	73.3	48.08	93.8	66-119
Cobalt	1.6	1.6	1.9	0-20	1.6	109	120.19	89.8	80-120
Copper	11.0	11.2	1.5	0-39	11.0	68.5	60.09	95.8	65-124
Iron	26200	26800	2.2	0-20	26200	34200	3245.11	245.1(a)	80-120 OK
Lead	6.2	6.2	0.2	0-44	6.2	114	120.19	89.8	60-127
Magnesium	200	206	2.8	0-20	200	3000	3004.74	93.0	80-120
Manganese	338	346	2.3	0-20	338	414	120.19	63.2N	80-120
Molybdenum	anr								
Nickel	5.0	5.3	5.9	0-30	5.0	118	120.19	94.3	71-119
Potassium	195	198	1.6	0-20	195	3070	3004.74	95.7	80-120
Selenium	5.3	5.5	4.1	0-28	5.3	416	480.76	85.4	65-115
Silver	0.0	0.0	NC	0-21	0.0	10	12.02	83.0	63-123
Sodium	134	115	15.0	0-20	134	2990	3004.74	95.1	80-120
Thallium	0.0	0.0	NC	0-20	0.0	449	480.76	93.4	80-120
Tin	anr								
Vanadium	45.4	46.3	2.2	0-20	45.4	158	120.19	93.9	80-120
Zinc	9.9	10.3	3.7	0-31	9.9	121	120.19	92.5	69-120

Associated samples MP2601: F6186-1, F6186-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2601
Matrix Type: SOLID

Methods: SW846 6010A
Units: mg/kg

Prep Date: 04/04/00

Metal	F6186-1 Original	MSD	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	24000	27400	3381.96	99.1	80-120
Antimony	0.51	78.3	116.62	66.7N	80-120
Arsenic	5.0	425	466.48	90.1	72-110
Barium	16.2	456	466.48	94.2	64-116
Beryllium	0.11	11.5	11.66	97.3	80-120
Cadmium	0.0	10.5	11.66	89.6	64-120
Calcium	196	2930	2915.49	93.7	80-120
Chromium	28.2	71.9	46.65	93.7	66-119
Cobalt	1.6	107	116.62	90.7	80-120
Copper	11.0	66.6	58.31	95.4	65-124
Iron	26200	33500	3148.72	230.6(a)	80-120
Lead	6.2	112	116.62	90.8	60-127
Magnesium	200	2930	2915.49	93.7	80-120
Manganese	338	405	116.62	57.6N	80-120
Molybdenum					
Nickel	5.0	116	116.62	95.3	71-119
Potassium	195	2970	2915.49	95.2	80-120
Selenium	5.3	406	466.48	86.0	65-115
Silver	0.0	9.7	11.66	83.5	63-123
Sodium	134	2910	2915.49	95.4	80-120
Thallium	0.0	438	466.48	94.0	80-120
Tin					
Vanadium	45.4	155	116.62	93.8	80-120
Zinc	9.9	118	116.62	92.9	69-120

Associated samples MP2601: F6186-1, F6186-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N00052-MSA0200-014

QC Batch ID: MP2611
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 04/10/00 04/10/00

Metal	F6218-1 Original	DUP	RPD	QC Limits	F6218-1 Original	MS	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.09	0.11	20.0	0-20	0.09	0.60	0.48	107.1	75-125

Associated samples MP2611: F6186-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2611
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 04/10/00

Metal	F6218-1 Original	MSD	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.09	0.70	0.56	108.6	75-125

Associated samples MP2611: F6186-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2621
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 04/13/00 04/13/00

Metal	F6186-2 Original	DUP	RPD	QC Limits	F6186-2 Original	MS	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.06	0.05	10.3	0-20	0.06	0.72	0.61	109.3	75-125

Associated samples MP2621: F6186-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

000058

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2621
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 04/13/00

Metal	F6186-2 Original	MSD	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.06	0.59	0.52	101.5	75-125

Associated samples MP2621: F6186-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2601
Matrix Type: SOLID

Methods: SW846 6010A
Units: mg/kg

Prep Date: 04/04/00

Metal	BSP Result	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	2630	2900	90.8	80-120
Antimony	97.2	100	97.2	80-120
Arsenic	377	400	94.2	80-120
Barium	392	400	98.0	80-120
Beryllium	9.9	10	99.0	80-120
Cadmium	9.7	10	97.1	80-120
Calcium	2470	2500	98.8	80-120
Chromium	39.2	40	98.1	80-120
Cobalt	94.0	100	94.0	80-120
Copper	48.6	50	97.3	80-120
Iron	2710	2700	100.4	80-120
Lead	97.3	100	97.3	80-120
Magnesium	2450	2500	98.0	80-120
Manganese	97.1	100	97.1	80-120
Molybdenum				
Nickel	98.4	100	98.4	80-120
Potassium	2240	2500	89.8	80-120
Selenium	359	400	89.7	80-120
Silver	9.4	10	93.7	80-120
Sodium	2390	2500	95.7	80-120
Thallium	400	400	100.1	80-120
Tin				
Vanadium	98.1	100	98.1	80-120
Zinc	98.0	100	98.0	80-120

Associated samples MP2601: F6186-1, F6186-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2611
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 04/10/00

Metal	BSP Result	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.58	0.5	116.0	80-120

Associated samples MP2611: F6186-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2621
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 04/13/00

Metal	BSP Result	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.53	0.5	106.0	80-120

Associated samples MP2621: F6186-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

000567

SERIAL DILUTION RESULTS SUMMARY

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2601
Matrix Type: SOLID

Methods: SW846 6010A
Units: ug/l

Prep Date: 04/04/00

Metal	F6186-1 Original	SDL 1:5	RPD	QC Limits
Aluminum	192000	173000	9.4	0-10
Antimony	4.11	0.00	100.0(a)	0-10
Arsenic	39.8	50.6	27.3 (a)	0-10
Barium	129	123	5.1	0-10
Beryllium	0.840	0.00	100.0(a)	0-10
Cadmium	0.00	0.00	NC	0-10
Calcium	1560	1580	0.9	0-10
Chromium	225	208	7.7	0-10
Cobalt	12.4	11.1	10.8 (a)	0-10
Copper	87.7	72.6	17.2	0-10
Iron	209000	194000	7.0	0-10
Lead	49.3	48.8	1.0	0-10
Magnesium	1600	1540	3.9	0-10
Manganese	2700	2540	5.9	0-10
Molybdenum	anr			
Nickel	40.0	38.2	4.6	0-10
Potassium	1550	4160	167.6	0-10
Selenium	42.0	53.0	26.3 (a)	0-10
Silver	0.00	0.00	NC	0-10
Sodium	1060	0.00	100.0(a)	0-10
Thallium	0.00	0.00	NC	0-10
Tin	anr			
Vanadium	362	334	7.8	0-10
Zinc	79.4	87.2	9.9	0-10

with % solids falls into Range
gmm 5/15/00

Associated samples MP2601: F6186-1, F6186-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

000558

Metals Digestion Log: Soil MP2601

ethod Of Digestion: CD-3050B Temp: 33-95 Thermometer ID#: 33

	HNO_3	HCl	H_2O_2
dded:			
fg:	Fisher	Fisher	Fisher
t #:	119091	419030	983019

mple #	Wt	Final Vol	% Solid	Digestion Factor	Date	Comments
F6186.1 -DUP	0.92	100			44.00	
F6186.1 -MS	0.98					spiked w/2.0ml acc FP-Tl 0ml CN1186-0.5ml acc 187
F6186.1 MSD	101					same as MS
F6186.1	0.94					
F6186.7	0.99					
F6178.13	1.04					
.14	1.02					
.16	0.95					
.18	1.01					
.20	1.02					
.22	0.94					
[illegible]	[illegible]					
[illegible]	[illegible]					
SB						
SB						

lyst's Signature: _____ Date: _____

Review: _____ Date: _____

000563

MP2611

Mercury Digestion Log: Water and Soil

Method Of Digestion: SW846 7471A

Temp: 95

Analyst: Beth Palmer

Thermometer #: 37

Time Started:

Time Ended:

Reagents Added:	HNO3	HCL	H2SO4	Pot. Perm.	Pot. Persulfate
Mfg:	FISHER			→	
Lot#:	119091	419030	318064	GN1233	

Sample #	Wt(g)	Init.Vol.(ml)	Final Vol.(ml)	Date	Comments
F6218-1 Dup	0.68	100	100	4.10.00	
F6218-1 MS	0.68	↓	↓		3.0 ml GN1212
1 F6218-1 MSD	0.58	↓	↓		Same as MS
2 F6218-1	0.59	↓	↓		
3 F6218-2	0.67	↓	↓		
4 F6197-1	0.57	↓	↓		
5 F6209-1	0.64	↓	↓		
6 F6227-4	0.65	↓	↓		
7 F6219-2	0.71	↓	↓		
8 F6219-4	0.89	↓	↓		
9 F6219-6	0.64	↓	↓		
10 F6219 7	0.58	↓	↓		
11 F6186-1	0.60	↓	↓		
12					
13					
14					
15					
16					
17					
18					
19					
20					
MB		100	100	4.10.00	
SB		↓	↓	↓	Same as MS

Analyst's Signature: [signature]

Date: 07-10-00

000060

Mercury Digestion Log: Water and Soil mp2621

Method Of Digestion: SW846 7471A

Temp: 95

Analyst: SJL

Thermometer #: 37

Time Started:

Time Ended:

Reagents Added:	HNO3	HCL	H2SO4	Pot. Perm.	Pot. Persulfate
Mfg:	Fisher	Fisher	Fisher	Fisher	
Lot#:	119091	491030	3PCG4	KN12499 SJL	

Sample #	Wt(g)	Init.Vol.(ml)	Final Vol.(ml)	Date	Comments
F61350.7 Dup	0.61		100	4.13.00	
F61350.7 MS	0.53				
1 F61350.7 msd	0.60				30ml of KMnO4
2 F61350.7	0.70				same as ms
3 F61350.7	0.74				
4 F61350.7	0.63				
5 F61351.1	0.68				
6 F61351.2	0.75				
7 F61351.3	0.60				
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
MB			100		
SB					same as ms

Analyst's Signature: [illegible]

Date: 4.13.00

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N00052-MSA0200-014

File ID: IR0406M3.ASC Date Analyzed: 04/06/00 Methods: SW846 6010A
Analyst: JK Run ID: MA1813
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
09:30	MA1813-ICV1	1		
09:35	MA1813-ICB1	1		
09:42	MA1813-CCV1	1		
09:47	MA1813-CCB1	1		
09:53	MA1813-CRI1	1		
09:59	MA1813-CRIA1	1		
10:06	MA1813-ICSA1	1		
10:11	MA1813-ICSAB1	1		
10:19	MA1813-CCV2	1		
10:25	MA1813-CCB2	1		
10:34	MP2601-MB1	1		
10:40	MP2601-B1	1		
10:45	MP2601-D1	1		
10:51	F6186-1	1		
10:56	MP2601-S1	1		
11:01	MP2601-S2	1		
11:07	MP2601-SD1	5		
11:12	F6186-2	1		
11:24	ZZZZZZ	1		
11:29	MA1813-CCV3	1		
11:35	MA1813-CCB3	1		
11:40	MP2603-MB1	1		
11:45	MP2603-B1	1		
11:51	MP2603-D1	1		
11:56	F6157-2A	1		(sample used for QC only; not part of login F6186)
12:01	MP2603-S1	1		
12:07	MP2603-S2	1		
12:12	MP2603-SD1	5		
12:17	ZZZZZZ	1		
12:23	ZZZZZZ	1		
12:28	MA1813-CCV4	1		
12:33	MA1813-CCB4	1		
12:39	ZZZZZZ	1		

000071

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#NO052-MSA0200-014

File ID: IR0406M3.ASC Date Analyzed: 04/06/00 Methods: SW846 6010A
Analyst: JK Run ID: MA1813
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:44	ZZZZZZ	1		
12:49	ZZZZZZ	1		
12:55	ZZZZZZ	1		
13:00	ZZZZZZ	1		
13:05	ZZZZZZ	1		
13:14	ZZZZZZ	1		
13:19	ZZZZZZ	1		
13:24	ZZZZZZ	1		
13:30	ZZZZZZ	1		
13:35	MA1813-CCV5	1		
13:40	MA1813-CCB5	1		
13:46	ZZZZZZ	1		
13:51	ZZZZZZ	1		
13:57	ZZZZZZ	1		
14:02	ZZZZZZ	1		
14:07	MA1813-CCV6	1		
14:13	MA1813-CCB6	1		

Refer to raw data for calibration curve and standards.

000572

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0411S1.HGX Date Analyzed: 04/11/00 Methods: SW846 7471A
Analyst: JK Run ID: MA1818
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	MA1818-ICV1	1		
00:00	MA1818-ICB1	1		
00:00	MA1818-CCV1	1		
00:00	MA1818-CCB1	1		
00:00	MA1818-CRI1	1		
00:00	MP2611-MB1	1		
00:00	MP2611-B1	1		
00:00	MP2611-S1	1		
00:00	MP2611-S2	1		
00:00	MP2611-D1	1		
00:00	F6218-1	1		(sample used for QC only; not part of login F6186)
00:00	ZZZZZZ	1		
00:00	MA1818-CCV2	1		
00:00	MA1818-CCB2	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	F6186-1	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	MA1818-CCV3	1		
00:00	MA1818-CCB3	1		

Refer to raw data for calibration curve and standards.

000373

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0414S1.HGX
Analyst: JK
Parameters: Hg

Date Analyzed: 04/14/00
Run ID: MA1822

Methods: SW846 7471A

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	MA1822-ICV1	1		
00:00	MA1822-ICB1	1		
00:00	MA1822-CCV1	1		
00:00	MA1822-CCB1	1		
00:00	MA1822-CRI1	1		
00:00	MP2621-MB1	1		
00:00	MP2621-B1	1		
00:00	MP2621-S1	1		
00:00	MP2621-S2	1		
00:00	MP2621-D1	1		
00:00	F6186-2	1		
00:00	MA1822-CCV2	1		
00:00	MA1822-CCB2	1		
00:00	ZZZZZZ	5		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	10		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	50		
00:00	MA1822-CCV3	1		
00:00	MA1822-CCB3	1		

Refer to raw data for calibration curve and standards.

alysis Report [redacted] 04/06/00 10:[illegible]

thod: TRACE6 Sample Name: F6186-1

n Time: 04/06/00 10:51:00

mment: SW846-6010B

de: CONC Corr. Factor: 1

lem	Ag3280	Al3082	As1890	Ba4934	B[illegible]	[illegible]	[illegible]
nits	ppm	ppm	ppm	ppm	ppm	ppm	ppm
vge	L-.0102	191.5	.0398	.1292	.0006	[illegible]	[illegible]
Dev	.0002	.4	.0010	.0003	.0000	[illegible]	[illegible]
RSD	2.150	.1886	2.471	.1934	4.889	[illegible]	[illegible]
1	L-.0100	191.8	.0393	.1294	.0008	[illegible]	[illegible]
2	L-.0102	191.6	.0409	.1294	.0008	[illegible]	[illegible]
3	L-.0104	191.1	.0392	.1290	.0009	[illegible]	[illegible]

lem	Co2286	Cr2677	Cu3247	Fe2714	K[illegible]	Mg[illegible]	[illegible]
nits	ppm	ppm	ppm	ppm	ppm	ppm	ppm
vge	.0124	.2252	.0877	209.2	1.554	1.500	[illegible]
Dev	.0001	.0001	.0006	.3	.018	.004	[illegible]
RSD	.7032	.0536	.6253	.1252	1.149	[illegible]	[illegible]
1	.0123	.2254	.0884	209.5	1.569	1.501	[illegible]
2	.0125	.2251	.0875	209.1	1.534	1.506	[illegible]
3	.0124	.2252	.0873	209.0	1.558	1.500	[illegible]

lem	Mo2020	Na3302	Ni2316	2203/1	[illegible]	[illegible]	[illegible]
nits	ppm	ppm	ppm	ppm	ppm	ppm	ppm
vge	.0220	1.066	.0400	.0420	.0510	[illegible]	[illegible]
Dev	.0003	.124	.0004	.0015	.0016	[illegible]	[illegible]
RSD	1.143	11.62	1.049	3.549	3.133	[illegible]	[illegible]
1	.0222	1.161	.0403	.0426	.0498	[illegible]	[illegible]
2	.0217	.9257	.0395	.0403	.0528	[illegible]	[illegible]
3	.0221	1.110	.0402	.0431	.0507	[illegible]	[illegible]

lem	Sb2068	1960/1	1960/2	Sn1899	Ti1908	V[illegible]	[illegible]
nits	ppm	ppm	ppm	ppm	ppm	ppm	ppm
vge	.0041	-.0345	.0786	.0092	L-.0535	[illegible]	[illegible]
Dev	.0014	.0018	.0034	.0004	.0016	[illegible]	[illegible]
RSD	35.33	5.134	4.377	4.252	3.046	[illegible]	[illegible]
1	.0058	-.0331	.0804	.0091	L-.0531	[illegible]	[illegible]
2	.0030	-.0340	.0807	.0088	L-.0521	[illegible]	[illegible]
3	.0035	-.0365	.0746	.0095	L-.0553	[illegible]	[illegible]

ntStd	1	2	3	4	5	6	[illegible]
ode	Counts	NOTUSED	NOTUSED	NOTUSED	NOTUSED	NOTUSED	NOTUSED
lem	Y	--	--	--	--		
avlen	371.030	--	--	--	--		
vge	7869	--	--	--	--		
Dev	16.34644	--	--	--	--		
RSD	.2077334	--	--	--	--		
1	7851	--	--	--	--		
2	7883	--	--	--	--		
3	7873	--	--	--	--		

$0.2252 \text{ mg/L} \left(\frac{1L}{1000 mL}\right)\left(\frac{100 mL}{0.92 g}\right)\left(\frac{1000 g}{1 Kg}\right)\left(\frac{1}{.849}\right) =$ [redacted] mg/Kg

gmm 5/15/00

000402

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N00052-MSA0200-014

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Cyanide, Total	GP1455	0.50	<0.50	mg/kg	106.0	80-120%

Associated Samples:
Batch GP1455: F6186-1, F6186-2

000412

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Cyanide, Total	GP1455	F6186-1	mg/kg	<0.59	11.8	12.7	108.0	65-127%

Associated Samples:
Batch GP1455: F6186-1, F6186-2

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F6186
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Cyanide, Total	GP1455	F6186-1	mg/kg	<0.59	<0.59	0.0	0-8.4%
Solids, Percent	GN5372	F6175-4	%	89.6	89.5	0.1	0-5%

Associated Samples:
Batch GN5372: F6186-1, F6186-2
Batch GP1455: F6186-1, F6186-2

EXCEL Spreadsheet Calculation

Excel 023
Rev Date: 1/4/99

CYANIDE SOILS

Test Title: CN
Analyst: JK
Prep Date: 4/6-4/7/00
GP Batch: 691455,1456

Analysis Date: 4/11/00
GN Batch: 605404

Corr. Coef: 0.9987
Slope: 0.80
Intercept: -0.005

Cal. Date 3/24/00

	Sample #	X Values (abs)	Y Values Conc (mg/l)	Final Vol. (ml)	Sam. Wt. (g)	Dilution	Final Conc.	Units	DL	%SOL
	Cal. Blk.	0.000	0.000							
	STD 1	0.017	0.010							
	STD 2	0.069	0.050							
	STD 3	0.123	0.100							
	STD 4	0.276	0.200							
	STD 5	0.396	0.300							
	STD 6	0.620	0.500							
	ICV	0.325	0.254	100.0	100.0	1	0.254	mg/l	0.010	
MB	6-Apr	0.001	-0.004	100.0	0.5	1	-0.818	mg/kg	0.500	100.0
DUP	F6186-1	0.007	0.001	100.0	0.5	1	0.161	mg/kg	0.588	85.0
MS	F6186-1	0.074	0.054	100.0	0.5	1	12.703	mg/kg	0.588	85.0
BS	6-Apr	0.073	0.053	100.0	0.5	1	10.639	mg/kg	0.500	100.0
1	F6186-1	0.007	0.001	100.0	0.5	1	0.161	mg/kg	0.589	84.9
2	F6186-2	0.001	-0.004	100.0	0.5	1	-0.964	mg/kg	0.589	84.9
3	F6202-1	0.002	-0.003	100.0	0.5	1	-0.822	mg/kg	0.623	80.2
4	F6202-2	-0.001	-0.006	100.0	0.5	1	-1.401	mg/kg	0.617	81.1
5	F6202-3	-0.001	-0.008	100.0	0.5	1	-1.875	mg/kg	0.614	81.4
6			#VALUE!	100.0	0.5	1	#VALUE!	mg/kg	######	
	CCV	0.327	0.255	100.0	100.0	1	0.255	mg/l	0.010	100.0
6	MB 4/7	0.000	-0.005	100.0	0.5	1	-0.977	mg/kg	0.500	100.0
7	SB 4/7	0.069	0.050	100.0	0.5	1	10.002	mg/kg	0.500	100.0
8	F6202-5DUP	0.001	-0.004	100.0	0.5	1	-1.037	mg/kg	0.634	78.9
9	F6202-5	0.000	-0.005	100.0	0.5	1	-1.238	mg/kg	0.634	78.9
10	F6202-5MS	0.067	0.048	100.0	0.5	1	12.274	mg/kg	0.634	78.9
11	F6202-4	0.001	-0.004	100.0	0.5	1	-1.121	mg/kg	0.685	73.0
12	F6202-6	0.003	-0.002	100.0	0.5	1	-0.635	mg/kg	0.635	78.7
13	F6202-7	0.001	-0.004	100.0	0.5	1	-1.033	mg/kg	0.631	79.2
14	F6202-8	0.002	-0.003	100.0	0.5	1	-0.775	mg/kg	0.588	85.0
15	F6202-10	-0.001	-0.006	100.0	0.5	1	-1.440	mg/kg	0.634	78.9
	CCV	0.328	0.256	100.0	100.0	1	0.256	mg/kg	0.010	
16	F6202-13	0.001	-0.004	100.0	0.5	1	-0.998	mg/kg	0.610	82.0
17	F6219-2	0.000	-0.005	100.0	0.5	1	-1.319	mg/kg	0.675	74.1
18	F6219-4	0.003	-0.002	100.0	0.5	1	-0.603	mg/kg	0.603	82.9
19	F6219-6	0.003	-0.002	100.0	0.5	1	-0.635	mg/kg	0.635	78.7
20	F6219-7	0.000	-0.005	100.0	0.5	1	-1.487	mg/kg	0.761	65.7
21	F6152-1	0.153	0.117	100.0	0.5	1	23.368	mg/kg	0.500	100.0
22			#VALUE!	100.0	0.5	1	#VALUE!	mg/kg	######	
23			#VALUE!	100.0	0.5	1	#VALUE!	mg/kg	######	
24			#VALUE!	100.0	0.5	1	#VALUE!	mg/kg	######	
25			#VALUE!	100.0	0.5	1	#VALUE!	mg/kg	######	
	CCV	0.326	0.254	100.0	100.0	1	0.254	mg/l	0.010	

Serial# CNS029

QC Summary Report

Dup Result	0.161	RPD =	0.12
Sample Result	0.161		
Matrix Spike Result	12.703	REC =	106.6
Spike Amount	11.765		
Sample Result	0.161		
MB Result	-0.818		
Blank Spike Result	10.639	REC =	106.4
Spike Amount	10.000		

Serial# CNS029

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **TERRY HANSEN** **DATE: OCTOBER 27, 2000**

FROM: **SEAN NIXON** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – VOC/SVOC/PAH/PEST/PCB/**
CTO 079 NAS, WHITING FIELD, FLORIDA
SDG F6287

SAMPLES

7/Aqueous
39GV00101 39GW00101 39GW00101D 39TB041400 39WV00101 39WW00101
39WW00101D

7/Solid
05DSB102 05DSB202 05DSB302 05DSB402 39DV00101 39DW00101
39DW00101D

OVERVIEW

The sample set for CTO 079, NAS Whiting Field, Florida, Sample Delivery Group (SDG) F6287 consists of seven (7) aqueous samples including one (1) trip blank, and seven (7) solid samples. Samples 39WW00101, 39DW00101, and 39GW00101 were specified for MS/MSD analyses by the field crew.

The samples were collected by Tetra Tech NUS on April 14, 2000 and analyzed by Accutest Laboratories. The samples were analyzed for volatiles, semivolatiles, pesticides/PCBs, and PAHs. All analyses were performed in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria, using Test Methods for Evaluating Solid Wastes, SW-846 Methods 8260B, 8270C, 8081A, 8082, and 8310. The data in this SDG were validated with regard to the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Tuning and System Performance
  • Initial/continuing calibrations
* • Laboratory method/field quality control blank results
* • Surrogate spike recoveries
* • Internal standard performance
  • Matrix Spike/Matrix Spike Duplicate results (MS/MSD)
* • Laboratory Control Samples/Blank Spike Analyses
* • Compound Identification
* • Compound quantitation
* • Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified analytical results are presented in Appendix A.

Volatiles

The initial calibration and continuing calibration verification of 4/16/00 and 4/20/00 respectively contained relative response factors less than the 0.05 quality control limit for acetone and 2-butanone. The nondetected results for the aforementioned compounds were qualified as rejected, UR, in the affected samples (39GV00101, 39GW00101, 39GW00101D, 39TB041400, 39WV00101, 39WW00101, and 39WW00101D).

Pesticides

A continuing calibration verification, affecting samples 05DSB102, 05DSB202, 05DSB302, and 05DSB402, contained Percent Differences (%Ds) greater than the 15% quality control limit for 4,4'-DDT, Endrin ketone, and Methoxychlor. The positive and nondetected results for the aforementioned compounds were qualified as estimated, J and UJ, in the affected samples.

A continuing calibration verification, affecting samples 39DW00101 and 39DW00101D contained %Ds greater than the 15% quality control limit for 4,4'-DDT and Methoxychlor. The nondetected results for the aforementioned compounds were qualified as estimated, UJ, in the affected samples.

The matrix spike recovery for Endrin Aldehyde was less than 10%. The nondetected result in 39DW00101 was qualified as rejected, UR.

Additional Comments

Positive results reported below the reporting limit were qualified as estimated, J.

The laboratory did not report results for 1,2-dibromoethane on either the Form Is or the electronic data, but the compound was calibrated and could have been reported. The data reviewer has added 1,2-dibromoethane to the electronic data.

PAH and pesticide continuing calibration verifications contained %Ds greater than the 15% quality control limit for several compounds on one column, but only on one column. Therefore, no action was taken.

The semivolatile MS/MSD analyses of samples 39WW00101 and 39DW00101 contained Relative Percent Differences (RPDs) greater than the quality control limits for diethyl phthalate and 4-chloroaniline respectively. No action was for MS/MSD noncompliances alone.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Calibration noncompliances resulted in the estimation of results for, 4,4'-DDT, Endrin ketone, and Methoxychlor and the rejection of nondetected results for acetone and 2-butanone.

Other Factors Affecting Data Quality: A poor matrix spike recovery for Endrin Aldehyde resulted in the rejection of the aforementioned compound in sample 39DW00101.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Review (10/99), and the NFESC document entitled "Navy IRCDQM (September 1999). The text of this report has been formulated to address only those problems 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)."

Sean T. Nixon
Tetra Tech NUS
Chemist/Data Validator

Joseph A. Samchuck
Tetra Tech NUS
Data Validation Quality Assurance Officer

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

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO079-NAS WHITING FIELD
WATER DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	39GV00101			39GW00101			39GW00101D			39TB041400		
SAMPLE DATE:	04/14/00			04/14/00			04/14/00			04/14/00		
LABORATORY ID:	F6287-10			F6287-3			F6287-6			F6287-7		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:							39GW00101					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHENE	1	U		1	U		1	U		1	U	
1,2-DIBROMOETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROETHENE (TOTAL)	2	U		2	U		2	U		2	U	
1,2-DICHLOROPROPANE	1	U		1	U		1	U		1	U	
2-BUTANONE	5	UR	C	5	UR	C	5	UR	C	5	UR	C
2-HEXANONE	5	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE	5	U		5	U		5	U		5	U	
ACETONE	5	UR	C	5	UR	C	5	UR	C	5	UR	C
BENZENE	1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMOFORM	1	U		1	U		1	U		1	U	
BROMOMETHANE	1	U		1	U		1	U		1	U	
CARBON DISULFIDE	5	U		5	U		5	U		5	U	
CARBON TETRACHLORIDE	1	U		1	U		1	U		1	U	
CHLOROBENZENE	1	U		1	U		1	U		1	U	
CHLOROETHANE	1	U		1	U		1	U		1	U	
CHLOROFORM	1	U		1	U		1	U		1	U	
CHLOROMETHANE	1	U		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
DIBROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
ETHYLBENZENE	1	U		1	U		1	U		1	U	
METHYLENE CHLORIDE	5	U		5	U		5	U		5	U	
STYRENE	1	U		1	U		1	U		1	U	
TETRACHLOROETHENE	1	U		1	U		1	U		1	U	
TOLUENE	1	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
TRICHLOROETHENE	1	U		1	U		1	U		1	U	

CTO079-NAS WHITING FIELD
WATER DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	39WV00101			39WW00101			39WW00101D					
SAMPLE DATE:	04/14/00			04/14/00			04/14/00			/ /		
LABORATORY ID:	F6287-8			F6287-1			F6287-4					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:							39WW00101					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U		1	U		1	U				
1,1,2,2-TETRACHLOROETHANE	1	U		1	U		1	U				
1,1,2-TRICHLOROETHANE	1	U		1	U		1	U				
1,1-DICHLOROETHANE	1	U		1	U		1	U				
1,1-DICHLOROETHENE	1	U		1	U		1	U				
1,2-DIBROMOETHANE	1	U		1	U		1	U				
1,2-DICHLOROETHANE	1	U		1	U		1	U				
1,2-DICHLOROETHENE (TOTAL)	2	U		2	U		2	U				
1,2-DICHLOROPROPANE	1	U		1	U		1	U				
2-BUTANONE	5	UR	C	5	UR	C	5	UR	C			
2-HEXANONE	5	U		5	U		5	U				
4-METHYL-2-PENTANONE	5	U		5	U		5	U				
ACETONE	5	UR	C	5	UR	C	5	UR	C			
BENZENE	1	U		1	U		1	U				
BROMODICHLOROMETHANE	1	U		1	U		1	U				
BROMOFORM	1	U		1	U		1	U				
BROMOMETHANE	1	U		1	U		1	U				
CARBON DISULFIDE	5	U		5	U		5	U				
CARBON TETRACHLORIDE	1	U		1	U		1	U				
CHLOROBENZENE	1	U		1	U		1	U				
CHLOROETHANE	1	U		1	U		1	U				
CHLOROFORM	1	U		1	U		1	U				
CHLOROMETHANE	1	U		1	U		1	U				
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U				
DIBROMOCHLOROMETHANE	1	U		1	U		1	U				
ETHYLBENZENE	1	U		1	U		1	U				
METHYLENE CHLORIDE	5	U		5	U		5	U				
STYRENE	1	U		1	U		1	U				
TETRACHLOROETHENE	1	U		1	U		1	U				
TOLUENE	1	U		1	U		1	U				
TRANS-1,3-DICHLOROPROPENE	1	U		1	U		1	U				
TRICHLOROETHENE	1	U		1	U		1	U				

CTO079-NAS WHITING FIELD
SOIL DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	39DV00101			39DW00101			39DW00101D					
SAMPLE DATE:	04/14/00			04/14/00			04/14/00			/ /		
LABORATORY ID:	F6287-9			F6287-2			F6287-5					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	73.1 %			76.4 %			76.7 %			100.0 %		
UNITS:	UG/KG			UG/KG			UG/KG					
FIELD DUPLICATE OF:							39DW00101					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	6.5	U		6.4	U		6.4	U				
1,1,2,2-TETRACHLOROETHANE	6.5	U		6.4	U		6.4	U				
1,1,2-TRICHLOROETHANE	6.5	U		6.4	U		6.4	U				
1,1-DICHLOROETHANE	6.5	U		6.4	U		6.4	U				
1,1-DICHLOROETHENE	6.5	U		6.4	U		6.4	U				
1,2-DIBROMOETHANE	6.5	U		6.4	U		6.4	U				
1,2-DICHLOROETHANE	6.5	U		6.4	U		6.4	U				
1,2-DICHLOROETHENE (TOTAL)	13	U		13	U		13	U				
1,2-DICHLOROPROPANE	6.5	U		6.4	U		6.4	U				
2-BUTANONE	13	U		13	U		13	U				
2-HEXANONE	13	U		13	U		13	U				
4-METHYL-2-PENTANONE	13	U		13	U		13	U				
ACETONE	65	U		64	U		64	U				
BENZENE	6.5	U		6.4	U		6.4	U				
BROMODICHLOROMETHANE	6.5	U		6.4	U		6.4	U				
BROMOFORM	6.5	U		6.4	U		6.4	U				
BROMOMETHANE	6.5	U		6.4	U		6.4	U				
CARBON DISULFIDE	13	U		13	U		13	U				
CARBON TETRACHLORIDE	6.5	U		6.4	U		6.4	U				
CHLOROBENZENE	6.5	U		6.4	U		6.4	U				
CHLOROETHANE	6.5	U		6.4	U		6.4	U				
CHLOROFORM	6.5	U		6.4	U		6.4	U				
CHLOROMETHANE	6.5	U		6.4	U		6.4	U				
CIS-1,3-DICHLOROPROPENE	6.5	U		6.4	U		6.4	U				
DIBROMOCHLOROMETHANE	6.5	U		6.4	U		6.4	U				
ETHYLBENZENE	6.5	U		6.4	U		6.4	U				
METHYLENE CHLORIDE	13	U		13	U		13	U				
STYRENE	6.5	U		6.4	U		6.4	U				
TETRACHLOROETHENE	6.5	U		6.4	U		6.4	U				
TOLUENE	6.5	U		6.4	U		6.4	U				
TRANS-1,3-DICHLOROPROPENE	6.5	U		6.4	U		6.4	U				
TRICHLOROETHENE	6.5	U		6.4	U		6.4	U				

CTO079-NAS WHITING FIELD
WATER DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	39WV00101			39WW00101			39WW00101D					
SAMPLE DATE:	04/14/00			04/14/00			04/14/00			/ /		
LABORATORY ID:	F6287-8			F6287-1			F6287-4					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:							39WW00101					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	5	U		5	U		5	U				
1,2-DICHLOROBENZENE	5	U		5	U		5	U				
1,3-DICHLOROBENZENE	5	U		5	U		5	U				
1,4-DICHLOROBENZENE	5	U		5	U		5	U				
2,4,5-TRICHLOROPHENOL	5	U		5	U		5	U				
2,4,6-TRICHLOROPHENOL	5	U		5	U		5	U				
2,4-DICHLOROPHENOL	5	U		5	U		5	U				
2,4-DIMETHYLPHENOL	25	U		25	U		25	U				
2,4-DINITROPHENOL	25	U		25	U		25	U				
2,4-DINITROTOLUENE	5	U		5	U		5	U				
2,6-DINITROTOLUENE	5	U		5	U		5	U				
2-CHLORONAPHTHALENE	5	U		5	U		5	U				
2-CHLOROPHENOL	5	U		5	U		5	U				
2-METHYLPHENOL	5	U		5	U		5	U				
2-NITROANILINE	5	U		5	U		5	U				
2-NITROPHENOL	5	U		5	U		5	U				
3&4-METHYLPHENOL	5	U		5	U		5	U				
3,3'-DICHLOROBENZIDINE	10	U		10	U		10	U				
3-NITROANILINE	5	U		5	U		5	U				
4,6-DINITRO-2-METHYLPHENOL	10	U		10	U		10	U				
4-BROMOPHENYL PHENYL ETHER	5	U		5	U		5	U				
4-CHLORO-3-METHYLPHENOL	5	U		5	U		5	U				
4-CHLOROANILINE	5	U		5	U		5	U				
4-CHLOROPHENYL PHENYL ETHER	5	U		5	U		5	U				
4-NITROANILINE	5	U		5	U		5	U				
4-NITROPHENOL	25	U		25	U		25	U				
BENZOIC ACID	25	U		25	U		25	U				
BENZYL ALCOHOL	5	U		5	U		5	U				
BIS(2-CHLOROETHOXY)METHANE	5	U		5	U		5	U				
BIS(2-CHLOROETHYL)ETHER	5	U		5	U		5	U				
BIS(2-CHLOROISOPROPYL)ETHER	5	U		5	U		5	U				
BIS(2-ETHYLHEXYL)PHTHALATE	5	U		5	U		5	U				

CTO079-NAS WHITING FIELD
WATER DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	39WV00101			39WW00101			39WW00101D					
SAMPLE DATE:	04/14/00			04/14/00			04/14/00			/ /		
LABORATORY ID:	F6287-8			F6287-1			F6287-4					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:							39WW00101					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
DI-N-BUTYL PHTHALATE	5	U		5	U		5	U				
DI-N-OCTYL PHTHALATE	5	U		5	U		5	U				
DIBENZOFURAN	5	U		5	U		5	U				
DIETHYL PHTHALATE	5	U		5	U		5	U				
DIMETHYL PHTHALATE	5	U		5	U		5	U				
HEXACHLOROBENZENE	5	U		5	U		5	U				
HEXACHLOROBUTADIENE	5	U		5	U		5	U				
HEXACHLOROCYCLOPENTADIENE	5	U		5	U		5	U				
HEXACHLOROETHANE	5	U		5	U		5	U				
ISOPHORONE	5	U		5	U		5	U				
N-NITROSO-DI-N-PROPYLAMINE	5	U		5	U		5	U				
N-NITROSODIPHENYLAMINE	5	U		5	U		5	U				
NITROBENZENE	5	U		5	U		5	U				
PENTACHLOROPHENOL	25	U		25	U		25	U				
PHENOL	5	U		5	U		5	U				

CTO079-NAS WHITING FIELD
WATER DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	39WV00101	39WW00101	39WW00101D	
SAMPLE DATE:	04/14/00	04/14/00	04/14/00	/ /
LABORATORY ID:	F6287-8	F6287-1	F6287-4	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	0.0 %	0.0 %	0.0 %	100.0 %
UNITS:	UG/L	UG/L	UG/L	
FIELD DUPLICATE OF:			39WW00101	

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2	U		2	U		2	U				
2-METHYLNAPHTHALENE	2	U		2	U		2	U				
ACENAPHTHENE	2	U		2	U		2	U				
ACENAPHTHYLENE	2	U		2	U		2	U				
ANTHRACENE	2	U		2	U		2	U				
BENZO(A)ANTHRACENE	0.2	U		0.2	U		0.2	U				
BENZO(A)PYRENE	0.2	U		0.2	U		0.2	U				
BENZO(B)FLUORANTHENE	0.2	U		0.2	U		0.2	U				
BENZO(G,H,I)PERYLENE	0.2	U		0.2	U		0.2	U				
BENZO(K)FLUORANTHENE	0.2	U		0.2	U		0.2	U				
CHRYSENE	0.2	U		0.2	U		0.2	U				
DIBENZO(A,H)ANTHRACENE	0.2	U		0.2	U		0.2	U				
FLUORANTHENE	2	U		2	U		2	U				
FLUORENE	2	U		2	U		2	U				
INDENO(1,2,3-CD)PYRENE	0.2	U		0.2	U		0.2	U				
NAPHTHALENE	2	U		2	U		2	U				
PHENANTHRENE	2	U		2	U		2	U				
PYRENE	2	U		2	U		2	U				

CTO079-NAS WHITING FIELD
SOIL DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	39DV00101			39DW00101			39DW00101D					
SAMPLE DATE:	04/14/00			04/14/00			04/14/00			/ /		
LABORATORY ID:	F6287-9			F6287-2			F6287-5					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	73.1 %			76.4 %			76.7 %			100.0 %		
UNITS:	UG/KG			UG/KG			UG/KG					
FIELD DUPLICATE OF:							39DW00101					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	460	U		440	U		430	U				
1,2-DICHLOROBENZENE	460	U		440	U		430	U				
1,3-DICHLOROBENZENE	460	U		440	U		430	U				
1,4-DICHLOROBENZENE	460	U		440	U		430	U				
2,4,5-TRICHLOROPHENOL	460	U		440	U		430	U				
2,4,6-TRICHLOROPHENOL	460	U		440	U		430	U				
2,4-DICHLOROPHENOL	460	U		440	U		430	U				
2,4-DIMETHYLPHENOL	1100	U		1100	U		1100	U				
2,4-DINITROPHENOL	1100	U		1100	U		1100	U				
2,4-DINITROTOLUENE	460	U		440	U		430	U				
2,6-DINITROTOLUENE	460	U		440	U		430	U				
2-CHLORONAPHTHALENE	460	U		440	U		430	U				
2-CHLOROPHENOL	460	U		440	U		430	U				
2-METHYLPHENOL	460	U		440	U		430	U				
2-NITROANILINE	460	U		440	U		430	U				
2-NITROPHENOL	460	U		440	U		430	U				
3&4-METHYLPHENOL	460	U		440	U		430	U				
3,3'-DICHLOROBENZIDINE	910	U		870	U		870	U				
3-NITROANILINE	460	U		440	U		430	U				
4,6-DINITRO-2-METHYLPHENOL	910	U		870	U		870	U				
4-BROMOPHENYL PHENYL ETHER	460	U		440	U		430	U				
4-CHLORO-3-METHYLPHENOL	460	U		440	U		430	U				
4-CHLOROANILINE	460	U		440	U		430	U				
4-CHLOROPHENYL PHENYL ETHER	460	U		440	U		430	U				
4-NITROANILINE	460	U		440	U		430	U				
4-NITROPHENOL	1100	U		1100	U		1100	U				
BENZOIC ACID	1100	U		1100	U		1100	U				
BENZYL ALCOHOL	460	U		440	U		430	U				
BIS(2-CHLOROETHOXY)METHANE	460	U		440	U		430	U				
BIS(2-CHLOROETHYL)ETHER	460	U		440	U		430	U				
BIS(2-CHLOROISOPROPYL)ETHER	460	U		440	U		430	U				
BIS(2-ETHYLHEXYL)PHTHALATE	460	U		440	U		430	U				

CTO079-NAS WHITING FIELD
SOIL DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	39DV00101			39DW00101			39DW00101D					
SAMPLE DATE:	04/14/00			04/14/00			04/14/00			/ /		
LABORATORY ID:	F6287-9			F6287-2			F6287-5					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	73.1 %			76.4 %			76.7 %			100.0 %		
UNITS:	UG/KG			UG/KG			UG/KG					
FIELD DUPLICATE OF:							39DW00101					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
DI-N-BUTYL PHTHALATE	479			440	U		430	U				
DI-N-OCTYL PHTHALATE	460	U		440	U		430	U				
DIBENZOFURAN	460	U		440	U		430	U				
DIETHYL PHTHALATE	460	U		440	U		430	U				
DIMETHYL PHTHALATE	460	U		440	U		430	U				
HEXACHLOROBENZENE	460	U		440	U		430	U				
HEXACHLOROBUTADIENE	460	U		440	U		430	U				
HEXACHLOROCYCLOPENTADIENE	460	U		440	U		430	U				
HEXACHLOROETHANE	460	U		440	U		430	U				
ISOPHORONE	460	U		440	U		430	U				
N-NITROSO-DI-N-PROPYLAMINE	460	U		440	U		430	U				
N-NITROSODIPHENYLAMINE	460	U		440	U		430	U				
NITROBENZENE	460	U		440	U		430	U				
PENTACHLOROPHENOL	1100	U		1100	U		1100	U				
PHENOL	460	U		440	U		430	U				

CTO079-NAS WHITING FIELD
SOIL DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	39DV00101			39DW00101			39DW00101D					
SAMPLE DATE:	04/14/00			04/14/00			04/14/00			/ /		
LABORATORY ID:	F6287-9			F6287-2			F6287-5					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	73.1 %			76.4 %			76.7 %			100.0 %		
UNITS:	UG/KG			UG/KG			UG/KG					
FIELD DUPLICATE OF:							39DW00101					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	460	U		440	U		430	U				
2-METHYLNAPHTHALENE	460	U		440	U		430	U				
ACENAPHTHENE	460	U		440	U		430	U				
ACENAPHTHYLENE	910	U		870	U		870	U				
ANTHRACENE	460	U		440	U		430	U				
BENZO(A)ANTHRACENE	91	U		87	U		87	U				
BENZO(A)PYRENE	91	U		87	U		87	U				
BENZO(B)FLUORANTHENE	91	U		87	U		87	U				
BENZO(G,H,I)PERYLENE	91	U		87	U		87	U				
BENZO(K)FLUORANTHENE	91	U		87	U		87	U				
CHRYSENE	91	U		87	U		87	U				
DIBENZO(A,H)ANTHRACENE	91	U		87	U		87	U				
FLUORANTHENE	460	U		440	U		430	U				
FLUORENE	460	U		440	U		430	U				
INDENO(1,2,3-CD)PYRENE	91	U		87	U		87	U				
NAPHTHALENE	460	U		440	U		430	U				
PHENANTHRENE	460	U		440	U		430	U				
PYRENE	460	U		440	U		430	U				

SOIL DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	05DSB102			05DSB202			05DSB302			05DSB402		
SAMPLE DATE:	04/14/00			04/14/00			04/14/00			04/14/00		
LABORATORY ID:	F6287-11			F6287-12			F6287-13			F6287-14		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	89.2 %			93.8 %			90.0 %			87.9 %		
UNITS:	UG/KG			UG/KG			UG/KG			UG/KG		
FIELD DUPLICATE OF:												
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
PESTICIDES/PCBs												
4,4'-DDD	3.7	U		3.6	U		3.7	U		3.8	U	
4,4'-DDE	0.74	J	P	18			3.7	U		3.8	U	
4,4'-DDT	3.1	J	CP	7.8	J	C	3.7	UJ	C	3.8	UJ	C
ALDRIN	1.9	U		1.8	U		1.8	U		1.9	U	
ALPHA-BHC	1.9	U		1.8	U		1.8	U		1.9	U	
ALPHA-CHLORDANE	3.7	U		3.6	U		3.7	U		3.8	U	
AROCLOR-1016	37	U		36	U		37	U		38	U	
AROCLOR-1221	37	U		36	U		37	U		38	U	
AROCLOR-1232	37	U		36	U		37	U		38	U	
AROCLOR-1242	37	U		36	U		37	U		38	U	
AROCLOR-1248	37	U		36	U		37	U		38	U	
AROCLOR-1254	37	U		36	U		37	U		38	U	
AROCLOR-1260	23.8	J	P	79.9			37	U		38	U	
BETA-BHC	1.9	U		1.8	U		1.8	U		1.9	U	
DELTA-BHC	1.9	U		1.8	U		1.8	U		1.9	U	
DIELDRIN	17.9			2.6			1.8	U		1.9	U	
ENDOSULFAN I	1.9	U		1.8	U		1.8	U		1.9	U	
ENDOSULFAN II	3.7	U		3.6	U		3.7	U		3.8	U	
ENDOSULFAN SULFATE	3.7	U		3.6	U		3.7	U		3.8	U	
ENDRIN	3.7	U		3.6	U		3.7	U		3.8	U	
ENDRIN ALDEHYDE	3.7	U		3.6	U		3.7	U		3.8	U	
ENDRIN KETONE	3.7	UJ	C	3.6	UJ	C	3.7	UJ	C	3.8	UJ	C
GAMMA-BHC (LINDANE)	1.9	U		1.8	U		1.8	U		1.9	U	
GAMMA-CHLORDANE	3.7	U		3.6	U		3.7	U		3.8	U	
HEPTACHLOR	1.9	U		1.8	U		1.8	U		1.9	U	
HEPTACHLOR EPOXIDE	1.9	U		1.8	U		1.8	U		1.9	U	
METHOXYCHLOR	7.5	UJ	C	7.1	UJ	C	7.4	UJ	C	7.6	UJ	C
TOXAPHENE	190	U		180	U		180	U		190	U	

WATER DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	39WV00101			39WW00101			39WW00101D					
SAMPLE DATE:	04/14/00			04/14/00			04/14/00			/ /		
LABORATORY ID:	F6287-8			F6287-1			F6287-4					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:							39WW00101					
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
PESTICIDES/PCBs												
4,4'-DDD	0.1	U		0.1	U		0.1	U				
4,4'-DDE	0.1	U		0.1	U		0.1	U				
4,4'-DDT	0.1	U		0.1	U		0.1	U				
ALDRIN	0.05	U		0.05	U		0.05	U				
ALPHA-BHC	0.05	U		0.05	U		0.05	U				
ALPHA-CHLORDANE	0.1	U		0.1	U		0.1	U				
AROCLOR-1016	0.5	U		0.5	U		0.5	U				
AROCLOR-1221	0.5	U		0.5	U		0.5	U				
AROCLOR-1232	0.5	U		0.5	U		0.5	U				
AROCLOR-1242	0.5	U		0.5	U		0.5	U				
AROCLOR-1248	0.5	U		0.5	U		0.5	U				
AROCLOR-1254	0.5	U		0.5	U		0.5	U				
AROCLOR-1260	0.5	U		0.5	U		0.5	U				
BETA-BHC	0.05	U		0.05	U		0.05	U				
DELTA-BHC	0.05	U		0.05	U		0.05	U				
DIELDRIN	0.05	U		0.05	U		0.05	U				
ENDOSULFAN I	0.05	U		0.05	U		0.05	U				
ENDOSULFAN II	0.1	U		0.1	U		0.1	U				
ENDOSULFAN SULFATE	0.1	U		0.1	U		0.1	U				
ENDRIN	0.1	U		0.1	U		0.1	U				
ENDRIN ALDEHYDE	0.1	U		0.1	U		0.1	U				
ENDRIN KETONE	0.1	U		0.1	U		0.1	U				
GAMMA-BHC (LINDANE)	0.05	U		0.05	U		0.05	U				
GAMMA-CHLORDANE	0.1	U		0.1	U		0.1	U				
HEPTACHLOR	0.05	U		0.05	U		0.05	U				
HEPTACHLOR EPOXIDE	0.05	U		0.05	U		0.05	U				
METHOXYCHLOR	0.2	U		0.2	U		0.2	U				
TOXAPHENE	2.5	U		2.5	U		2.5	U				

SOIL DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	05DSB102			05DSB202			05DSB302			05DSB402		
SAMPLE DATE:	04/14/00			04/14/00			04/14/00			04/14/00		
LABORATORY ID:	F6287-11			F6287-12			F6287-13			F6287-14		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	89.2 %			93.8 %			90.0 %			87.9 %		
UNITS:	UG/KG			UG/KG			UG/KG			UG/KG		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
4,4'-DDD	3.7	U		3.6	U		3.7	U		3.8	U	
4,4'-DDE	0.74	J	P	18			3.7	U		3.8	U	
4,4'-DDT	3.1	J	CP	7.8	J	C	3.7	UJ	C	3.8	UJ	C
ALDRIN	1.9	U		1.8	U		1.8	U		1.9	U	
ALPHA-BHC	1.9	U		1.8	U		1.8	U		1.9	U	
ALPHA-CHLORDANE	3.7	U		3.6	U		3.7	U		3.8	U	
AROCLOR-1016	37	U		36	U		37	U		38	U	
AROCLOR-1221	37	U		36	U		37	U		38	U	
AROCLOR-1232	37	U		36	U		37	U		38	U	
AROCLOR-1242	37	U		36	U		37	U		38	U	
AROCLOR-1248	37	U		36	U		37	U		38	U	
AROCLOR-1254	37	U		36	U		37	U		38	U	
AROCLOR-1260	23.8	J	P	79.9			37	U		38	U	
BETA-BHC	1.9	U		1.8	U		1.8	U		1.9	U	
DELTA-BHC	1.9	U		1.8	U		1.8	U		1.9	U	
DIELDRIN	17.9			2.6			1.8	U		1.9	U	
ENDOSULFAN I	1.9	U		1.8	U		1.8	U		1.9	U	
ENDOSULFAN II	3.7	U		3.6	U		3.7	U		3.8	U	
ENDOSULFAN SULFATE	3.7	U		3.6	U		3.7	U		3.8	U	
ENDRIN	3.7	U		3.6	U		3.7	U		3.8	U	
ENDRIN ALDEHYDE	3.7	U		3.6	U		3.7	U		3.8	U	
ENDRIN KETONE	3.7	UJ	C	3.6	UJ	C	3.7	UJ	C	3.8	UJ	C
GAMMA-BHC (LINDANE)	1.9	U		1.8	U		1.8	U		1.9	U	
GAMMA-CHLORDANE	3.7	U		3.6	U		3.7	U		3.8	U	
HEPTACHLOR	1.9	U		1.8	U		1.8	U		1.9	U	
HEPTACHLOR EPOXIDE	1.9	U		1.8	U		1.8	U		1.9	U	
METHOXYCHLOR	7.5	UJ	C	7.1	UJ	C	7.4	UJ	C	7.6	UJ	C
TOXAPHENE	190	U		180	U		180	U		190	U	

SOIL DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	39DV00101			39DW00101			39DW00101D					
SAMPLE DATE:	04/14/00			04/14/00			04/14/00			/ /		
LABORATORY ID:	F6287-9			F6287-2			F6287-5					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	73.1 %			76.4 %			76.7 %			100.0 %		
UNITS:	UG/KG			UG/KG			UG/KG					
FIELD DUPLICATE OF:							39DW00101					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
4,4'-DDD	4.6	U		43	U		43	U				
4,4'-DDE	4.6	U		43	U		43	U				
4,4'-DDT	4.6	U		86	UJ	C	86	UJ	C			
ALDRIN	2.3	U		22	U		22	U				
ALPHA-BHC	2.3	U		22	U		22	U				
ALPHA-CHLORDANE	4.6	U		43	U		43	U				
AROCLOR-1016	46	U		44	U		43	U				
AROCLOR-1221	46	U		44	U		43	U				
AROCLOR-1232	46	U		44	U		43	U				
AROCLOR-1242	46	U		44	U		43	U				
AROCLOR-1248	46	U		44	U		43	U				
AROCLOR-1254	46	U		44	U		43	U				
AROCLOR-1260	46	U		44	U		43	U				
BETA-BHC	2.3	U		22	U		22	U				
DELTA-BHC	2.3	U		22	U		22	U				
DIELDRIN	2.3	U		22	U		22	U				
ENDOSULFAN I	2.3	U		22	U		22	U				
ENDOSULFAN II	4.6	U		43	U		43	U				
ENDOSULFAN SULFATE	4.6	U		43	U		43	U				
ENDRIN	4.6	U		43	U		43	U				
ENDRIN ALDEHYDE	4.6	U		43	UR	D	43	U				
ENDRIN KETONE	4.6	U		43	U		43	U				
GAMMA-BHC (LINDANE)	2.3	U		22	U		22	U				
GAMMA-CHLORDANE	4.6	U		43	U		43	U				
HEPTACHLOR	2.3	U		22	U		22	U				
HEPTACHLOR EPOXIDE	2.3	U		22	U		22	U				
METHOXYCHLOR	9.1	U		87	UJ	C	87	UJ	C			
TOXAPHENE	230	U		2200	U		2200	U				

APPENDIX B
RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID:	39GV00101		
Lab Sample ID:	F6287-10	**Date Sampled:**	04/14/00
Matrix:	AQ - Ground Water	**Date Received:**	04/15/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0012707.D	1	04/21/00	CJP	n/a	n/a	VG353
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	ug/l	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39GW00101		
Lab Sample ID:	F6287-3	**Date Sampled:**	04/14/00
Matrix:	AQ - Ground Water	**Date Received:**	04/15/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0012702.D	1	04/21/00	CJP	n/a	n/a	VG353
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	ug/l	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39GW00101D		
Lab Sample ID:	F6287-6	**Date Sampled:**	04/14/00
Matrix:	AQ - Ground Water	**Date Received:**	04/15/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0012704.D	1	04/21/00	CJP	n/a	n/a	VG353
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	ug/l	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39TB041400		
Lab Sample ID:	F6287-7	**Date Sampled:**	04/14/00
Matrix:	AQ - Trip Blank Water	**Date Received:**	04/15/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	G0012705.D	1	04/21/00	CJP	n/a	n/a	VG353
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	ug/l	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WV00101		
Lab Sample ID:	F6287-8	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0012706.D	1	04/21/00	CJP	n/a	n/a	VG353
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	ug/l	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WW00101		
Lab Sample ID:	F6287-1	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0012701.D	1	04/20/00	CJP	n/a	n/a	VG353
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	ug/l	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WW00101D		
Lab Sample ID:	F6287-4	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0012703.D	1	04/21/00	CJP	n/a	n/a	VG353
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	ug/l	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DV00101		
Lab Sample ID:	F6287-9	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 8260B	**Percent Solids:**	73.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	H007048.D	1	04/20/00	CJP	n/a	n/a	VH69
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	65	ug/kg	
71-43-2	Benzene	ND	6.5	ug/kg	
75-27-4	Bromodichloromethane	ND	6.5	ug/kg	
75-25-2	Bromoform	ND	6.5	ug/kg	
108-90-7	Chlorobenzene	ND	6.5	ug/kg	
75-00-3	Chloroethane	ND	6.5	ug/kg	
67-66-3	Chloroform	ND	6.5	ug/kg	
75-15-0	Carbon disulfide	ND	13	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.5	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.5	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.5	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.5	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.5	ug/kg	
124-48-1	Dibromochloromethane	ND	6.5	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.5	ug/kg	
540-59-0	1,2-Dichloroethene (total)	ND	13	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.5	ug/kg	
100-41-4	Ethylbenzene	ND	6.5	ug/kg	
591-78-6	2-Hexanone	ND	13	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	13	ug/kg	
74-83-9	Methyl bromide	ND	6.5	ug/kg	
74-87-3	Methyl chloride	ND	6.5	ug/kg	
75-09-2	Methylene chloride	ND	13	ug/kg	
78-93-3	Methyl ethyl ketone	ND	13	ug/kg	
100-42-5	Styrene	ND	6.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.5	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.5	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.5	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.5	ug/kg	
108-88-3	Toluene	ND	6.5	ug/kg	
79-01-6	Trichloroethylene	ND	6.5	ug/kg	
75-01-4	Vinyl chloride	ND	6.5	ug/kg	
1330-20-7	Xylene (total)	ND	20	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DW00101		
Lab Sample ID:	F6287-2	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 8260B	**Percent Solids:**	76.4
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	H007046.D	1	04/20/00	CJP	n/a	n/a	VH69
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	64	ug/kg	
71-43-2	Benzene	ND	6.4	ug/kg	
75-27-4	Bromodichloromethane	ND	6.4	ug/kg	
75-25-2	Bromoform	ND	6.4	ug/kg	
108-90-7	Chlorobenzene	ND	6.4	ug/kg	
75-00-3	Chloroethane	ND	6.4	ug/kg	
67-66-3	Chloroform	ND	6.4	ug/kg	
75-15-0	Carbon disulfide	ND	13	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.4	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.4	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.4	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.4	ug/kg	
124-48-1	Dibromochloromethane	ND	6.4	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.4	ug/kg	
540-59-0	1,2-Dichloroethene (total)	ND	13	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.4	ug/kg	
100-41-4	Ethylbenzene	ND	6.4	ug/kg	
591-78-6	2-Hexanone	ND	13	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	13	ug/kg	
74-83-9	Methyl bromide	ND	6.4	ug/kg	
74-87-3	Methyl chloride	ND	6.4	ug/kg	
75-09-2	Methylene chloride	ND	13	ug/kg	
78-93-3	Methyl ethyl ketone	ND	13	ug/kg	
100-42-5	Styrene	ND	6.4	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.4	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.4	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.4	ug/kg	
108-88-3	Toluene	ND	6.4	ug/kg	
79-01-6	Trichloroethylene	ND	6.4	ug/kg	
75-01-4	Vinyl chloride	ND	6.4	ug/kg	
1330-20-7	Xylene (total)	ND	19	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DW00101D		
Lab Sample ID:	F6287-5	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 8260B	**Percent Solids:**	76.7
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	H007047.D	1	04/20/00	CJP	n/a	n/a	VH69
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	64	ug/kg	
71-43-2	Benzene	ND	6.4	ug/kg	
75-27-4	Bromodichloromethane	ND	6.4	ug/kg	
75-25-2	Bromoform	ND	6.4	ug/kg	
108-90-7	Chlorobenzene	ND	6.4	ug/kg	
75-00-3	Chloroethane	ND	6.4	ug/kg	
67-66-3	Chloroform	ND	6.4	ug/kg	
75-15-0	Carbon disulfide	ND	13	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.4	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.4	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.4	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.4	ug/kg	
124-48-1	Dibromochloromethane	ND	6.4	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.4	ug/kg	
540-59-0	1,2-Dichloroethene (total)	ND	13	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.4	ug/kg	
100-41-4	Ethylbenzene	ND	6.4	ug/kg	
591-78-6	2-Hexanone	ND	13	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	13	ug/kg	
74-83-9	Methyl bromide	ND	6.4	ug/kg	
74-87-3	Methyl chloride	ND	6.4	ug/kg	
75-09-2	Methylene chloride	ND	13	ug/kg	
78-93-3	Methyl ethyl ketone	ND	13	ug/kg	
100-42-5	Styrene	ND	6.4	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.4	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.4	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.4	ug/kg	
108-88-3	Toluene	ND	6.4	ug/kg	
79-01-6	Trichloroethylene	ND	6.4	ug/kg	
75-01-4	Vinyl chloride	ND	6.4	ug/kg	
1330-20-7	Xylene (total)	ND	19	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WV00101		
Lab Sample ID:	F6287-8	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	SW846 3510C/8270C	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W001506.D	1	04/20/00	ME	04/19/00	OP1462	SW99
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	25	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	ug/l	
105-67-9	2,4-Dimethylphenol	ND	25	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	5.0	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND	25	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	ug/l	
~~83-32-9~~	~~Acenaphthene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~208-96-8~~	~~Acenaphthylene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~120-12-7~~	~~Anthracene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~56-55-3~~	~~Benzo(a)anthracene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~50-32-8~~	~~Benzo(a)pyrene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~205-99-2~~	~~Benzo(b)fluoranthene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~191-24-2~~	~~Benzo(g,h,i)perylene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~207-08-9~~	~~Benzo(k)fluoranthene~~	~~ND~~	~~5.0~~	~~ug/l~~	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	ug/l	
86-74-8	Carbazole	ND	5.0	ug/l	
~~218-01-9~~	~~Chrysene~~	~~ND~~	~~5.0~~	~~ug/l~~	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	ug/l	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WV00101		
Lab Sample ID:	F6287-8	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	SW846 3510C/8270C	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	ug/l	
~~53-70-3~~	~~Dibenzo(a,h)anthracene~~	~~ND~~	~~5.0~~	~~ug/l~~	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	ug/l	
~~206-44-0~~	~~Fluoranthene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~86-73-7~~	~~Fluorene~~	~~ND~~	~~5.0~~	~~ug/l~~	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
~~193-39-5~~	~~Indeno(1,2,3-cd)pyrene~~	~~ND~~	~~5.0~~	~~ug/l~~	
78-59-1	Isophorone	ND	5.0	ug/l	
~~91-57-6~~	~~2-Methylnaphthalene~~	~~ND~~	~~5.0~~	~~ug/l~~	
88-74-4	2-Nitroaniline	ND	5.0	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	ug/l	
~~91-20-3~~	~~Naphthalene~~	~~ND~~	~~5.0~~	~~ug/l~~	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
~~85-01-8~~	~~Phenanthrene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~129-00-0~~	~~Pyrene~~	~~ND~~	~~5.0~~	~~ug/l~~	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	56%		21-100%
4165-62-2	Phenol-d5	37%		10-94%
118-79-6	2,4,6-Tribromophenol	105%		10-123%
4165-60-0	Nitrobenzene-d5	100%		35-114%
321-60-8	2-Fluorobiphenyl	100%		43-116%
1718-51-0	Terphenyl-d14	106%		33-141%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WW00101		
Lab Sample ID:	F6287-1	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	SW846 3510C/8270C	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W001502.D	1	04/20/00	ME	04/19/00	OP1462	SW99
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	25	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	ug/l	
105-67-9	2,4-Dimethylphenol	ND	25	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	5.0	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND	25	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	ug/l	
~~83-32-9~~	~~Acenaphthene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~208-96-8~~	~~Acenaphthylene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~120-12-7~~	~~Anthracene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~56-55-3~~	~~Benzo(a)anthracene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~50-32-8~~	~~Benzo(a)pyrene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~205-99-2~~	~~Benzo(b)fluoranthene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~191-24-2~~	~~Benzo(g,h,i)perylene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~207-08-9~~	~~Benzo(k)fluoranthene~~	~~ND~~	~~5.0~~	~~ug/l~~	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	ug/l	
86-74-8	Carbazole	ND	5.0	ug/l	
~~218-01-9~~	~~Chrysene~~	~~ND~~	~~5.0~~	~~ug/l~~	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	ug/l	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WW00101		
Lab Sample ID:	F6287-1	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	SW846 3510C/8270C	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	ug/l	
~~53-70-3~~	~~Dibenzo(a,h)anthracene~~	~~ND~~	~~5.0~~	~~ug/l~~	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	ug/l	
~~206-44-0~~	~~Fluoranthene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~86-73-7~~	~~Fluorene~~	~~ND~~	~~5.0~~	~~ug/l~~	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
~~193-39-5~~	~~Indeno(1,2,3-cd)pyrene~~	~~ND~~	~~5.0~~	~~ug/l~~	
78-59-1	Isophorone	ND	5.0	ug/l	
~~91-57-6~~	~~2-Methylnaphthalene~~	~~ND~~	~~5.0~~	~~ug/l~~	
88-74-4	2-Nitroaniline	ND	5.0	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	ug/l	
~~91-20-3~~	~~Naphthalene~~	~~ND~~	~~5.0~~	~~ug/l~~	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
~~85-01-8~~	~~Phenanthrene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~129-00-0~~	~~Pyrene~~	~~ND~~	~~5.0~~	~~ug/l~~	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	53%		21-100%
4165-62-2	Phenol-d5	35%		10-94%
118-79-6	2,4,6-Tribromophenol	98%		10-123%
4165-60-0	Nitrobenzene-d5	93%		35-114%
321-60-8	2-Fluorobiphenyl	94%		43-116%
1718-51-0	Terphenyl-d14	99%		33-141%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WW00101D		
Lab Sample ID:	F6287-4	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	SW846 3510C/8270C	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W001505.D	1	04/20/00	ME	04/19/00	OP1462	SW99
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	25	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	ug/l	
105-67-9	2,4-Dimethylphenol	ND	25	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	5.0	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND	25	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	ug/l	
~~83-32-9~~	~~Acenaphthene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~208-96-8~~	~~Acenaphthylene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~120-12-7~~	~~Anthracene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~56-55-3~~	~~Benzo(a)anthracene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~50-32-8~~	~~Benzo(a)pyrene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~205-99-2~~	~~Benzo(b)fluoranthene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~191-24-2~~	~~Benzo(g,h,i)perylene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~207-08-9~~	~~Benzo(k)fluoranthene~~	~~ND~~	~~5.0~~	~~ug/l~~	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	ug/l	
86-74-8	Carbazole	ND	5.0	ug/l	
~~218-01-9~~	~~Chrysene~~	~~ND~~	~~5.0~~	~~ug/l~~	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	ug/l	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WW00101D		
Lab Sample ID:	F6287-4	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	SW846 3510C/8270C	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	5.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	ug/l	
~~53-70-3~~	~~Dibenzo(a,h)anthracene~~	~~ND~~	~~5.0~~	~~ug/l~~	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	ug/l	
~~206-44-0~~	~~Fluoranthene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~86-73-7~~	~~Fluorene~~	~~ND~~	~~5.0~~	~~ug/l~~	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
~~193-39-5~~	~~Indeno(1,2,3-cd)pyrene~~	~~ND~~	~~5.0~~	~~ug/l~~	
78-59-1	Isophorone	ND	5.0	ug/l	
~~91-57-6~~	~~2-Methylnaphthalene~~	~~ND~~	~~5.0~~	~~ug/l~~	
88-74-4	2-Nitroaniline	ND	5.0	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	ug/l	
~~91-20-3~~	~~Naphthalene~~	~~ND~~	~~5.0~~	~~ug/l~~	
98-95-3	Nitrobenzene	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
~~85-01-8~~	~~Phenanthrene~~	~~ND~~	~~5.0~~	~~ug/l~~	
~~129-00-0~~	~~Pyrene~~	~~ND~~	~~5.0~~	~~ug/l~~	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	52%		21-100%
4165-62-2	Phenol-d5	36%		10-94%
118-79-6	2,4,6-Tribromophenol	96%		10-123%
4165-60-0	Nitrobenzene-d5	93%		35-114%
321-60-8	2-Fluorobiphenyl	88%		43-116%
1718-51-0	Terphenyl-d14	98%		33-141%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DV00101		
Lab Sample ID:	F6287-9	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 3550B/8270C	**Percent Solids:**	73.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W001530.D	1	04/24/00	ME	04/21/00	OP1472	SW100
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic acid	ND	1100	ug/kg	
95-57-8	2-Chlorophenol	ND	460	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	460	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	460	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	1100	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1100	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	910	ug/kg	
95-48-7	2-Methylphenol	ND	460	ug/kg	
	3&4-Methylphenol	ND	460	ug/kg	
88-75-5	2-Nitrophenol	ND	460	ug/kg	
100-02-7	4-Nitrophenol	ND	1100	ug/kg	
87-86-5	Pentachlorophenol	ND	1100	ug/kg	
108-95-2	Phenol	ND	460	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	460	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	460	ug/kg	
~~83-32-9~~	~~Acenaphthene~~	~~ND~~	~~460~~	~~ug/kg~~	
~~208-96-8~~	~~Acenaphthylene~~	~~ND~~	~~460~~	~~ug/kg~~	
~~120-12-7~~	~~Anthracene~~	~~ND~~	~~460~~	~~ug/kg~~	
~~56-55-3~~	~~Benzo(a)anthracene~~	~~ND~~	~~460~~	~~ug/kg~~	
~~50-32-8~~	~~Benzo(a)pyrene~~	~~ND~~	~~460~~	~~ug/kg~~	
~~205-99-2~~	~~Benzo(b)fluoranthene~~	~~ND~~	~~460~~	~~ug/kg~~	
~~191-24-2~~	~~Benzo(g,h,i)perylene~~	~~ND~~	~~460~~	~~ug/kg~~	
~~207-08-9~~	~~Benzo(k)fluoranthene~~	~~ND~~	~~460~~	~~ug/kg~~	
101-55-3	4-Bromophenyl phenyl ether	ND	460	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	460	ug/kg	
100-51-6	Benzyl Alcohol	ND	460	ug/kg	
91-58-7	2-Chloronaphthalene	ND	460	ug/kg	
106-47-8	4-Chloroaniline	ND	460	ug/kg	
86-74-8	Carbazole	ND	460	ug/kg	
~~218-01-9~~	~~Chrysene~~	~~ND~~	~~460~~	~~ug/kg~~	
111-91-1	bis(2-Chloroethoxy)methane	ND	460	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	460	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	460	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	460	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	460	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	460	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DV00101		
Lab Sample ID:	F6287-9	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 3550B/8270C	**Percent Solids:**	73.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	460	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	460	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	460	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	910	ug/kg	
~~53-70-3~~	~~Dibenzo(a,h)anthracene~~	~~ND~~	~~460~~	~~ug/kg~~	
132-64-9	Dibenzofuran	ND	460	ug/kg	
84-74-2	Di-n-butyl phthalate	479	460	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	460	ug/kg	
84-66-2	Diethyl phthalate	ND	460	ug/kg	
131-11-3	Dimethyl phthalate	ND	460	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	460	ug/kg	
~~206-44-0~~	~~Fluoranthene~~	~~ND~~	~~460~~	~~ug/kg~~	
~~86-73-7~~	~~Fluorene~~	~~ND~~	~~460~~	~~ug/kg~~	
118-74-1	Hexachlorobenzene	ND	460	ug/kg	
87-68-3	Hexachlorobutadiene	ND	460	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	460	ug/kg	
67-72-1	Hexachloroethane	ND	460	ug/kg	
~~193-39-5~~	~~Indeno(1,2,3-cd)pyrene~~	~~ND~~	~~460~~	~~ug/kg~~	
78-59-1	Isophorone	ND	460	ug/kg	
~~91-57-6~~	~~2-Methylnaphthalene~~	~~ND~~	~~460~~	~~ug/kg~~	
88-74-4	2-Nitroaniline	ND	460	ug/kg	
99-09-2	3-Nitroaniline	ND	460	ug/kg	
100-01-6	4-Nitroaniline	ND	460	ug/kg	
~~91-20-3~~	~~Naphthalene~~	~~ND~~	~~460~~	~~ug/kg~~	
98-95-3	Nitrobenzene	ND	460	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	460	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	460	ug/kg	
~~85-01-8~~	~~Phenanthrene~~	~~ND~~	~~460~~	~~ug/kg~~	
~~129-00-0~~	~~Pyrene~~	~~ND~~	~~460~~	~~ug/kg~~	
120-82-1	1,2,4-Trichlorobenzene	ND	460	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	76%		36-129%
4165-62-2	Phenol-d5	86%		38-135%
118-79-6	2,4,6-Tribromophenol	83%		37-144%
4165-60-0	Nitrobenzene-d5	78%		36-135%
321-60-8	2-Fluorobiphenyl	81%		44-135%
1718-51-0	Terphenyl-d14	104%		42-149%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DW00101		
Lab Sample ID:	F6287-2	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 3550B/8270C	**Percent Solids:**	76.4
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W001526.D	1	04/24/00	ME	04/21/00	OP1472	SW100
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic acid	ND	1100	ug/kg	
95-57-8	2-Chlorophenol	ND	440	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	440	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	440	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	1100	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1100	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	870	ug/kg	
95-48-7	2-Methylphenol	ND	440	ug/kg	
	3&4-Methylphenol	ND	440	ug/kg	
88-75-5	2-Nitrophenol	ND	440	ug/kg	
100-02-7	4-Nitrophenol	ND	1100	ug/kg	
87-86-5	Pentachlorophenol	ND	1100	ug/kg	
108-95-2	Phenol	ND	440	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	440	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	440	ug/kg	
~~83-32-9~~	~~Acenaphthene~~	~~ND~~	~~440~~	~~ug/kg~~	
~~208-96-8~~	~~Acenaphthylene~~	~~ND~~	~~440~~	~~ug/kg~~	
~~120-12-7~~	~~Anthracene~~	~~ND~~	~~440~~	~~ug/kg~~	
~~56-55-3~~	~~Benzo(a)anthracene~~	~~ND~~	~~440~~	~~ug/kg~~	
~~50-32-8~~	~~Benzo(a)pyrene~~	~~ND~~	~~440~~	~~ug/kg~~	
~~205-99-2~~	~~Benzo(b)fluoranthene~~	~~ND~~	~~440~~	~~ug/kg~~	
~~191-24-2~~	~~Benzo(g,h,i)perylene~~	~~ND~~	~~440~~	~~ug/kg~~	
~~207-08-9~~	~~Benzo(k)fluoranthene~~	~~ND~~	~~440~~	~~ug/kg~~	
101-55-3	4-Bromophenyl phenyl ether	ND	440	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	440	ug/kg	
100-51-6	Benzyl Alcohol	ND	440	ug/kg	
91-58-7	2-Chloronaphthalene	ND	440	ug/kg	
106-47-8	4-Chloroaniline	ND	440	ug/kg	
86-74-8	Carbazole	ND	440	ug/kg	
~~218-01-9~~	~~Chrysene~~	~~ND~~	~~440~~	~~ug/kg~~	
111-91-1	bis(2-Chloroethoxy)methane	ND	440	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	440	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	440	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	440	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	440	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	440	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DW00101		
Lab Sample ID:	F6287-2	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 3550B/8270C	**Percent Solids:**	76.4
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	440	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	440	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	440	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	870	ug/kg	
~~53-70-3~~	~~Dibenzo(a,h)anthracene~~	~~ND~~	~~440~~	~~ug/kg~~	
132-64-9	Dibenzofuran	ND	440	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	440	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	440	ug/kg	
84-66-2	Diethyl phthalate	ND	440	ug/kg	
131-11-3	Dimethyl phthalate	ND	440	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	440	ug/kg	
~~206-44-0~~	~~Fluoranthene~~	~~ND~~	~~440~~	~~ug/kg~~	
~~86-73-7~~	~~Fluorene~~	~~ND~~	~~440~~	~~ug/kg~~	
118-74-1	Hexachlorobenzene	ND	440	ug/kg	
87-68-3	Hexachlorobutadiene	ND	440	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	440	ug/kg	
67-72-1	Hexachloroethane	ND	440	ug/kg	
~~193-39-5~~	~~Indeno(1,2,3-cd)pyrene~~	~~ND~~	~~440~~	~~ug/kg~~	
78-59-1	Isophorone	ND	440	ug/kg	
~~91-57-6~~	~~2-Methylnaphthalene~~	~~ND~~	~~440~~	~~ug/kg~~	
88-74-4	2-Nitroaniline	ND	440	ug/kg	
99-09-2	3-Nitroaniline	ND	440	ug/kg	
100-01-6	4-Nitroaniline	ND	440	ug/kg	
~~91-20-3~~	~~Naphthalene~~	~~ND~~	~~440~~	~~ug/kg~~	
98-95-3	Nitrobenzene	ND	440	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	440	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	440	ug/kg	
~~85-01-8~~	~~Phenanthrene~~	~~ND~~	~~440~~	~~ug/kg~~	
~~129-00-0~~	~~Pyrene~~	~~ND~~	~~440~~	~~ug/kg~~	
120-82-1	1,2,4-Trichlorobenzene	ND	440	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	69%		36-129%
4165-62-2	Phenol-d5	79%		38-135%
118-79-6	2,4,6-Tribromophenol	85%		37-144%
4165-60-0	Nitrobenzene-d5	71%		36-135%
321-60-8	2-Fluorobiphenyl	75%		44-135%
1718-51-0	Terphenyl-d14	91%		42-149%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DW00101D		
Lab Sample ID:	F6287-5	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 3550B/8270C	**Percent Solids:**	76.7
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W001529.D	1	04/24/00	ME	04/21/00	OP1472	SW100
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic acid	ND	1100	ug/kg	
95-57-8	2-Chlorophenol	ND	430	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	430	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	430	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	1100	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1100	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	870	ug/kg	
95-48-7	2-Methylphenol	ND	430	ug/kg	
	3&4-Methylphenol	ND	430	ug/kg	
88-75-5	2-Nitrophenol	ND	430	ug/kg	
100-02-7	4-Nitrophenol	ND	1100	ug/kg	
87-86-5	Pentachlorophenol	ND	1100	ug/kg	
108-95-2	Phenol	ND	430	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	430	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	430	ug/kg	
~~83-32-9~~	~~Acenaphthene~~	~~ND~~	~~430~~	~~ug/kg~~	
~~208-96-8~~	~~Acenaphthylene~~	~~ND~~	~~430~~	~~ug/kg~~	
~~120-12-7~~	~~Anthracene~~	~~ND~~	~~430~~	~~ug/kg~~	
~~56-55-3~~	~~Benzo(a)anthracene~~	~~ND~~	~~430~~	~~ug/kg~~	
~~50-32-8~~	~~Benzo(a)pyrene~~	~~ND~~	~~430~~	~~ug/kg~~	
~~205-99-2~~	~~Benzo(b)fluoranthene~~	~~ND~~	~~430~~	~~ug/kg~~	
~~191-24-2~~	~~Benzo(g,h,i)perylene~~	~~ND~~	~~430~~	~~ug/kg~~	
~~207-08-9~~	~~Benzo(k)fluoranthene~~	~~ND~~	~~430~~	~~ug/kg~~	
101-55-3	4-Bromophenyl phenyl ether	ND	430	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	430	ug/kg	
100-51-6	Benzyl Alcohol	ND	430	ug/kg	
91-58-7	2-Chloronaphthalene	ND	430	ug/kg	
106-47-8	4-Chloroaniline	ND	430	ug/kg	
86-74-8	Carbazole	ND	430	ug/kg	
~~218-01-9~~	~~Chrysene~~	~~ND~~	~~430~~	~~ug/kg~~	
111-91-1	bis(2-Chloroethoxy)methane	ND	430	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	430	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	430	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	430	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	430	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	430	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DW00101D		
Lab Sample ID:	F6287-5	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 3550B/8270C	**Percent Solids:**	76.7
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	430	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	430	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	430	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	870	ug/kg	
~~53-70-3~~	~~Dibenzo(a,h)anthracene~~	~~ND~~	~~430~~	~~ug/kg~~	
132-64-9	Dibenzofuran	ND	430	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	430	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	430	ug/kg	
84-66-2	Diethyl phthalate	ND	430	ug/kg	
131-11-3	Dimethyl phthalate	ND	430	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	430	ug/kg	
~~206-44-0~~	~~Fluoranthene~~	~~ND~~	~~430~~	~~ug/kg~~	
~~86-73-7~~	~~Fluorene~~	~~ND~~	~~430~~	~~ug/kg~~	
118-74-1	Hexachlorobenzene	ND	430	ug/kg	
87-68-3	Hexachlorobutadiene	ND	430	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	430	ug/kg	
67-72-1	Hexachloroethane	ND	430	ug/kg	
~~193-39-5~~	~~Indeno(1,2,3-cd)pyrene~~	~~ND~~	~~430~~	~~ug/kg~~	
78-59-1	Isophorone	ND	430	ug/kg	
91-57-6	2-Methylnaphthalene	ND	430	ug/kg	
88-74-4	2-Nitroaniline	ND	430	ug/kg	
99-09-2	3-Nitroaniline	ND	430	ug/kg	
100-01-6	4-Nitroaniline	ND	430	ug/kg	
~~91-20-3~~	~~Naphthalene~~	~~ND~~	~~430~~	~~ug/kg~~	
98-95-3	Nitrobenzene	ND	430	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	430	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	430	ug/kg	
~~85-01-8~~	~~Phenanthrene~~	~~ND~~	~~430~~	~~ug/kg~~	
~~129-00-0~~	~~Pyrene~~	~~ND~~	~~430~~	~~ug/kg~~	
120-82-1	1,2,4-Trichlorobenzene	ND	430	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	79%		36-129%
4165-62-2	Phenol-d5	88%		38-135%
118-79-6	2,4,6-Tribromophenol	83%		37-144%
4165-60-0	Nitrobenzene-d5	80%		36-135%
321-60-8	2-Fluorobiphenyl	83%		44-135%
1718-51-0	Terphenyl-d14	98%		42-149%

ND = Not detected
RL = Reporting 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

Semivolatile Surrogate Recovery Summary

Job Number: F6287
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Method: SW846 3550B/8270C **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
F6287-2	W001526.D	69.0	79.0	85.0	71.0	75.0	91.0
F6287-5	W001529.D	79.0	88.0	83.0	80.0	83.0	98.0
F6287-9	W001530.D	76.0	86.0	83.0	78.0	81.0	104.0
OP1472-BS	W001518.D	86.0	89.0	92.0	88.0	90.0	90.0
OP1472-MB	W001519.D	96.0	104.0	101.0	100.0	100.0	110.0
OP1472-MB	W001544.D	94.0	102.0	99.0	100.0	105.0	114.0
OP1472-MS	W001527.D	67.0	72.0	85.0	70.0	78.0	85.0
OP1472-MSD	W001528.D	72.0	78.0	84.0	75.0	80.0	85.0

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	36-129%
S2 = Phenol-d5	38-135%
S3 = 2,4,6-Tribromophenol	37-144%
S4 = Nitrobenzene-d5	36-135%
S5 = 2-Fluorobiphenyl	44-135%
S6 = Terphenyl-d14	42-149%

Semivolatile Surrogate Recovery Summary

Job Number: F6287
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Method: SW846 3510C/8270C **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
F6287-1	W001502.D	53.0	35.0	98.0	93.0	94.0	99.0
F6287-4	W001505.D	52.0	36.0	96.0	93.0	88.0	98.0
F6287-8	W001506.D	56.0	37.0	105.0	100.0	100.0	106.0
OP1462-BS	W001497.D	59.0	41.0	103.0	98.0	94.0	107.0
OP1462-MB	W001498.D	56.0	38.0	100.0	98.0	96.0	100.0
OP1462-MS	W001503.D	48.0	31.0	89.0	82.0	83.0	92.0
OP1462-MSD	W001504.D	55.0	36.0	99.0	94.0	92.0	99.0

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	21-100%
S2 = Phenol-d5	10-94%
S3 = 2,4,6-Tribromophenol	10-123%
S4 = Nitrobenzene-d5	35-114%
S5 = 2-Fluorobiphenyl	43-116%
S6 = Terphenyl-d14	33-141%

Report of Analysis

Client Sample ID:	39WV00101		
Lab Sample ID:	F6287-8	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	SW846 3510C/8081A	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	MN06770.D	1	04/24/00	SKW	04/19/00	OP1466	GMN275
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	0.050	ug/l	
319-84-6	alpha-BHC	ND	0.050	ug/l	
319-85-7	beta-BHC	ND	0.050	ug/l	
319-86-8	delta-BHC	ND	0.050	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.050	ug/l	
5103-71-9	alpha-Chlordane	ND	0.10	ug/l	
5103-74-2	gamma-Chlordane	ND	0.10	ug/l	
60-57-1	Dieldrin	ND	0.050	ug/l	
72-54-8	4,4'-DDD	ND	0.10	ug/l	
72-55-9	4,4'-DDE	ND	0.10	ug/l	
50-29-3	4,4'-DDT	ND	0.10	ug/l	
72-20-8	Endrin	ND	0.10	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.10	ug/l	
7421-93-4	Endrin aldehyde	ND	0.10	ug/l	
53494-70-5	Endrin ketone	ND	0.10	ug/l	
959-98-8	Endosulfan-I	ND	0.050	ug/l	
33213-65-9	Endosulfan-II	ND	0.10	ug/l	
76-44-8	Heptachlor	ND	0.050	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.050	ug/l	
72-43-5	Methoxychlor	ND	0.20	ug/l	
8001-35-2	Toxaphene	ND	2.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		50-128%
2051-24-3	Decachlorobiphenyl	76%		11-157%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WV00101		
Lab Sample ID:	F6287-8	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	SW846 8082	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AB13140.D	1	04/21/00	SKW	04/19/00	OP1465	GAB497
Run #2							

PCB List

CAS No.	Compound	Result	RL	Units	Q
12674-11-2	Aroclor 1016	ND	0.50	ug/l	
11104-28-2	Aroclor 1221	ND	0.50	ug/l	
11141-16-5	Aroclor 1232	ND	0.50	ug/l	
53469-21-9	Aroclor 1242	ND	0.50	ug/l	
12672-29-6	Aroclor 1248	ND	0.50	ug/l	
11097-69-1	Aroclor 1254	ND	0.50	ug/l	
11096-82-5	Aroclor 1260	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	102%		50-128%
2051-24-3	Decachlorobiphenyl	106%		11-157%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WW00101		
Lab Sample ID:	F6287-1	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	SW846 3510C/8081A	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	MN06766.D	1	04/24/00	SKW	04/19/00	OP1466	GMN275
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	0.050	ug/l	
319-84-6	alpha-BHC	ND	0.050	ug/l	
319-85-7	beta-BHC	ND	0.050	ug/l	
319-86-8	delta-BHC	ND	0.050	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.050	ug/l	
5103-71-9	alpha-Chlordane	ND	0.10	ug/l	
5103-74-2	gamma-Chlordane	ND	0.10	ug/l	
60-57-1	Dieldrin	ND	0.050	ug/l	
72-54-8	4,4'-DDD	ND	0.10	ug/l	
72-55-9	4,4'-DDE	ND	0.10	ug/l	
50-29-3	4,4'-DDT	ND	0.10	ug/l	
72-20-8	Endrin	ND	0.10	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.10	ug/l	
7421-93-4	Endrin aldehyde	ND	0.10	ug/l	
53494-70-5	Endrin ketone	ND	0.10	ug/l	
959-98-8	Endosulfan-I	ND	0.050	ug/l	
33213-65-9	Endosulfan-II	ND	0.10	ug/l	
76-44-8	Heptachlor	ND	0.050	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.050	ug/l	
72-43-5	Methoxychlor	ND	0.20	ug/l	
8001-35-2	Toxaphene	ND	2.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	86%		50-128%
2051-24-3	Decachlorobiphenyl	78%		11-157%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WW00101		
Lab Sample ID:	F6287-1	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	SW846 8082	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AB13135.D	1	04/21/00	SKW	04/19/00	OP1465	GAB497
Run #2							

PCB List

CAS No.	Compound	Result	RL	Units	Q
12674-11-2	Aroclor 1016	ND	0.50	ug/l	
11104-28-2	Aroclor 1221	ND	0.50	ug/l	
11141-16-5	Aroclor 1232	ND	0.50	ug/l	
53469-21-9	Aroclor 1242	ND	0.50	ug/l	
12672-29-6	Aroclor 1248	ND	0.50	ug/l	
11097-69-1	Aroclor 1254	ND	0.50	ug/l	
11096-82-5	Aroclor 1260	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	100%		50-128%
2051-24-3	Decachlorobiphenyl	96%		11-157%

000565

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WW00101D		
Lab Sample ID:	F6287-4	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	SW846 3510C/8081A	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	MN06769.D	1	04/24/00	SKW	04/19/00	OP1466	GMN275
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	0.050	ug/l	
319-84-6	alpha-BHC	ND	0.050	ug/l	
319-85-7	beta-BHC	ND	0.050	ug/l	
319-86-8	delta-BHC	ND	0.050	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.050	ug/l	
5103-71-9	alpha-Chlordane	ND	0.10	ug/l	
5103-74-2	gamma-Chlordane	ND	0.10	ug/l	
60-57-1	Dieldrin	ND	0.050	ug/l	
72-54-8	4,4'-DDD	ND	0.10	ug/l	
72-55-9	4,4'-DDE	ND	0.10	ug/l	
50-29-3	4,4'-DDT	ND	0.10	ug/l	
72-20-8	Endrin	ND	0.10	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.10	ug/l	
7421-93-4	Endrin aldehyde	ND	0.10	ug/l	
53494-70-5	Endrin ketone	ND	0.10	ug/l	
959-98-8	Endosulfan-I	ND	0.050	ug/l	
33213-65-9	Endosulfan-II	ND	0.10	ug/l	
76-44-8	Heptachlor	ND	0.050	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.050	ug/l	
72-43-5	Methoxychlor	ND	0.20	ug/l	
8001-35-2	Toxaphene	ND	2.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	88%		50-128%
2051-24-3	Decachlorobiphenyl	75%		11-157%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WW00101D		
Lab Sample ID:	F6287-4	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	SW846 8082	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AB13139.D	1	04/21/00	SKW	04/19/00	OP1465	GAB497
Run #2							

PCB List

CAS No.	Compound	Result	RL	Units	Q
12674-11-2	Aroclor 1016	ND	0.50	ug/l	
11104-28-2	Aroclor 1221	ND	0.50	ug/l	
11141-16-5	Aroclor 1232	ND	0.50	ug/l	
53469-21-9	Aroclor 1242	ND	0.50	ug/l	
12672-29-6	Aroclor 1248	ND	0.50	ug/l	
11097-69-1	Aroclor 1254	ND	0.50	ug/l	
11096-82-5	Aroclor 1260	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	103%		50-128%
2051-24-3	Decachlorobiphenyl	104%		11-157%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	05DSB102		
Lab Sample ID:	F6287-11	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 3550B/8081A	**Percent Solids:**	89.2
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST04422.D	1	04/26/00	SKW	04/18/00	OP1460	GST164
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	1.9	ug/kg	
319-84-6	alpha-BHC	ND	1.9	ug/kg	
319-85-7	beta-BHC	ND	1.9	ug/kg	
319-86-8	delta-BHC	ND	1.9	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	ug/kg	
5103-71-9	alpha-Chlordane	ND	3.7	ug/kg	
5103-74-2	gamma-Chlordane	ND	3.7	ug/kg	
60-57-1	Dieldrin	17.9	1.9	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	ug/kg	
72-55-9	4,4'-DDE	0.74	3.7	ug/kg	J
50-29-3	4,4'-DDT	3.1	3.7	ug/kg	J
72-20-8	Endrin	ND	3.7	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.7	ug/kg	
53494-70-5	Endrin ketone	ND	3.7	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	ug/kg	
76-44-8	Heptachlor	ND	1.9	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	ug/kg	
72-43-5	Methoxychlor	ND	7.5	ug/kg	
8001-35-2	Toxaphene	ND	190	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	95%		50-144%
2051-24-3	Decachlorobiphenyl	79%		10-180%

(a) All hits confirmed by dual column analysis.

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	05DSB102		
Lab Sample ID:	F6287-11	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 8082	**Percent Solids:**	89.2
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	AB13057.D	1	04/19/00	SKW	04/18/00	OP1461	GAB496
Run #2							

PCB List

CAS No.	Compound	Result	RL	Units	Q
12674-11-2	Aroclor 1016	ND	37	ug/kg	
11104-28-2	Aroclor 1221	ND	37	ug/kg	
11141-16-5	Aroclor 1232	ND	37	ug/kg	
53469-21-9	Aroclor 1242	ND	37	ug/kg	
12672-29-6	Aroclor 1248	ND	37	ug/kg	
11097-69-1	Aroclor 1254	ND	37	ug/kg	
11096-82-5	Aroclor 1260	23.8	37	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	90%		50-144%
2051-24-3	Decachlorobiphenyl	111%		10-180%

(a) All hits confirmed by dual column analysis.

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	05DSB202		
Lab Sample ID:	F6287-12	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 3550B/8081A	**Percent Solids:**	93.8
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST04423.D	1	04/26/00	SKW	04/18/00	OP1460	GST164
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	1.8	ug/kg	
319-84-6	alpha-BHC	ND	1.8	ug/kg	
319-85-7	beta-BHC	ND	1.8	ug/kg	
319-86-8	delta-BHC	ND	1.8	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	ug/kg	
5103-71-9	alpha-Chlordane	ND	3.6	ug/kg	
5103-74-2	gamma-Chlordane	ND	3.6	ug/kg	
60-57-1	Dieldrin	2.6	1.8	ug/kg	
72-54-8	4,4'-DDD	ND	3.6	ug/kg	
72-55-9	4,4'-DDE	18.0	3.6	ug/kg	
50-29-3	4,4'-DDT	7.8	3.6	ug/kg	
72-20-8	Endrin	ND	3.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.6	ug/kg	
53494-70-5	Endrin ketone	ND	3.6	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	ug/kg	
33213-65-9	Endosulfan-II	ND	3.6	ug/kg	
76-44-8	Heptachlor	ND	1.8	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	ug/kg	
72-43-5	Methoxychlor	ND	7.1	ug/kg	
8001-35-2	Toxaphene	ND	180	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	93%		50-144%
2051-24-3	Decachlorobiphenyl	49%		10-180%

(a) All hits confirmed by dual column analysis.

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	05DSB202		
Lab Sample ID:	F6287-12	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 8082	**Percent Solids:**	93.8
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	AB13058.D	1	04/19/00	SKW	04/18/00	OP1461	GAB496
Run #2							

PCB List

CAS No.	Compound	Result	RL	Units	Q
12674-11-2	Aroclor 1016	ND	36	ug/kg	
11104-28-2	Aroclor 1221	ND	36	ug/kg	
11141-16-5	Aroclor 1232	ND	36	ug/kg	
53469-21-9	Aroclor 1242	ND	36	ug/kg	
12672-29-6	Aroclor 1248	ND	36	ug/kg	
11097-69-1	Aroclor 1254	ND	36	ug/kg	
11096-82-5	Aroclor 1260	79.9	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	86%		50-144%
2051-24-3	Decachlorobiphenyl	92%		10-180%

(a) All hits confirmed by dual column analysis.

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	05DSB302		
Lab Sample ID:	F6287-13	**Date Sampled:**	04/14/00
Matrix:	SQ - Soil	**Date Received:**	04/15/00
Method:	SW846 3550B/8081A	**Percent Solids:**	90.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST04424.D	1	04/26/00	SKW	04/18/00	OP1460	GST164
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	1.8	ug/kg	
319-84-6	alpha-BHC	ND	1.8	ug/kg	
319-85-7	beta-BHC	ND	1.8	ug/kg	
319-86-8	delta-BHC	ND	1.8	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	ug/kg	
5103-71-9	alpha-Chlordane	ND	3.7	ug/kg	
5103-74-2	gamma-Chlordane	ND	3.7	ug/kg	
60-57-1	Dieldrin	ND	1.8	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	ug/kg	
72-20-8	Endrin	ND	3.7	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.7	ug/kg	
53494-70-5	Endrin ketone	ND	3.7	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	ug/kg	
76-44-8	Heptachlor	ND	1.8	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	ug/kg	
72-43-5	Methoxychlor	ND	7.4	ug/kg	
8001-35-2	Toxaphene	ND	180	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	85%		50-144%
2051-24-3	Decachlorobiphenyl	65%		10-180%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	05DSB302		
Lab Sample ID:	F6287-13	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 8082	**Percent Solids:**	90.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AB13059.D	1	04/19/00	SKW	04/18/00	OP1461	GAB496
Run #2							

PCB List

CAS No.	Compound	Result	RL	Units	Q
12674-11-2	Aroclor 1016	ND	37	ug/kg	
11104-28-2	Aroclor 1221	ND	37	ug/kg	
11141-16-5	Aroclor 1232	ND	37	ug/kg	
53469-21-9	Aroclor 1242	ND	37	ug/kg	
12672-29-6	Aroclor 1248	ND	37	ug/kg	
11097-69-1	Aroclor 1254	ND	37	ug/kg	
11096-82-5	Aroclor 1260	ND	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		50-144%
2051-24-3	Decachlorobiphenyl	115%		10-180%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	05DSB402		
Lab Sample ID:	F6287-14	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 3550B/8081A	**Percent Solids:**	87.9
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST04364.D	1	04/19/00	SKW	04/18/00	OP1460	GST163
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	1.9	ug/kg	
319-84-6	alpha-BHC	ND	1.9	ug/kg	
319-85-7	beta-BHC	ND	1.9	ug/kg	
319-86-8	delta-BHC	ND	1.9	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	ug/kg	
5103-71-9	alpha-Chlordane	ND	3.8	ug/kg	
5103-74-2	gamma-Chlordane	ND	3.8	ug/kg	
60-57-1	Dieldrin	ND	1.9	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	ug/kg	
72-20-8	Endrin	ND	3.8	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.8	ug/kg	
53494-70-5	Endrin ketone	ND	3.8	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	ug/kg	
76-44-8	Heptachlor	ND	1.9	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	ug/kg	
72-43-5	Methoxychlor	ND	7.6	ug/kg	
8001-35-2	Toxaphene	ND	190	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	90%		50-144%
2051-24-3	Decachlorobiphenyl	67%		10-180%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	05DSB402		
Lab Sample ID:	F6287-14		
Matrix:	SO - Soil	**Date Sampled:**	04/14/00
Method:	SW846 8082	**Date Received:**	04/15/00
Project:	NAS Whiting Field PO#NOO52-MSA0200-014	**Percent Solids:**	87.9

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AB13060.D	1	04/20/00	SKW	04/18/00	OP1461	GAB496
Run #2							

PCB List

CAS No.	Compound	Result	RL	Units	Q
12674-11-2	Aroclor 1016	ND	38	ug/kg	
11104-28-2	Aroclor 1221	ND	38	ug/kg	
11141-16-5	Aroclor 1232	ND	38	ug/kg	
53469-21-9	Aroclor 1242	ND	38	ug/kg	
12672-29-6	Aroclor 1248	ND	38	ug/kg	
11097-69-1	Aroclor 1254	ND	38	ug/kg	
11096-82-5	Aroclor 1260	ND	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	87%		50-144%
2051-24-3	Decachlorobiphenyl	115%		10-180%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DV00101		
Lab Sample ID:	F6287-9	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 3550B/8081A	**Percent Solids:**	73.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST04357.D	1	04/19/00	SKW	04/18/00	OP1460	GST163
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	2.3	ug/kg	
319-84-6	alpha-BHC	ND	2.3	ug/kg	
319-85-7	beta-BHC	ND	2.3	ug/kg	
319-86-8	delta-BHC	ND	2.3	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	2.3	ug/kg	
5103-71-9	alpha-Chlordane	ND	4.6	ug/kg	
5103-74-2	gamma-Chlordane	ND	4.6	ug/kg	
60-57-1	Dieldrin	ND	2.3	ug/kg	
72-54-8	4,4'-DDD	ND	4.6	ug/kg	
72-55-9	4,4'-DDE	ND	4.6	ug/kg	
50-29-3	4,4'-DDT	ND	4.6	ug/kg	
72-20-8	Endrin	ND	4.6	ug/kg	
1031-07-8	Endosulfan sulfate	ND	4.6	ug/kg	
7421-93-4	Endrin aldehyde	ND	4.6	ug/kg	
53494-70-5	Endrin ketone	ND	4.6	ug/kg	
959-98-8	Endosulfan-I	ND	2.3	ug/kg	
33213-65-9	Endosulfan-II	ND	4.6	ug/kg	
76-44-8	Heptachlor	ND	2.3	ug/kg	
1024-57-3	Heptachlor epoxide	ND	2.3	ug/kg	
72-43-5	Methoxychlor	ND	9.1	ug/kg	
8001-35-2	Toxaphene	ND	230	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	93%		50-144%
2051-24-3	Decachlorobiphenyl	80%		10-180%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DV00101		
Lab Sample ID:	F6287-9	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 8082	**Percent Solids:**	73.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AB13056.D	1	04/19/00	SKW	04/18/00	OP1461	GAB496
Run #2							

PCB List

CAS No.	Compound	Result	RL	Units	Q
12674-11-2	Aroclor 1016	ND	46	ug/kg	
11104-28-2	Aroclor 1221	ND	46	ug/kg	
11141-16-5	Aroclor 1232	ND	46	ug/kg	
53469-21-9	Aroclor 1242	ND	46	ug/kg	
12672-29-6	Aroclor 1248	ND	46	ug/kg	
11097-69-1	Aroclor 1254	ND	46	ug/kg	
11096-82-5	Aroclor 1260	ND	46	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	87%		50-144%
2051-24-3	Decachlorobiphenyl	88%		10-180%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DW00101		
Lab Sample ID:	F6287-2	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 3550B/8081A	**Percent Solids:**	76.4
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST04430.D	10	04/26/00	SKW	04/18/00	OP1460	GST164
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	22	ug/kg	
319-84-6	alpha-BHC	ND	22	ug/kg	
319-85-7	beta-BHC	ND	22	ug/kg	
319-86-8	delta-BHC	ND	22	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	22	ug/kg	
5103-71-9	alpha-Chlordane	ND	43	ug/kg	
5103-74-2	gamma-Chlordane	ND	43	ug/kg	
60-57-1	Dieldrin	ND	22	ug/kg	
72-54-8	4,4'-DDD	ND	43	ug/kg	
72-55-9	4,4'-DDE	ND	43	ug/kg	
50-29-3	4,4'-DDT [a]	ND	86	ug/kg	
72-20-8	Endrin	ND	43	ug/kg	
1031-07-8	Endosulfan sulfate	ND	43	ug/kg	
7421-93-4	Endrin aldehyde	ND	43	ug/kg	
53494-70-5	Endrin ketone	ND	43	ug/kg	
959-98-8	Endosulfan-I	ND	22	ug/kg	
33213-65-9	Endosulfan-II	ND	43	ug/kg	
76-44-8	Heptachlor	ND	22	ug/kg	
1024-57-3	Heptachlor epoxide	ND	22	ug/kg	
72-43-5	Methoxychlor	ND	87	ug/kg	
8001-35-2	Toxaphene	ND	2200	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	85%		50-144%
2051-24-3	Decachlorobiphenyl	68%		10-180%

(a) Elevated detection limit due to CCV outside of control limits due to sample matrix; confirmed by reanalysis.

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DW00101		
Lab Sample ID:	F6287-2	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 8082	**Percent Solids:**	76.4
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AB13052.D	1	04/19/00	SKW	04/18/00	OP1461	GAB496
Run #2							

PCB List

CAS No.	Compound	Result	RL	Units	Q
12674-11-2	Aroclor 1016	ND	44	ug/kg	
11104-28-2	Aroclor 1221	ND	44	ug/kg	
11141-16-5	Aroclor 1232	ND	44	ug/kg	
53469-21-9	Aroclor 1242	ND	44	ug/kg	
12672-29-6	Aroclor 1248	ND	44	ug/kg	
11097-69-1	Aroclor 1254	ND	44	ug/kg	
11096-82-5	Aroclor 1260	ND	44	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	86%		50-144%
2051-24-3	Decachlorobiphenyl	102%		10-180%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DW00101D		
Lab Sample ID:	F6287-5	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 3550B/8081A	**Percent Solids:**	76.7
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST04429.D	10	04/26/00	SKW	04/18/00	OP1460	GST164
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	22	ug/kg	
319-84-6	alpha-BHC	ND	22	ug/kg	
319-85-7	beta-BHC	ND	22	ug/kg	
319-86-8	delta-BHC	ND	22	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	22	ug/kg	
5103-71-9	alpha-Chlordane	ND	43	ug/kg	
5103-74-2	gamma-Chlordane	ND	43	ug/kg	
60-57-1	Dieldrin	ND	22	ug/kg	
72-54-8	4,4'-DDD	ND	43	ug/kg	
72-55-9	4,4'-DDE	ND	43	ug/kg	
50-29-3	4,4'-DDT [a]	ND	86	ug/kg	
72-20-8	Endrin	ND	43	ug/kg	
1031-07-8	Endosulfan sulfate	ND	43	ug/kg	
7421-93-4	Endrin aldehyde	ND	43	ug/kg	
53494-70-5	Endrin ketone	ND	43	ug/kg	
959-98-8	Endosulfan-I	ND	22	ug/kg	
33213-65-9	Endosulfan-II	ND	43	ug/kg	
76-44-8	Heptachlor	ND	22	ug/kg	
1024-57-3	Heptachlor epoxide	ND	22	ug/kg	
72-43-5	Methoxychlor	ND	87	ug/kg	
8001-35-2	Toxaphene	ND	2200	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		50-144%
2051-24-3	Decachlorobiphenyl	69%		10-180%

(a) Elevated detection limitdue to CCV outside of control limits due to sample matrix; confirmed by reanalysis.

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DW00101D		
Lab Sample ID:	F6287-5	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	SW846 8082	**Percent Solids:**	76.7
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AB13055.D	1	04/19/00	SKW	04/18/00	OP1461	GAB496
Run #2							

PCB List

CAS No.	Compound	Result	RL	Units	Q
12674-11-2	Aroclor 1016	ND	43	ug/kg	
11104-28-2	Aroclor 1221	ND	43	ug/kg	
11141-16-5	Aroclor 1232	ND	43	ug/kg	
53469-21-9	Aroclor 1242	ND	43	ug/kg	
12672-29-6	Aroclor 1248	ND	43	ug/kg	
11097-69-1	Aroclor 1254	ND	43	ug/kg	
11096-82-5	Aroclor 1260	ND	43	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	85%		50-144%
2051-24-3	Decachlorobiphenyl	94%		10-180%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DV00101		
Lab Sample ID:	F6287-9	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	EPA 8310	**Percent Solids:**	73.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA000887.D	1	04/25/00	CCJ	04/22/00	OP1473	GAA43
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	460	ug/kg	
208-96-8	Acenaphthylene	ND	910	ug/kg	
120-12-7	Anthracene	ND	460	ug/kg	
56-55-3	Benzo(a)anthracene	ND	91	ug/kg	
50-32-8	Benzo(a)pyrene	ND	91	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	91	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	91	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	91	ug/kg	
218-01-9	Chrysene	ND	91	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	91	ug/kg	
206-44-0	Fluoranthene	ND	460	ug/kg	
86-73-7	Fluorene	ND	460	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	91	ug/kg	
91-20-3	Naphthalene	ND	460	ug/kg	
90-12-0	1-Methylnaphthalene	ND	460	ug/kg	
91-57-6	2-Methylnaphthalene	ND	460	ug/kg	
85-01-8	Phenanthrene	ND	460	ug/kg	
129-00-0	Pyrene	ND	460	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	70%		35-135%
92-94-4	p-Terphenyl	88%		50-150%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DW00101		
Lab Sample ID:	F6287-2	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	EPA 8310	**Percent Solids:**	76.4
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA000879.D	1	04/23/00	CCJ	04/22/00	OP1473	GAA42
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	440	ug/kg	
208-96-8	Acenaphthylene	ND	870	ug/kg	
120-12-7	Anthracene	ND	440	ug/kg	
56-55-3	Benzo(a)anthracene	ND	87	ug/kg	
50-32-8	Benzo(a)pyrene	ND	87	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	87	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	87	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	87	ug/kg	
218-01-9	Chrysene	ND	87	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	87	ug/kg	
206-44-0	Fluoranthene	ND	440	ug/kg	
86-73-7	Fluorene	ND	440	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	87	ug/kg	
91-20-3	Naphthalene	ND	440	ug/kg	
90-12-0	1-Methylnaphthalene	ND	440	ug/kg	
91-57-6	2-Methylnaphthalene	ND	440	ug/kg	
85-01-8	Phenanthrene	ND	440	ug/kg	
129-00-0	Pyrene	ND	440	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	63%		35-135%
92-94-4	p-Terphenyl	83%		50-150%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39DW00101D		
Lab Sample ID:	F6287-5	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
Method:	EPA 8310	**Percent Solids:**	76.7
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA000880.D	1	04/23/00	CCJ	04/22/00	OP1473	GAA42
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	430	ug/kg	
208-96-8	Acenaphthylene	ND	870	ug/kg	
120-12-7	Anthracene	ND	430	ug/kg	
56-55-3	Benzo(a)anthracene	ND	87	ug/kg	
50-32-8	Benzo(a)pyrene	ND	87	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	87	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	87	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	87	ug/kg	
218-01-9	Chrysene	ND	87	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	87	ug/kg	
206-44-0	Fluoranthene	ND	430	ug/kg	
86-73-7	Fluorene	ND	430	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	87	ug/kg	
91-20-3	Naphthalene	ND	430	ug/kg	
90-12-0	1-Methylnaphthalene	ND	430	ug/kg	
91-57-6	2-Methylnaphthalene	ND	430	ug/kg	
85-01-8	Phenanthrene	ND	430	ug/kg	
129-00-0	Pyrene	ND	430	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	70%		35-135%
92-94-4	p-Terphenyl	92%		50-150%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WV00101		
Lab Sample ID:	F6287-8	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	EPA 8310	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA000836.D	1	04/20/00	CCJ	04/18/00	OP1459	GAA40
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	2.0	ug/l	
208-96-8	Acenaphthylene	ND	2.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	0.20	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	83%		45-130%
92-94-4	p-Terphenyl	100%		50-150%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WW00101		
Lab Sample ID:	F6287-1	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	EPA 8310	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA000834.D	1	04/20/00	CCJ	04/18/00	OP1459	GAA40
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	2.0	ug/l	
208-96-8	Acenaphthylene	ND	2.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	0.20	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	84%		45-130%
92-94-4	p-Terphenyl	102%		50-150%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	39WW00101D		
Lab Sample ID:	F6287-4	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
Method:	EPA 8310	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA000835.D	1	04/20/00	CCJ	04/18/00	OP1459	GAA40
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	2.0	ug/l	
208-96-8	Acenaphthylene	ND	2.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	0.20	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	82%		45-130%
92-94-4	p-Terphenyl	99%		50-150%

ND = Not detected
RL = Reporting 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

APPENDIX C
SUPPORT DOCUMENTATION

CHAIN OF CUSTODY

ACCUTEST

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #: 87000

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: Tetra Tech NUS Inc.
ADDRESS: 1401 Oven Park Dr. Suite 102
CITY, STATE, ZIP: Tallahassee FL 32312
SEND REPORT TO:
PHONE #: 850-385-9899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting Field
LOCATION: Milton, FL
PROJECT NO.: 0052
FAX #: 850-385-9860

ANALYTICAL INFORMATION

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	VOC TCL (HCl)	SVOC	PAH	Pest PCB	Metals	CN	TOC	VOC	SVOC/PAH/Pest PCB/Metals	Grain Size	LAB USE ONLY
F6287-1	39WW00101 MS/MSD	4-14-00	0907		SW							3	2	2	2	1	1	1				
-2	39DW00101 MS/MSD	4-14-00	0914		SD														1	2	1	
-3	39GW00101 MS/MSD	4-14-00	0943		GW							3										
-4	39WW00101D	4-14-00	0907		SW							3	2	2	2	1	1	1				
-5	39DW00101D	4-14-00	0914		SD														1	2	1	
-6	39GW00101D	4-14-00	0943		GW							3										
-1	39WW00101MS	4-14-00	0907 ~~0914~~		SW							3	2	2	2	1	1	1				
-2	39DW00101MS	4-14-00	0914		SD														1	2	1	
-3	39GW00101MS	4-14-00	0943		GW							3										
-7	39TB041400											2			(Trip	Blank	s)					

DATA TURNAROUND INFORMATION

- ☐ STANDARD
- ☐ 48 HOUR RUSH
- ☐ 24 HOUR EMERGENCY
- ☐ OTHER

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- ☐ STANDARD
- ☐ COMMERCIAL "B"
- ☐ DISK DELIVERABLE
- ☐ STATE FORMS
- ☐ OTHER (SPECIFY)

COMMENTS/REMARKS

SW- Surface Water
SD- Sediment

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
[signature]	4-14-00	1. [signature] 4/15/00 1000	2.		2.
3.		3.	4.		4.
5.		6.	SEAL #	PRESERVE WHERE APPLICABLE ☐ ON ICE	TEMPERATURE

CHAIN OF CUSTODY

ACCUTEST

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #:

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: Tetra Tech NUS Inc.
ADDRESS: 1401 Oven Park Dr, Suite 102
CITY, STATE, ZIP: Tallahassee FL 32312
SEND REPORT TO:
PHONE #: 850-385-9899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting Field
LOCATION: Milton, FL
PROJECT NO.: 0052
FAX #: 850-385-9860

ANALYTICAL INFORMATION

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	VOC TCL (HCl)	SVOC	PAH	Pest PCB	Metals	CN	TOC	VOC	SVOC/Pest/Pest PCB/Metals	Grain Size	LAB USE ONLY
-1	39WW00101MD	4-14-00	0907		SW							3	2	2	2	1	1	1				
-2	39DW00101MD	4-14-00	0914		SD														1	2	1	
-3	39GW00101MD	4-14-00	0943		GW							3										
-8	39WV00101	4-14-00	1405		SW							3	2	2	2	1	1	1				
-9	39DV00101	4-14-00	1409		SD														1	2	1	
-10	39GV00101	4-14-00	1422		GW							3										

DATA TURNAROUND INFORMATION

- ☐ STANDARD
- ☐ 48 HOUR RUSH
- ☐ 24 HOUR EMERGENCY
- ☐ OTHER _____

APPROVED BY: _____

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- ☐ STANDARD
- ☐ COMMERCIAL "B"
- ☐ DISK DELIVERABLE
- ☐ STATE FORMS
- ☐ OTHER (SPECIFY) _____

COMMENTS/REMARKS

SW - Surface Water
SD - Sediment

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1. [signature]	4-14-00	1. Rachel 4-17-00 1000	2.		2.
RELINQUISHED BY: 3.	DATE TIME:	RECEIVED BY: 3.	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY:			

CHAIN OF CUSTODY

ACCUTEST

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #:

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: Tetra Tech NUS Inc.
ADDRESS: 1401 Oven Park Drive suite 102
CITY, STATE, ZIP: Tallahassee Fl. 32312
SEND REPORT TO:
PHONE #: 850-385-9899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting Field
LOCATION: Milton Fl.
PROJECT NO.: 0052
FAX #: 850-385-9860

ANALYTICAL INFORMATION

TCL Rest/PCBs/Metals

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	TCL Rest/PCBs/Metals	LAB USE ONLY
-11	05DSB102	4-14-00	0848	JRN	SO	2					X	X	
-12	05DSB202	↓	0900	↓	SO	2					X	X	
-13	05DSB302	↓	0920	↓	SO	2					X	X	
-14	05DSB402	↓	0935	↓	SO	2					X	X	

DATA TURNAROUND INFORMATION

- [X] STANDARD
- [ ] 48 HOUR RUSH
- [ ] 24 HOUR EMERGENCY
- [ ] OTHER

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- [ ] STANDARD
- [ ] COMMERCIAL "B"
- [ ] DISK DELIVERABLE
- [ ] STATE FORMS
- [ ] OTHER (SPECIFY)

COMMENTS/REMARKS

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1. [signature]	4/14/00	1. Radcliff 4/15/00 / 1000	2.		2.
RELINQUISHED BY: 3.	DATE TIME:	RECEIVED BY: 3.	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY:	SEAL #	PRESERVE WHERE APPLICABLE	ON ICE / TEMPERATURE

00076

CHAIN OF CUSTODY

ACCUTEST

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #:

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: ALSE

ADDRESS:

CITY, STATE, ZIP:

SEND REPORT TO:

PHONE #:

FACILITY INFORMATION

PROJECT NAME: F6287

LOCATION:

PROJECT NO.:

FAX #:

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	TOC											LAB USE ONLY
	F6287-1	4/14/00	0907	TTNS	SW	3	X					X					ms/msD					10	
	-4	↓	0907	↓	SW	1	X					X										↓	
	-8	↓	1405	↓	SW	1	X					X										↓	AD 4/17/00

NOT IN LIMS

DATA TURNAROUND INFORMATION

- ☐ STANDARD
- ☐ 48 HOUR RUSH
- ☐ 24 HOUR EMERGENCY
- ☒ OTHER 2 week

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- ☐ STANDARD
- ☐ COMMERCIAL "B"
- ☐ DISK DELIVERABLE
- ☐ STATE FORMS
- ☒ OTHER (SPECIFY) FT1

COMMENTS/REMARKS

N2

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1.	4/17/00	1.	2.	4/18/00 1030	2.
RELINQUISHED BY: 3.	DATE TIME: 1000	RECEIVED BY: 3.	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
RELINQUISHED BY: 5.	DATE TIME:	RECEIVED BY: 5.	SEAL #	PRESERVE WHERE APPLICABLE	ON ICE / TEMPERATURE

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/KG	39DW00101D	F6287-5	NORMAL	F6287	M	04/14/00	04/18/00	04/20/00	4	2	6
UG/L	39WV00101	F6287-8	NORMAL	F6287	M	04/14/00	04/18/00	04/19/00	4	1	5
UG/L	39WW00101	F6287-1	NORMAL	F6287	M	04/14/00	04/18/00	04/19/00	4	1	5
UG/L	39WW00101D	F6287-4	NORMAL	F6287	M	04/14/00	04/18/00	04/19/00	4	1	5
UG/KG	39DV00101	F6287-9	NORMAL	F6287	OS	04/14/00	04/21/00	04/24/00	7	3	10
UG/KG	39DW00101	F6287-2	NORMAL	F6287	OS	04/14/00	04/21/00	04/24/00	7	3	10
UG/KG	39DW00101D	F6287-5	NORMAL	F6287	OS	04/14/00	04/21/00	04/24/00	7	3	10
UG/L	39WV00101	F6287-8	NORMAL	F6287	OS	04/14/00	04/19/00	04/20/00	5	1	6
UG/L	39WW00101	F6287-1	NORMAL	F6287	OS	04/14/00	04/19/00	04/20/00	5	1	6
UG/L	39WW00101D	F6287-4	NORMAL	F6287	OS	04/14/00	04/19/00	04/20/00	5	1	6
UG/KG	39DV00101	F6287-9	NORMAL	F6287	OV	04/14/00	/ /	04/20/00	0	0	6
UG/KG	39DW00101	F6287-2	NORMAL	F6287	OV	04/14/00	/ /	04/20/00	0	0	6
UG/KG	39DW00101D	F6287-5	NORMAL	F6287	OV	04/14/00	/ /	04/20/00	0	0	6
UG/L	39GV00101	F6287-10	NORMAL	F6287	OV	04/14/00	/ /	04/21/00	0	0	7
UG/L	39GW00101	F6287-3	NORMAL	F6287	OV	04/14/00	/ /	04/21/00	0	0	7
UG/L	39GW00101D	F6287-6	NORMAL	F6287	OV	04/14/00	/ /	04/21/00	0	0	7
UG/L	39TB041400	F6287-7	NORMAL	F6287	OV	04/14/00	/ /	04/21/00	0	0	7
UG/L	39WV00101	F6287-8	NORMAL	F6287	OV	04/14/00	/ /	04/21/00	0	0	7
UG/L	39WW00101	F6287-1	NORMAL	F6287	OV	04/14/00	/ /	04/20/00	0	0	6
UG/L	39WW00101D	F6287-4	NORMAL	F6287	OV	04/14/00	/ /	04/21/00	0	0	7
UG/KG	39DV00101	F6287-9	NORMAL	F6287	PAH	04/14/00	04/22/00	04/25/00	8	3	11
UG/KG	39DW00101	F6287-2	NORMAL	F6287	PAH	04/14/00	04/22/00	04/23/00	8	1	9
UG/KG	39DW00101D	F6287-5	NORMAL	F6287	PAH	04/14/00	04/22/00	04/23/00	8	1	9
UG/L	39WV00101	F6287-8	NORMAL	F6287	PAH	04/14/00	04/18/00	04/20/00	4	2	6
UG/L	39WW00101	F6287-1	NORMAL	F6287	PAH	04/14/00	04/18/00	04/20/00	4	2	6
UG/L	39WW00101D	F6287-4	NORMAL	F6287	PAH	04/14/00	04/18/00	04/20/00	4	2	6
UG/KG	05DSB102	F6287-11	NORMAL	F6287	PCB	04/14/00	04/18/00	04/19/00	4	1	5

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/KG	05DSB202	F6287-12	NORMAL	F6287	PCB	04/14/00	04/18/00	04/19/00	4	1	5
UG/KG	05DSB302	F6287-13	NORMAL	F6287	PCB	04/14/00	04/18/00	04/19/00	4	1	5
UG/KG	05DSB402	F6287-14	NORMAL	F6287	PCB	04/14/00	04/18/00	04/20/00	4	2	6
UG/KG	39DV00101	F6287-9	NORMAL	F6287	PCB	04/14/00	04/18/00	04/19/00	4	1	5
UG/KG	39DW00101	F6287-2	NORMAL	F6287	PCB	04/14/00	04/18/00	04/19/00	4	1	5
UG/KG	39DW00101D	F6287-5	NORMAL	F6287	PCB	04/14/00	04/18/00	04/19/00	4	1	5
UG/L	39WV00101	F6287-8	NORMAL	F6287	PCB	04/14/00	04/19/00	04/21/00	5	2	7
UG/L	39WW00101	F6287-1	NORMAL	F6287	PCB	04/14/00	04/19/00	04/21/00	5	2	7
UG/L	39WW00101D	F6287-4	NORMAL	F6287	PCB	04/14/00	04/19/00	04/21/00	5	2	7
UG/KG	05DSB102	F6287-11	NORMAL	F6287	PEST	04/14/00	04/18/00	04/26/00	4	8	12
UG/KG	05DSB202	F6287-12	NORMAL	F6287	PEST	04/14/00	04/18/00	04/26/00	4	8	12
UG/KG	05DSB302	F6287-13	NORMAL	F6287	PEST	04/14/00	04/18/00	04/26/00	4	8	12
UG/KG	05DSB402	F6287-14	NORMAL	F6287	PEST	04/14/00	04/18/00	04/19/00	4	1	5
UG/KG	39DV00101	F6287-9	NORMAL	F6287	PEST	04/14/00	04/18/00	04/19/00	4	1	5
UG/KG	39DW00101	F6287-2	NORMAL	F6287	PEST	04/14/00	04/18/00	04/26/00	4	8	12
UG/KG	39DW00101D	F6287-5	NORMAL	F6287	PEST	04/14/00	04/18/00	04/26/00	4	8	12
UG/L	39WV00101	F6287-8	NORMAL	F6287	PEST	04/14/00	04/19/00	04/24/00	5	5	10
UG/L	39WW00101	F6287-1	NORMAL	F6287	PEST	04/14/00	04/19/00	04/24/00	5	5	10
UG/L	39WW00101D	F6287-4	NORMAL	F6287	PEST	04/14/00	04/19/00	04/24/00	5	5	10
MG/L	39WV00101	F6287-8	NORMAL	F6287	TOC	04/14/00	04/20/00	04/21/00	6	1	7
MG/L	39WW00101	F6287-1	NORMAL	F6287	TOC	04/14/00	04/20/00	04/21/00	6	1	7
MG/L	39WW00101D	F6287-4	NORMAL	F6287	TOC	04/14/00	04/20/00	04/21/00	6	1	7

Instrument Performance Check (BFB)

Job Number: F6287
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: VG353-BFB
Lab File ID: G0012698.D
Instrument ID: GCMSG
Injection Date: 04/20/00
Injection Time: 21:45

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	33508	17.0		Pass
75	30.0 - 60.0% of mass 95	104282	52.8		Pass
95	Base peak, 100% relative abundance	197392	100.0		Pass
96	5.0 - 9.0% of mass 95	13571	6.9		Pass
173	Less than 2.0% of mass 174	0	0.0	(0.0) [a]	Pass
174	50.0 - 100.0% of mass 95	144650	73.3		Pass
175	5.0 - 9.0% of mass 174	11004	5.6	(7.6) [a]	Pass
176	95.0 - 101.0% of mass 174	144098	73.0	(99.6) [a]	Pass
177	5.0 - 9.0% of mass 176	9363	4.7	(6.5) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VG353-CC348	G0012698.D	04/20/00	21:45	00:00	Continuing cal 20
VG353-BS2	G0012699.D	04/20/00	22:23	00:38	Blank Spike
VG352-BS4	G0012699.D	04/20/00	22:23	00:38	Blank Spike
VG353-MB2	G0012700.D	04/20/00	23:02	01:17	Method Blank
VG352-MB4	G0012700.D	04/20/00	23:02	01:17	Method Blank
F6287-1	G0012701.D	04/20/00	23:41	01:56	39WW00101
F6287-3	G0012702.D	04/21/00	00:20	02:35	39GW00101
F6287-4	G0012703.D	04/21/00	00:58	03:13	39WW00101D
F6287-6	G0012704.D	04/21/00	01:37	03:52	39GW00101D
F6287-7	G0012705.D	04/21/00	02:16	04:31	39TB041400
F6287-8	G0012706.D	04/21/00	02:55	05:10	39WV00101
F6287-10	G0012707.D	04/21/00	03:33	05:48	39GV00101
ZZZZZZ	G0012708.D	04/21/00	04:13	06:28	(unrelated sample)
ZZZZZZ	G0012709.D	04/21/00	04:51	07:06	(unrelated sample)
ZZZZZZ	G0012710.D	04/21/00	05:30	07:45	(unrelated sample)

acetone & 2-butanone RRT < 0.05

Response Factor Report MSVOA1

Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : SW-846 Method 8260B & EPA 624 (low level)
Last Update : Sun Apr 16 09:02:59 2000
Response via : Initial Calibration

Calibration Files
1 =G0012567.D 2 =G0012568.D 3 =G0012566.D
4 =G0012569.D 5 =G0012570.D 6 =G0012571.D

		Compound	1	2	3	4	5	6	Avg	%RSD
1)	I	Fluorobenzene	----------ISTD----------							
2)		Dichlorodifluoromet	0.338	0.339	0.417	0.414	0.412	0.398	0.386	9.73
3)	P	Chloromethane		0.120	0.139	0.135	0.135	0.135	0.133	5.70
4)	C	Vinyl Chloride		0.147	0.175	0.171	0.171	0.170	0.167	6.62
5)		Bromomethane		0.170	0.202	0.188	0.184	0.183	0.185	6.28
6)		Chloroethane		0.093	0.121	0.117	0.116	0.113	0.112	9.97
7)		Trichlorofluorometh	0.562	0.566	0.677	0.686	0.687	0.668	0.641	9.36
8)		Acrolein		0.007	0.006	0.008	0.009	0.009	0.008	15.43
9)	C	1,1-Dichloroethene		0.309	0.364	0.369	0.368	0.366	0.355	7.34
10)		Freon 113	0.434	0.430	0.514	0.507	0.508	0.491	~~0.481~~	7.98
11)		Acetone	0.013	0.015	0.015	0.015	0.016	0.016	0.015	7.97
12)		Carbon Disulfide	0.477	0.498	0.595	0.590	0.592	0.580	~~0.555~~	9.54
13)		Methylene Chloride	0.257	0.202	0.225	0.210	0.214	0.217	0.221	8.74
14)		trans-1,2-Dichloroe		0.313	0.362	0.363	0.368	0.362	0.353	6.51
15)		Acrylonitrile		0.017	0.017	0.019	0.021	0.021	~~0.019~~	10.11
16)		Methyl Tert Butyl E		0.406	0.438	0.500	0.498	0.518	0.472	10.06
17)	P	1,1-Dichloroethane	0.345	0.355	0.407	0.403	0.404	0.403	0.386	7.28
18)		Vinyl acetate	0.262	0.250	0.283	0.301	0.279	0.309	0.281	8.01
19)		Di-isopropyl ether	0.594	0.586	0.643	0.651	0.644	0.643	0.627	4.64
20)		2,2-Dichloropropane	0.403	0.448	0.465	0.512	0.469	0.473	0.462	7.72
21)		cis-1,2-Dichloroeth		0.217	0.220	0.243	0.235	0.240	0.231	5.05
22)		2-Butanone	0.025	0.028	0.030	0.030	0.030	0.031	0.029	8.67
23)		Bromochloromethane		0.137	0.143	0.144	0.147	0.147	0.143	2.79
24)	C	Chloroform	0.527	0.535	0.572	0.579	0.588	0.574	0.562	4.48
25)		1,1,1-Trichloroetha		0.521	0.603	0.604	0.618	0.597	0.588	6.53
26)	S	Dibromofluoromethan	0.226	0.230	0.224	0.224	0.228	0.223	0.226	1.27
27)		1,1-Dichloropropene	0.322	0.351	0.397	0.412	0.413	0.394	0.382	9.62
28)		Carbon Tetrachlorid		0.459	0.531	0.567	0.559	0.535	0.530	8.06
29)	S	1,2-Dichloroethane-	0.132	0.137	0.136	0.139	0.146	0.149	0.140	4.47
30)		Benzene	0.654	0.647	0.714	0.742	0.749	0.729	0.706	6.30
31)		1,2-Dichloroethane	0.278	0.280	0.287	0.295	0.302	0.305	0.291	3.87
32)		Trichloroethene		0.295	0.336	0.349	0.355	0.342	0.335	7.08
33)	C	1,2-Dichloropropane	0.214	0.216	0.229	0.236	0.240	0.237	0.229	4.92
34)		Dibromomethane		0.154	0.166	0.173	0.180	0.176	0.170	6.00
35)		1,4-Dioxane	0.000	0.001	0.001	0.001	0.001	0.001	~~0.001#~~	29.52
36)		Bromodichloromethan		0.405	0.448	0.479	0.500	0.501	0.467	8.70
37)		2-Nitropropane	0.023	0.024	0.027	0.029	0.030	0.032	~~0.028~~	13.11
38)		2-Chloroethyl vinyl		0.080	0.089	0.094	0.099	0.100	0.093	8.86
39)		4-Methyl-2-pentanon	0.095	0.093	0.100	0.099	0.100	0.105	0.098	4.46
40)		cis-1,3-Dichloropro		0.323	0.367	0.390	0.387	0.393	0.372	7.86
	I	Chlorobenzene-d5	----------ISTD----------							
	S	Toluene-d8	0.629	0.665	0.646	0.668	0.661	0.684	0.659	2.92

= Out of Range

000183

Response Factor Report MSVOA1

Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : SW-846 Method 8260B & EPA 624 (low level)
Last Update : Sun Apr 16 09:02:59 2000
Response via : Initial Calibration

Calibration Files
1 =G0012567.D 2 =G0012568.D 3 =G0012566.D
4 =G0012569.D 5 =G0012570.D 6 =G0012571.D

		Compound	1	2	3	4	5	6	Avg	%RSD
)	C	Toluene		1.083	1.209	1.243	1.244	1.221	1.200	5.60
)		trans-1,3-Dichlorop		0.335	0.377	0.416	0.416	0.448	0.398	10.90
)		1,1,2-Trichloroetha		0.183	0.194	0.217	0.214	0.221	0.206	7.99
)		Tetrachloroethene		0.447	0.519	0.541	0.545	0.534	0.517	7.81
)		2-hexanone	0.077	0.078	0.084	0.089	0.088	0.093	0.085	7.45
)		1,3-Dichloropropane	0.340	0.384	0.398	0.426	0.426	0.431	0.401	8.70
)		Dibromochloromethan		0.359	0.395	0.444	0.450	0.473	0.424	10.90
)		1,2-Dibromoethane		0.282	0.291	0.317	0.329	0.337	0.311	7.65
)		1-Chlorohexane	0.459	0.455	0.519	0.542	0.540	0.533	0.508	7.93
)	P	Chlorobenzene	0.843	0.837	0.928	0.940	0.928	0.912	0.898	5.10
)		1,1,1,2-Tetrachloro		0.395	0.429	0.458	0.454	0.465	0.440	6.53
)	C	Ethylbenzene	1.300	1.392	1.503	1.537	1.533	1.480	1.457	6.42
		m,p-Xylene	1.100	1.171	1.295	1.309	1.282	1.274	1.239	6.78
		o-Xylene	1.097	1.180	1.317	1.328	1.288	1.297	1.251	7.38
		Styrene	0.721	0.766	0.863	0.899	0.881	0.907	0.839	9.22
	P	Bromoform		0.212	0.231	0.258	0.270	0.299	0.254	13.33
	I	1,4-Dichlorobenzene-d	----------ISTD----------							
		Isopropylbenzene	2.555	2.474	2.837	2.900	2.823	2.737	2.721	6.25
	S	4-Bromofluorobenzen	0.609	0.586	0.581	0.581	0.575	0.595	0.588	2.10
		Bromobenzene	0.601	0.632	0.705	0.708	0.700	0.711	0.676	6.99
	P	1,1,2,2-Tetrachloro	0.412	0.438	0.467	0.492	0.480	0.513	0.467	7.85
		1,2,3-Trichloroprop	0.121	0.161	0.154	0.159	0.153	0.163	0.152	10.35
		n-Propylbenzene	2.774	2.773	3.147	3.179	3.053	3.055	2.997	6.01
		2-Chlorotoluene	1.863	1.831	2.079	2.102	2.045	1.983	1.984	5.73
		4-Chlorotoluene	2.018	2.175	2.361	2.393	2.375	2.337	2.277	6.55
		1,3,5-Trimethylbenz	2.143	2.100	2.326	2.366	2.312	2.230	2.246	4.76
		sec-Butylbenzene	2.781	2.539	2.923	2.951	2.947	2.853	2.832	5.56
		1,3-Dichlorobenzene	1.270	1.171	1.311	1.296	1.293	1.273	1.269	3.96
		4-Isopropyltoluene	2.294	2.138	2.383	2.429	2.437	2.303	2.331	4.81
		1,4-Dichlorobenzene	1.339	1.281	1.338	1.363	1.370	1.353	1.341	2.37
		tert-Butylbenzene	1.763	1.651	1.848	1.833	1.818	1.788	1.783	4.03
		n-Butylbenzene	1.875	1.906	2.163	2.159	2.233	2.172	2.085	7.36
		1,2-Dichlorobenzene	1.153	1.064	1.178	1.162	1.154	1.167	1.146	3.62
		1,2,4-Trimethylbenz	2.207	2.096	2.326	2.341	2.321	2.236	2.254	4.20
		1,2-Dibromo-3-Chlor	0.091	0.089	0.089	0.096	0.106	0.114	0.097	10.57
		1,2,4-Trichlorobenz	0.717	0.675	0.733	0.835	0.855	0.899	0.786	11.37
		Hexachlorobutadiene	0.381	0.352	0.397	0.400	0.420	0.411	0.394	6.19
		Naphthalene	0.940	0.808	0.889	1.003	1.069	1.147	0.976	12.61
		1,2,3-Trichlorobenz	0.678	0.609	0.662	0.752	0.761	0.763	0.704	9.11

* Out of Range

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\042000\G0012698.D
Acq On : 20 Apr 2000 9:45 pm
Sample : CC348-20
Misc : ms528,vg353,,,,,
MS Integration Params: RTEINT.P

Vial: 19
Operator: ClaudiaP
Inst : MSVOA1
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : SW-846 Method 8260B & EPA 624 (low level)
Last Update : Sun Apr 16 09:02:59 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorobenzene	1.000	1.000	0.0	85	0.00
2		Dichlorodifluoromethane	0.386	0.305	21.0	63	-0.03
3	P	Chloromethane	0.133	0.122	8.3	77	-0.02
4	C	Vinyl Chloride	0.167	0.159	4.8	79	0.00
5		Bromomethane	0.185	0.176	4.9	80	-0.02
6		Chloroethane	0.112	0.109	2.7	79	-0.02
7		Trichlorofluoromethane	0.641	0.665	-3.7	83	0.00
8		Acrolein	0.008	0.002	75.0#	22#	0.00
9	C	1,1-Dichloroethene	0.355	0.323	9.0	75	-0.02
0		Freon 113	0.481	0.413	14.1	70	-0.02
1		Acetone	0.015	0.017	-13.3	95	0.00
2		Carbon Disulfide	0.555	0.490	11.7	71	0.00
3		Methylene Chloride	0.221	0.206	6.8	84	-0.03
4		trans-1,2-Dichloroethene	0.353	0.329	6.8	77	0.00
5		Acrylonitrile	0.019	0.020	-5.3	90	0.00
6		Methyl Tert Butyl Ether	0.472	0.483	-2.3	82	-0.02
7	P	1,1-Dichloroethane	0.386	0.369	4.4	78	-0.04
8		Vinyl acetate	0.281	0.277	1.4	79	-0.02
9		Di-isopropyl ether	0.627	0.621	1.0	81	0.00
0		2,2-Dichloropropane	0.462	0.382	17.3	64	0.00
1		cis-1,2-Dichloroethene	0.231	0.211	8.7	74	-0.02
2		2-Butanone	0.029	0.032	-10.3	90	-0.02
3		Bromochloromethane	0.143	0.138	3.5	81	-0.02
4	C	Chloroform	0.562	0.535	4.8	79	-0.02
5		1,1,1-Trichloroethane	0.588	0.557	5.3	79	0.00
6	S	Dibromofluoromethane	0.226	0.221	2.2	84	0.00
7		1,1-Dichloropropene	0.382	0.371	2.9	77	0.00
8		Carbon Tetrachloride	0.530	0.510	3.8	77	-0.02
9	S	1,2-Dichloroethane-d4	0.140	0.143	-2.1	87	0.00
0		Benzene	0.706	0.693	1.8	80	0.00
1		1,2-Dichloroethane	0.291	0.298	-2.4	86	0.00
2		Trichloroethene	0.335	0.326	2.7	80	0.00
3	C	1,2-Dichloropropane	0.229	0.230	-0.4	83	-0.02
4		Dibromomethane	0.170	0.170	0.0	84	0.00
5		1,4-Dioxane	0.001	0.001	0.0	135	0.00
6		Bromodichloromethane	0.467	0.476	-1.9	85	0.00
7		2-Nitropropane	0.028	0.034	-21.4	100	0.00
8		2-Chloroethyl vinyl ether	0.093	0.093	0.0	84	0.00
9		4-Methyl-2-pentanone	0.098	0.103	-5.1	89	0.00
0		cis-1,3-Dichloropropene	0.372	0.370	0.5	81	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\042000\G0012698.D
Acq On : 20 Apr 2000 9:45 pm
Sample : CC348-20
Misc : ms528,vg353,,,,,
MS Integration Params: RTEINT.P

Vial: 19
Operator: ClaudiaP
Inst : MSVOA1
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : SW-846 Method 8260B & EPA 624 (low level)
Last Update : Sun Apr 16 09:02:59 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
2	S	Toluene-d8	0.659	0.660	-0.2	89	0.00
3	C	Toluene	1.200	1.125	6.2	82	0.00
4		trans-1,3-Dichloropropene	0.398	0.378	5.0	82	0.00
5		1,1,2-Trichloroethane	0.206	0.203	1.5	84	-0.02
6		Tetrachloroethene	0.517	0.473	8.5	79	0.00
7		2-hexanone	0.085	0.087	-2.4	88	0.00
8		1,3-Dichloropropane	0.401	0.406	-1.2	86	0.00
9		Dibromochloromethane	0.424	0.422	0.5	86	0.00
0		1,2-Dibromoethane	0.311	0.304	2.3	87	0.00
1		1-Chlorohexane	0.508	0.473	6.9	79	0.00
2	P	Chlorobenzene	0.898	0.861	4.1	83	0.00
3		1,1,1,2-Tetrachloroethane	0.440	0.429	2.5	85	0.00
4	C	Ethylbenzene	1.457	1.429	1.9	84	0.00
5		m,p-Xylene	1.239	1.206	2.7	83	0.00
6		o-Xylene	1.251	1.212	3.1	83	0.00
7		Styrene	0.839	0.677	19.3	68	0.00
8	P	Bromoform	0.254	0.244	3.9	85	0.00
9	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	92	-0.02
0		Isopropylbenzene	2.721	2.561	5.9	82	0.00
1	S	4-Bromofluorobenzene	0.588	0.587	0.2	93	0.00
2		Bromobenzene	0.676	0.655	3.1	86	-0.02
3	P	1,1,2,2-Tetrachloroethane	0.467	0.476	-1.9	89	0.00
4		1,2,3-Trichloropropane	0.152	0.157	-3.3	91	-0.02
5		n-Propylbenzene	2.997	2.759	7.9	80	-0.02
6		2-Chlorotoluene	1.984	1.889	4.8	83	-0.02
7		4-Chlorotoluene	2.277	2.216	2.7	86	0.00
8		1,3,5-Trimethylbenzene	2.246	2.115	5.8	83	0.00
9		sec-Butylbenzene	2.832	2.577	9.0	81	-0.02
0		1,3-Dichlorobenzene	1.269	1.194	5.9	85	0.00
1		4-Isopropyltoluene	2.331	2.193	5.9	83	-0.02
2		1,4-Dichlorobenzene	1.341	1.227	8.5	83	0.00
3		tert-Butylbenzene	1.783	1.666	6.6	84	-0.02
4		n-Butylbenzene	2.085	1.911	8.3	82	0.00
5		1,2-Dichlorobenzene	1.146	1.081	5.7	86	0.00
6		1,2,4-Trimethylbenzene	2.254	2.164	4.0	85	-0.02
7		1,2-Dibromo-3-Chloropropane	0.097	0.099	-2.1	96	0.00
8		1,2,4-Trichlorobenzene	0.786	0.781	0.6	86	0.00
9		Hexachlorobutadiene	0.394	0.333	15.5	77	0.01
0		Naphthalene	0.976	0.996	-2.0	92	-0.02
1		1,2,3-Trichlorobenzene	0.704	0.686	2.6	84	-0.02

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Volatile Internal Standard Area Summary

Job Number: F6287
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Check Std: VG353-CC348 **Injection Date:** 04/20/00
Lab File ID: G0012698.D **Injection Time:** 21:45
Instrument ID: GCMSG

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Check Std	1697632	11.33	1334443	16.43	830756	20.57
Upper Limit [a]	3395264	11.83	2668886	16.93	1661512	21.07
Lower Limit [b]	848816	10.83	667222	15.93	415378	20.07

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
VG353-BS2	1750000	11.33	1318238	16.42	814966	20.57
VG352-BS4	1750000	11.33	1318238	16.42	814966	20.57
VG353-MB2	1746110	11.33	1331470	16.43	788938	20.57
VG352-MB4	1746110	11.33	1331470	16.43	788938	20.57
F6287-1	1696243	11.34	1368717	16.43	814004	20.57
F6287-3	1731003	11.33	1365642	16.43	791599	20.57
F6287-4	1736638	11.34	1341162	16.42	789253	20.57
F6287-6	1693410	11.33	1400141	16.43	812212	20.56
F6287-7 [c]	1750219	11.34	1355273	16.42	787711	20.56
F6287-8	1675713	11.32	1382197	16.43	818583	20.56
F6287-10	1743798	11.32	1320931	16.43	801107	20.57
ZZZZZZ	1680434	11.33	1392827	16.43	838065	20.56
ZZZZZZ	1697712	11.32	1357567	16.42	851764	20.57
ZZZZZZ	1752408	11.33	1392874	16.43	808250	20.59

IS 1 = Fluorobenzene
IS 2 = Chlorobenzene-D5
IS 3 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of internal standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of internal standard area; Retention time -0.5 minutes.
(c) Sample vial(s) contained significant headspace; reported results are considered minimum values.

Instrument Performance Check (BFB)

Job Number: F6287
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: VH67-BFB
Lab File ID: H007034.D
Instrument ID: GCMSH
Injection Date: 04/20/00
Injection Time: 09:31

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	44157	24.3		Pass
75	30.0 - 60.0% of mass 95	98952	54.5		Pass
95	Base peak, 100% relative abundance	181568	100.0		Pass
96	5.0 - 9.0% of mass 95	12874	7.1		Pass
173	Less than 2.0% of mass 174	0	0.0	(0.0) [a]	Pass
174	50.0 - 100.0% of mass 95	127744	70.4		Pass
175	5.0 - 9.0% of mass 174	9330	5.1	(7.3) [a]	Pass
176	95.0 - 101.0% of mass 174	124779	68.7	(97.7) [a]	Pass
177	5.0 - 9.0% of mass 176	8901	4.9	(7.1) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VH67-CC67	H007035.D	04/20/00	09:48	00:17	Continuing cal 40
VH67-BS4	H007036.D	04/20/00	10:28	00:57	Blank Spike
VH69-BS	H007036.D	04/20/00	10:28	00:57	Blank Spike
ZZZZZZ	H007040.D	04/20/00	13:37	04:06	(unrelated sample)
ZZZZZZ	H007041.D	04/20/00	14:17	04:46	(unrelated sample)
ZZZZZZ	H007042.D	04/20/00	14:57	05:26	(unrelated sample)
ZZZZZZ	H007043.D	04/20/00	15:36	06:05	(unrelated sample)
ZZZZZZ	H007044.D	04/20/00	16:16	06:45	(unrelated sample)
VH67-MB4	H007045.D	04/20/00	16:56	07:25	Method Blank
VH69-MB	H007045.D	04/20/00	16:56	07:25	Method Blank
F6287-2	H007046.D	04/20/00	17:36	08:05	39DW00101
F6287-5	H007047.D	04/20/00	18:17	08:46	39DW00101D
F6287-9	H007048.D	04/20/00	18:57	09:26	39DV00101
ZZZZZZ	H007049.D	04/20/00	19:38	10:07	(unrelated sample)
F6287-2MS	H007050.D	04/20/00	20:19	10:48	Matrix Spike
F6287-2MSD	H007051.D	04/20/00	20:59	11:28	Matrix Spike Duplicate

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\042000\H007035.D
Acq On : 20 Apr 2000 9:48 am
Sample : CC67-40
Misc : ms479,vh48,,,,,
MS Integration Params: RTEINT.P

Vial: 1
Operator: ClaudiaP
Inst : MSVOA3
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\8260S.M (RTE Integrator)
Title : SWA 5035/8260B
Last Update : Tue Apr 18 08:47:20 2000
Response via : Multiple Level Calibration

CP

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorobenzene	1.000	1.000	0.0	125	-0.03
2		Dichlorodifluoromethane	0.321	0.327	-1.9	135	-0.03
3	P	Chloromethane	0.455	0.431	5.3	127	-0.02
4	C	Vinyl Chloride	0.387	0.397	-2.6	135	-0.03
5		Bromomethane	0.185	0.206	-11.4	144	-0.04
6		Chloroethane	0.219	0.241	-10.0	141	-0.02
7		Trichlorofluoromethane	0.450	0.485	-7.8	140	-0.03
8		~~Acrolein~~	~~0.045~~	~~0.047~~	~~-4.4~~	142	-0.03
9	C	1,1-Dichloroethene	0.518	0.527	-1.7	126	-0.04
10		Freon 113	0.268	0.293	-9.3	134	-0.04
11		Acetone	0.138	0.142	-2.9	135	-0.04
12		Carbon Disulfide	0.927	0.945	-1.9	124	-0.02
13		Methylene Chloride	0.515	0.474	8.0	110	-0.04
14		trans-1,2-Dichloroethene	0.550	0.567	-3.1	127	-0.03
15		Acrylonitrile	0.144	0.145	-0.7	134	-0.04
16		Methyl Tert Butyl Ether	0.912	0.898	1.5	121	-0.04
17	P	1,1-Dichloroethane	0.599	0.609	-1.7	125	-0.03
18		Vinyl acetate	0.862	0.834	3.2	121	-0.03
19		Di-isopropyl ether	1.193	1.198	-0.4	122	-0.03
20		2,2-Dichloropropane	0.372	0.380	-2.2	124	-0.03
21		cis-1,2-Dichloroethene	0.295	0.299	-1.4	123	-0.03
22		2-Butanone	0.167	0.166	0.6	137	-0.04
23		Bromochloromethane	0.144	0.142	1.4	120	-0.03
24	C	Chloroform	0.610	0.593	2.8	121	-0.03
25		1,1,1-Trichloroethane	0.473	0.474	-0.2	122	-0.03
26	S	Dibromofluoromethane	0.252	0.249	1.2	123	-0.04
27		1,1-Dichloropropene	0.435	0.441	-1.4	126	-0.03
28		Carbon Tetrachloride	0.316	0.331	-4.7	126	-0.04
29	S	1,2-Dichloroethane-d4	0.376	0.387	-2.9	129	-0.04
30		Benzene	1.187	1.167	1.7	121	-0.04
31		1,2-Dichloroethane	0.544	0.518	4.8	118	-0.04
32		Trichloroethene	0.325	0.327	-0.6	125	-0.03
33	C	1,2-Dichloropropane	0.329	0.320	2.7	121	-0.03
34		Dibromomethane	0.178	0.175	1.7	123	-0.03
35		~~1,4-Dioxane~~	~~0.004~~	~~0.003~~	~~25.0~~	119	-0.03
36		Bromodichloromethane	0.417	0.411	1.4	121	-0.03
37		2-Nitropropane	0.089	0.097	-9.0	154	-0.03
38		2-Chloroethyl vinyl ether	0.152	0.153	-0.7	132	-0.03
39		4-Methyl-2-pentanone	0.396	0.389	1.8	129	-0.03
40		cis-1,3-Dichloropropene	0.444	0.438	1.4	123	-0.03

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\042000\H007035.D Vial: 1
Acq On : 20 Apr 2000 9:48 am Operator: ClaudiaP
Sample : CC67-40 Inst : MSVOA3
Misc : ms479,vh48,,,,, Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\HPCHEM\1\METHODS\8260S.M (RTE Integrator)
Title : SWA 5035/8260B
Last Update : Tue Apr 18 08:47:20 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
2	S	Toluene-d8	1.326	1.357	-2.3	120	-0.03
3	C	Toluene	1.620	1.706	-5.3	121	-0.03
4		trans-1,3-Dichloropropene	0.521	0.521	0.0	120	-0.03
5		1,1,2-Trichloroethane	0.310	0.317	-2.3	117	-0.03
6		Tetrachloroethene	0.400	0.442	-10.5	130	-0.03
7		2-hexanone	0.376	0.390	-3.7	131	-0.03
8		1,3-Dichloropropane	0.597	0.620	-3.9	125	-0.03
9		Dibromochloromethane	0.352	0.362	-2.8	123	-0.03
0		1,2-Dibromoethane	0.303	0.330	-8.9	130	-0.03
1		1-Chlorohexane	0.483	0.563	-16.6	139	-0.03
2	P	Chlorobenzene	1.015	1.075	-5.9	122	-0.03
3		1,1,1,2-Tetrachloroethane	0.347	0.371	-6.9	122	-0.02
4	C	Ethylbenzene	1.839	1.960	-6.6	124	-0.03
5		m,p-Xylene	1.503	1.605	-6.8	124	-0.03
6		o-Xylene	1.567	1.633	-4.2	122	-0.03
7		Styrene	1.060	1.128	-6.4	122	-0.03
8	P	Bromoform	0.236	0.233	1.3	121	-0.03
9	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	107	-0.04
0		Isopropylbenzene	2.958	3.486	-17.8	127	-0.03
1	S	4-Bromofluorobenzene	1.070	1.123	-5.0	114	-0.03
2		Bromobenzene	0.747	0.832	-11.4	119	-0.02
3	P	1,1,2,2-Tetrachloroethane	0.886	0.964	-8.8	120	-0.03
4		1,2,3-Trichloropropane	0.254	0.287	-13.0	131	-0.03
5		n-Propylbenzene	3.676	4.347	-18.3	128	-0.03
6		2-Chlorotoluene	2.470	2.771	-12.2	122	-0.03
7		4-Chlorotoluene	2.530	2.892	-14.3	123	-0.02
8		1,3,5-Trimethylbenzene	2.615	3.030	-15.9	125	-0.03
9		sec-Butylbenzene	3.028	3.582	-18.3	127	-0.03
0		1,3-Dichlorobenzene	1.420	1.629	-14.7	120	-0.03
1		4-Isopropyltoluene	2.379	2.834	-19.1	128	-0.03
2		1,4-Dichlorobenzene	1.448	1.632	-12.7	121	-0.03
3		tert-Butylbenzene	1.736	1.987	-14.5	124	-0.03
4		n-Butylbenzene	2.493	2.984	-19.7	127	-0.03
5		1,2-Dichlorobenzene	1.359	1.479	-8.8	115	-0.04
6		1,2,4-Trimethylbenzene	2.636	3.039	-15.3	124	-0.03
7		1,2-Dibromo-3-Chloropropane	0.181	0.190	-5.0	121	-0.02
8		1,2,4-Trichlorobenzene	0.927	1.088	-17.4	125	-0.02
9		Hexachlorobutadiene	0.526	0.608	-15.6	126	-0.02
0		Naphthalene	2.177	2.413	-10.8	125	-0.02
1		1,2,3-Trichlorobenzene	0.886	0.981	-10.7	121	-0.02

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Volatile Internal Standard Area Summary

Job Number: F6287
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Check Std: VH67-CC67 **Injection Date:** 04/20/00
Lab File ID: H007035.D **Injection Time:** 09:48
Instrument ID: GCMSH

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Check Std	1428203	14.36	1019717	19.59	524792	23.96
Upper Limit [a]	2856406	14.86	2039434	20.09	1049584	24.46
Lower Limit [b]	714102	13.86	509859	19.09	262396	23.46

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
VH67-BS4	1197204	14.36	867674	19.59	481894	23.96
VH69-BS	1197204	14.36	867674	19.59	481894	23.96
ZZZZZZ	1522395	14.36	1047366	19.60	436848	23.96
ZZZZZZ	1326246	14.36	919919	19.60	448450	23.97
ZZZZZZ	1416485	14.38	985670	19.60	501847	23.97
ZZZZZZ	1483293	14.37	1041756	19.60	523386	23.96
ZZZZZZ	1464384	14.37	1034898	19.61	519178	23.98
VH67-MB4	1437508	14.38	1012712	19.61	509571	23.97
VH69-MB	1437508	14.38	1012712	19.61	509571	23.97
F6287-2 [c]	1488084	14.39	1061166	19.61	543968	23.98
F6287-5 [c]	1434387	14.39	1026259	19.62	491397	23.98
F6287-9 [c]	1511549	14.39	1089059	19.62	544009	23.98
ZZZZZZ	1395508	14.39	1037285	19.62	524501	23.98
F6287-2MS	1295425	14.38	963738	19.61	504937	23.97
F6287-2MSD	1337634	14.38	1012651	19.61	530987	23.97

IS 1 = Fluorobenzene
IS 2 = Chlorobenzene-D5
IS 3 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of internal standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of internal standard area; Retention time -0.5 minutes.
(c) Sample introduction performed using method 5030A.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: F6287
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1462-MS	W001503.D	1	04/20/00	ME	04/19/00	OP1462	SW99
OP1462-MSD	W001504.D	1	04/20/00	ME	04/19/00	OP1462	SW99
F6287-1	W001502.D	1	04/20/00	ME	04/19/00	OP1462	SW99

The QC reported here applies to the following samples: **Method:** SW846 3510C/8270C

F6287-1, F6287-4, F6287-8

CAS No.	Compound	F6287-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
106-46-7	1,4-Dichlorobenzene	ND		50	40.6	81	41.1	82	1	33-125/21
121-14-2	2,4-Dinitrotoluene	ND		50	43.4	87	48.8	98	12	56-145/15
606-20-2	2,6-Dinitrotoluene	ND		50	47.1	94	51.2	102	8	54-145/22
91-94-1	3,3'-Dichlorobenzidine	ND		50	35.2	70	36.5	73	4	12-146/39
53-70-3	Dibenzo(a,h)anthracene	ND		50	49.4	99	46.9	94	5	39-134/38
132-64-9	Dibenzofuran	ND		50	42.0	84	45.7	91	8	60-125/22
84-74-2	Di-n-butyl phthalate	ND		50	42.1	84	46.0	92	9	56-125/16
117-84-0	Di-n-octyl phthalate	ND		50	41.6	83	45.5	91	9	30-133/26
84-66-2	Diethyl phthalate	ND		50	43.2	86	48.8	98	12*	51-125/11
131-11-3	Dimethyl phthalate	ND		50	41.5	83	45.2	90	8	15-125/13
117-81-7	bis(2-Ethylhexyl)phthalate	ND		50	42.0	84	45.9	92	9	34-142/41
206-44-0	Fluoranthene	ND		50	44.0	88	47.3	95	7	56-135/22
86-73-7	Fluorene	ND		50	44.0	88	48.0	96	9	58-125/16
118-74-1	Hexachlorobenzene	ND		50	45.3	91	48.1	96	6	50-145/19
87-68-3	Hexachlorobutadiene	ND		50	35.1	70	34.4	69	2	28-125/53
77-47-4	Hexachlorocyclopentadiene	ND		50	27.0	54	23.4	47	14	17-140/66
67-72-1	Hexachloroethane	ND		50	40.6	81	37.6	75	8	18-157/29
193-39-5	Indeno(1,2,3-cd)pyrene	ND		50	47.8	96	47.6	95	0	53-134/30
78-59-1	Isophorone	ND		50	37.2	74	42.1	84	12	44-125/21
91-57-6	2-Methylnaphthalene	ND		50	40.4	81	44.6	89	10	35-125/18
88-74-4	2-Nitroaniline	ND		50	41.9	84	45.8	92	9	54-125/20
99-09-2	3-Nitroaniline	ND		50	37.9	76	38.7	77	2	44-125/21
100-01-6	4-Nitroaniline	ND		50	40.1	80	44.2	88	10	44-125/20
91-20-3	Naphthalene	ND		50	43.3	87	47.5	95	9	22-131/26
98-95-3	Nitrobenzene	ND		50	39.8	80	45.2	90	13	37-125/22
621-64-7	N-Nitroso-di-n-propylamine	ND		50	38.0	76	42.1	84	10	45-125/21
86-30-6	N-Nitrosodiphenylamine	ND		50	45.4	91	50.4	101	10	61-127/22
85-01-8	Phenanthrene	ND		50	46.1	92	49.7	99	8	64-125/16
129-00-0	Pyrene	ND		50	46.5	93	49.7	99	7	47-142/45
120-82-1	1,2,4-Trichlorobenzene	ND		50	38.1	76	40.4	81	6	36-125/23

CAS No.	Surrogate Recoveries	MS	MSD	F6287-1	Limits
367-12-4	2-Fluorophenol	48%	55%	53%	21-100%
4165-62-2	Phenol-d5	31%	36%	35%	10-94%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: F6287
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1472-MS	W001527.D	1	04/24/00	ME	04/21/00	OP1472	SW100
OP1472-MSD	W001528.D	1	04/24/00	ME	04/21/00	OP1472	SW100
F6287-2	W001526.D	1	04/24/00	ME	04/21/00	OP1472	SW100

The QC reported here applies to the following samples: **Method:** SW846 3550B/8270C

F6287-2, F6287-5, F6287-9

CAS No.	Compound	F6287-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic acid	ND		2180	1170	54	1190	54	2	5-125/52
95-57-8	2-Chlorophenol	ND		2180	1430	66	1540	71	7	56-125/14
59-50-7	4-Chloro-3-methyl phenol	ND		2180	1600	73	1700	78	6	56-125/10
120-83-2	2,4-Dichlorophenol	ND		2180	1530	70	1660	76	8	59-125/12
105-67-9	2,4-Dimethylphenol	ND		2180	1150	53	1140	52	1	30-139/17
51-28-5	2,4-Dinitrophenol	ND		2180	1850	85	1930	88	4	5-125/48
534-52-1	4,6-Dinitro-o-cresol	ND		2180	1380	63	1420	65	3	16-125/24
95-48-7	2-Methylphenol	ND		2180	1450	66	1560	72	7	57-125/13
	3&4-Methylphenol	ND		4360	3080	71	3370	77	9	49-125/14
88-75-5	2-Nitrophenol	ND		2180	1540	71	1650	76	7	56-125/15
100-02-7	4-Nitrophenol	ND		2180	1490	68	1710	78	14	25-141/22
87-86-5	Pentachlorophenol	ND		2180	1570	72	1600	73	2	20-126/21
108-95-2	Phenol	ND		2180	1500	69	1660	76	10	48-125/12
95-95-4	2,4,5-Trichlorophenol	ND		2180	1760	81	1780	82	1	59-125/15
88-06-2	2,4,6-Trichlorophenol	ND		2180	1700	78	1710	78	0	54-125/17
83-32-9	Acenaphthene	ND		2180	1730	79	1770	81	2	62-125/14
208-96-8	Acenaphthylene	ND		2180	1900	87	1940	89	2	75-137/13
120-12-7	Anthracene	ND		2180	1890	87	1870	86	1	68-125/12
56-55-3	Benzo(a)anthracene	ND		2180	1850	85	1810	83	2	64-126/22
50-32-8	Benzo(a)pyrene	ND		2180	1940	89	1930	88	0	60-133/16
205-99-2	Benzo(b)fluoranthene	ND		2180	1820	83	1780	82	2	54-130/20
191-24-2	Benzo(g,h,i)perylene	ND		2180	2060	94	2100	96	2	34-174/29
207-08-9	Benzo(k)fluoranthene	ND		2180	1950	89	1860	85	5	55-128/20
101-55-3	4-Bromophenyl phenyl ether	ND		2180	1820	83	1740	80	4	56-125/18
85-68-7	Butyl benzyl phthalate	ND		2180	1480	68	1490	68	1	68-134/15
100-51-6	Benzyl Alcohol	ND		2180	1530	70	1540	71	1	52-125/16
91-58-7	2-Chloronaphthalene	ND		2180	1710	78	1780	82	4	64-125/18
106-47-8	4-Chloroaniline	ND		2180	1260	58	1440	66	13*	49-125/12
86-74-8	Carbazole	ND		2180	1780	82	1770	81	0	46-141/13
218-01-9	Chrysene	ND		2180	1830	84	1790	82	2	57-130/16
111-91-1	bis(2-Chloroethoxy)methane	ND		2180	1420	65	1500	69	5	43-138/15
111-44-4	bis(2-Chloroethyl)ether	ND		2180	1350	62	1450	66	7	39-136/14
108-60-1	bis(2-Chloroisopropyl)ether	ND		2180	1440	66	1540	71	7	59-125/15
7005-72-3	4-Chlorophenyl phenyl ether	ND		2180	1650	76	1640	75	1	66-125/12
95-50-1	1,2-Dichlorobenzene	ND		2180	1440	66	1530	70	6	57-125/15
541-73-1	1,3-Dichlorobenzene	ND		2180	1390	64	1480	68	6	55-125/14

Instrument Performance Check (DFTPP)

Job Number: F6287
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: SW99-DFTPP
Lab File ID: W001495.D
Instrument ID: GCMSW
Injection Date: 04/20/00
Injection Time: 10:51

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	72685	47.6		Pass
68	Less than 2.0% of mass 69	766	0.5	(1.5) [a]	Pass
69	Mass 69 relative abundance	50691	33.2		Pass
70	Less than 2.0% of mass 69	298	0.2	(0.59) [a]	Pass
127	40.0 - 60.0% of mass 198	74771	49.0		Pass
197	Less than 1.0% of mass 198	139	0.09		Pass
198	Base peak, 100% relative abundance	152603	100.0		Pass
199	5.0 - 9.0% of mass 198	10357	6.8		Pass
275	10.0 - 30.0% of mass 198	28970	19.0		Pass
365	1.0 - 100.0% of mass 198	2893	1.9		Pass
441	Present, but less than mass 443	12689	8.3	(75.4) [b]	Pass
442	40.0 - 100.0% of mass 198	82713	54.2		Pass
443	17.0 - 23.0% of mass 442	16829	11.0	(20.3) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
SW99-CC93	W001496.D	04/20/00	11:09	00:18	Continuing cal 75
OP1462-BS	W001497.D	04/20/00	11:39	00:48	Blank Spike
OP1462-MB	W001498.D	04/20/00	12:10	01:19	Method Blank
ZZZZZZ	W001499.D	04/20/00	12:40	01:49	(unrelated sample)
ZZZZZZ	W001500.D	04/20/00	13:10	02:19	(unrelated sample)
ZZZZZZ	W001501.D	04/20/00	13:40	02:49	(unrelated sample)
F6287-1	W001502.D	04/20/00	14:11	03:20	39WW00101
OP1462-MS	W001503.D	04/20/00	14:41	03:50	Matrix Spike
OP1462-MSD	W001504.D	04/20/00	15:11	04:20	Matrix Spike Duplicate
F6287-4	W001505.D	04/20/00	15:41	04:50	39WW00101D
F6287-8	W001506.D	04/20/00	16:12	05:21	39WV00101
ZZZZZZ	W001507.D	04/20/00	16:43	05:52	(unrelated sample)
ZZZZZZ	W001508.D	04/20/00	17:13	06:22	(unrelated sample)
ZZZZZZ	W001509.D	04/20/00	17:43	06:52	(unrelated sample)
ZZZZZZ	W001510.D	04/20/00	18:13	07:22	(unrelated sample)
ZZZZZZ	W001511.D	04/20/00	18:44	07:53	(unrelated sample)
ZZZZZZ	W001512.D	04/20/00	19:14	08:23	(unrelated sample)
ZZZZZZ	W001513.D	04/20/00	19:44	08:53	(unrelated sample)
ZZZZZZ	W001514.D	04/20/00	20:15	09:24	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: F6287
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: SW99-DFTPP
Lab File ID: W001495.D
Instrument ID: GCMSW
Injection Date: 04/20/00
Injection Time: 10:51

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	W001515.D	04/20/00	20:45	09:54	(unrelated sample)

Response Factor Report MSBNA01

Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Tue Apr 11 11:09:48 2000
Response via : Initial Calibration

Calibration Files

5	=W001397.D	25	=W001398.D	50	=W001399.D
75	=W001400.D	100	=W001401.D	125	=W001402.D

		Compound	5	25	50	75	100	125	Avg	%RSD
1)	I	1,4-Dichlorobenzene-d	----------	----------	----------	ISTD	----------	----------	----------	
2)		1,4-Dioxane	0.410	0.426	0.441	0.459	0.445	0.462	0.440	4.47
3)		N-nitrosodimethylam	0.695	0.691	0.716	0.763	0.734	0.757	0.726	4.20
4)		Pyridine	1.002	1.090	1.050	1.162	1.129	1.175	1.101	6.09
5)		Aniline	1.766	1.799	1.702	1.615	1.485	1.470	1.640	8.57
6)	S	2-Fluorophenol	1.142	1.189	1.166	1.151	1.074	1.077	1.133	4.19
7)		bis(2-Chloroethyl)e	1.219	1.261	1.241	1.258	1.209	1.203	1.232	2.02
8)	S	Phenol-d5	1.361	1.381	1.314	1.251	1.133	1.113	1.259	9.09
9)	C	Phenol	1.521	1.561	1.504	1.467	1.346	1.333	1.455	6.53
0)		2-Chlorophenol	1.320	1.389	1.356	1.402	1.351	1.361	1.363	2.14
1)		1,3-Dichlorobenzene	1.631	1.686	1.649	1.655	1.553	1.562	1.623	3.30
2)	C	1,4-Dichlorobenzene	1.564	1.587	1.568	1.544	1.455	1.450	1.528	3.92
3)		1,2-Dichlorobenzene	1.483	1.550	1.523	1.538	1.444	1.444	1.497	3.13
4)		Benzyl alcohol	0.467	0.688	0.728	0.788	0.794	0.817	0.714	18.19 old
5)		bis(2-chloroisoprop	2.676	2.693	2.604	2.496	2.289	2.210	2.495	8.17
5)		2-Methylphenol	1.067	1.121	1.147	1.190	1.096	1.113	1.122	3.80
7)		Hexachloroethane	0.523	0.544	0.532	0.534	0.511	0.518	0.527	2.25
8)	P	N-Nitroso-di-n-prop	0.776	0.782	0.780	0.810	0.763	0.752	0.777	2.52
9)		3&4-Methylphenol	1.005	1.099	1.106	1.133	1.088	1.073	1.084	4.04
0)	I	Naphthalene-d8	----------	----------	----------	ISTD	----------	----------	----------	
1)	S	Nitrobenzene-d5	0.288	0.303	0.294	0.304	0.285	0.287	0.293	2.80
2)		Nitrobenzene	0.309	0.318	0.312	0.317	0.296	0.294	0.308	3.30
3)		Isophorone	0.552	0.558	0.560	0.581	0.548	0.551	0.559	2.16
4)	C	2-Nitrophenol	0.179	0.197	0.201	0.213	0.204	0.204	0.200	5.76
5)		2,4-Dimethylphenol	0.291	0.325	0.313	0.324	0.307	0.311	0.312	3.95
5)		bis(2-Chloroethoxy)	0.393	0.389	0.382	0.382	0.358	0.355	0.377	4.30
7)		Benzoic Acid		0.162	0.195	0.235	0.232	0.228	0.210	14.99
8)	C	2,4-Dichlorophenol	0.278	0.298	0.295	0.305	0.281	0.278	0.289	3.99
9)		1,2,4-Trichlorobenz	0.326	0.339	0.334	0.334	0.316	0.313	0.327	3.22
9)		Naphthalene	1.029	1.051	1.002	0.970	0.905	0.883	0.973	6.92
1)		4-Chloroaniline	0.417	0.422	0.409	0.423	0.392	0.390	0.409	3.60
)		2,6-Dichlorophenol	0.283	0.287	0.284	0.291	0.274	0.269	0.281	2.91
)	C	Hexachlorobutadiene	0.191	0.193	0.188	0.185	0.175	0.173	0.184	4.67
)	C	4-Chloro-3-methylph	0.238	0.252	0.254	0.272	0.256	0.254	0.254	4.32
)		2-Methylnaphthalene	0.708	0.720	0.709	0.707	0.648	0.636	0.688	5.25
)		1-Methylnaphthalene	0.621	0.629	0.613	0.622	0.569	0.562	0.603	4.84
)	I	Acenaphthene-d10	----------	----------	----------	ISTD	----------	----------	----------	
)	P	Hexachlorocyclopent	0.284	0.371	0.391	0.402	0.382	0.403	0.372	11.99
)	C	2,4,6-Trichlorophen	0.343	0.373	0.374	0.382	0.363	0.374	0.368	3.76
)		2,4,5-Trichlorophen	0.359	0.381	0.386	0.409	0.376	0.387	0.383	4.22
)	S	2-Fluorobiphenyl	1.422	1.481	1.438	1.376	1.297	1.302	1.386	5.41

= Out of Range

Response Factor Report MSBNA01

Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Tue Apr 11 11:09:48 2000
Response via : Initial Calibration

Calibration Files

5	=W001397.D	25	=W001398.D	50	=W001399.D
75	=W001400.D	100	=W001401.D	125	=W001402.D

	Compound	5	25	50	75	100	125	Avg	%RSD
	2-Chloronaphthalene	1.176	1.244	1.223	1.184	1.114	1.130	1.178	4.30
	2-Nitroaniline	0.279	0.312	0.306	0.326	0.307	0.305	0.306	5.00
	Acenaphthylene	1.764	1.864	1.806	1.742	1.616	1.590	1.730	6.20
	Dimethylphthalate	1.311	1.352	1.278	1.363	1.293	1.297	1.316	2.61
	2,6-Dinitrotoluene	0.248	0.277	0.272	0.285	0.267	0.264	0.269	4.72
C	Acenaphthene	1.205	1.240	1.197	1.184	1.099	1.106	1.172	4.86
	3-Nitroaniline	0.300	0.348	0.346	0.373	0.350	0.349	0.344	7.00
P	2,4-Dinitrophenol		0.137	0.163	0.203	0.199	0.205	0.181	16.85
	Dibenzofuran	1.671	1.735	1.666	1.651	1.524	1.493	1.623	5.78
	2,4-Dinitrotoluene	0.319	0.357	0.352	0.395	0.372	0.368	0.361	6.95
P	4-Nitrophenol	0.124	0.146	0.145	0.162	0.154	0.150	0.147	8.67
	2,3,4,6-Tetrachloro	0.240	0.273	0.271	0.295	0.279	0.277	0.272	6.65
	Fluorene	1.275	1.324	1.277	1.257	1.171	1.137	1.240	5.75
	4-Chlorophenyl-phen	0.657	0.667	0.642	0.634	0.597	0.588	0.631	5.06
	Diethylphthalate	1.181	1.216	1.167	1.250	1.176	1.154	1.191	2.99
	4-Nitroaniline	0.292	0.320	0.314	0.353	0.331	0.325	0.322	6.24
I	Phenanthrene-d10	----------	----------	----------	ISTD	----------	----------	----------	
	4,6-Dinitro-2-methy		0.141	0.153	0.177	0.171	0.174	0.163	9.47
C	n-Nitrosodiphenylam	0.604	0.633	0.626	0.629	0.598	0.616	0.618	2.29
	1,2-Diphenylhydrazi	0.740	0.771	0.749	0.735	0.702	0.710	0.735	3.44
S	2,4,6-Tribromopheno	0.072	0.078	0.078	0.080	0.077	0.079	0.077	3.65
	4-Bromophenyl-pheny	0.214	0.224	0.218	0.218	0.206	0.212	0.215	2.94
	Hexachlorobenzene	0.201	0.209	0.209	0.204	0.195	0.199	0.203	2.80
C	Pentachlorophenol		0.104	0.113	0.127	0.124	0.125	0.119	8.05
	Phenanthrene	1.180	1.189	1.142	1.146	1.084	1.069	1.135	4.31
	Anthracene	1.185	1.219	1.173	1.166	1.090	1.079	1.152	4.82
	Carbazole	1.086	1.119	1.079	1.118	1.036	1.012	1.075	4.02
	Di-n-butylphthalate	1.245	1.353	1.346	1.377	1.295	1.252	1.311	4.22
C	Fluoranthene	1.023	1.084	1.055	1.064	1.003	0.953	1.030	4.63
I	Chrysene-d12	----------	----------	----------	ISTD	----------	----------	----------	
	Benzidine	0.696	0.792	0.804	0.819	0.782	0.796	0.781	5.61
	Pyrene	1.638	1.786	1.729	1.753	1.646	1.744	1.716	3.52
S	Terphenyl-d14	0.990	1.063	1.039	1.090	1.018	1.090	1.048	3.85
	Butylbenzylphthalat	0.783	0.912	0.927	0.990	0.946	0.953	0.918	7.79
	3,3'-Dichlorobenzid	0.361	0.404	0.419	0.439	0.422	0.427	0.412	6.64
	Benzo[a]anthracene	1.154	1.249	1.244	1.280	1.232	1.238	1.233	3.39
	Chrysene	1.189	1.230	1.215	1.220	1.164	1.175	1.199	2.22
	bis(2-Ethylhexyl)ph	0.812	0.966	0.996	1.072	1.035	1.052	0.989	9.59
I	Perylene-d12	----------	----------	----------	ISTD	----------	----------	----------	
C	Di-n-octylphthalate		1.959	2.068	2.402	2.368	2.415	2.242	9.49
	Benzo[b]fluoranthen	1.244	1.321	1.385	1.484	1.424	1.410	1.378	6.13

* Out of Range

Response Factor Report MSBNA01

Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Tue Apr 11 11:09:48 2000
Response via : Initial Calibration

Calibration Files

5	=W001397.D	25	=W001398.D	50	=W001399.D
75	=W001400.D	100	=W001401.D	125	=W001402.D

	Compound	5	25	50	75	100	125	Avg	%RSD
)	Benzo[k]fluoranthen	1.279	1.475	1.420	1.418	1.358	1.441	1.398	4.99
) C	Benzo[a]pyrene	1.052	1.158	1.167	1.219	1.156	1.194	1.158	4.94
)	Indeno[1,2,3-cd]pyr	0.709	0.876	0.909	0.934	0.884	0.922	0.872	9.50
)	Dibenz[a,h]anthrace	0.814	0.897	1.000	0.989	0.918	0.987	0.934	7.74
)	Benzo[g,h,i]perylen	0.860	1.006	1.006	0.989	0.909	0.988	0.960	6.35

= Out of Range

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\042000\W001496.D
Acq On : 20 Apr 2000 11:09 am
Sample : cc93-75
Misc : op1462,sw99,water,,,1,
MS Integration Params: LSCINT.P

Vial: 2
Operator: marke
Inst : MSBNA01
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Thu Apr 20 11:21:46 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	84	-0.02
2		1,4-Dioxane	0.440	0.454	-3.2	83	0.00
3		N-nitrosodimethylamine	0.726	0.766	-5.5	84	-0.09
4		Pyridine	1.101	1.013	8.0	73	-0.08
5		Aniline	1.640	1.571	4.2	82	-0.02
6	S	2-Fluorophenol	1.133	1.150	-1.5	84	-0.03
7		bis(2-Chloroethyl)ether	1.232	1.216	1.3	81	-0.02
8	S	Phenol-d5	1.259	1.220	3.1	82	-0.02
9	C	Phenol	1.455	1.451	0.3	83	-0.02
0		2-Chlorophenol	1.363	1.397	-2.5	84	-0.02
1		1,3-Dichlorobenzene	1.623	1.650	-1.7	84	-0.02
2	C	1,4-Dichlorobenzene	1.528	1.542	-0.9	84	-0.02
3		1,2-Dichlorobenzene	1.497	1.534	-2.5	84	-0.02
4		Benzyl alcohol	0.714	0.833	-16.7	89	-0.02
5		bis(2-chloroisopropyl)ether	2.495	2.460	1.4	83	-0.02
6		2-Methylphenol	1.122	1.156	-3.0	81	-0.02
7		Hexachloroethane	0.527	0.536	-1.7	84	-0.02
8	P	N-Nitroso-di-n-propylamine	0.777	0.761	2.1	79	-0.02
9		3&4-Methylphenol	1.084	1.103	-1.8	82	-0.02
0	I	Naphthalene-d8	1.000	1.000	0.0	80	-0.02
1	S	Nitrobenzene-d5	0.293	0.303	-3.4	80	-0.03
2		Nitrobenzene	0.308	0.315	-2.3	80	-0.02
3		Isophorone	0.559	0.555	0.7	77	-0.03
4	C	2-Nitrophenol	0.200	0.212	-6.0	80	-0.02
5		2,4-Dimethylphenol	0.312	0.313	-0.3	78	-0.03
6		bis(2-Chloroethoxy)methane	0.377	0.379	-0.5	80	-0.02
7		Benzoic Acid	0.210	0.234	-11.4	80	-0.04
8	C	2,4-Dichlorophenol	0.289	0.305	-5.5	81	-0.03
9		1,2,4-Trichlorobenzene	0.327	0.343	-4.9	83	-0.02
0		Naphthalene	0.973	0.992	-2.0	82	-0.03
1		4-Chloroaniline	0.409	0.410	-0.2	78	-0.02
2		2,6-Dichlorophenol	0.281	0.290	-3.2	80	-0.03
3	C	Hexachlorobutadiene	0.184	0.196	-6.5	85	-0.02
4	C	4-Chloro-3-methylphenol	0.254	0.258	-1.6	76	-0.02
5		2-Methylnaphthalene	0.688	0.696	-1.2	79	-0.02
6		1-Methylnaphthalene	0.603	0.606	-0.5	78	-0.02
7	I	Acenaphthene-d10	1.000	1.000	0.0	76	-0.03
8	P	Hexachlorocyclopentadiene	0.372	0.433	-16.4	82	-0.03
9	C	2,4,6-Trichlorophenol	0.368	0.395	-7.3	78	-0.03
0		2,4,5-Trichlorophenol	0.383	0.411	-7.3	76	-0.03
1	S	2-Fluorobiphenyl	1.386	1.441	-4.0	79	-0.03
2		2-Chloronaphthalene	1.178	1.233	-4.7	79	-0.03
3		2-Nitroaniline	0.306	0.314	-2.6	73	-0.03

4		Acenaphthylene	1.730	1.749	-1.1	76	-0.03
5		Dimethylphthalate	1.316	1.330	-1.1	74	-0.03
5		2,6-Dinitrotoluene	0.269	0.278	-3.3	74	-0.03
7	C	Acenaphthene	1.172	1.199	-2.3	77	-0.03
8		3-Nitroaniline	0.344	0.352	-2.3	71	-0.03
9	P	2,4-Dinitrophenol	0.181	0.200	-10.5	75	-0.03
0		Dibenzofuran	1.623	1.640	-1.0	75	-0.03
1		2,4-Dinitrotoluene	0.361	0.368	-1.9	71	-0.03
2	P	4-Nitrophenol	0.147	0.152	-3.4	71	-0.03
3		2,3,4,6-Tetrachlorophenol	0.272	0.294	-8.1	75	-0.03
4		Fluorene	1.240	1.244	-0.3	75	-0.03
5		4-Chlorophenyl-phenylether	0.631	0.640	-1.4	76	-0.02
5		Diethylphthalate	1.191	1.178	1.1	71	-0.02
7		4-Nitroaniline	0.322	0.324	-0.6	69	-0.04
8	I	Phenanthrene-d10	1.000	1.000	0.0	71	-0.03
9		4,6-Dinitro-2-methylphenol	0.163	0.175	-7.4	71	-0.04
0	C	n-Nitrosodiphenylamine	0.618	0.640	-3.6	73	-0.04
1		1,2-Diphenylhydrazine	0.735	0.749	-1.9	73	-0.03
2	S	2,4,6-Tribromophenol	0.077	0.084	-9.1	75	-0.04
3		4-Bromophenyl-phenylether	0.215	0.227	-5.6	74	-0.03
4		Hexachlorobenzene	0.203	0.211	-3.9	74	-0.03
5	C	Pentachlorophenol	0.119	0.134	-12.6	76	-0.03
6		Phenanthrene	1.135	1.161	-2.3	72	-0.03
7		Anthracene	1.152	1.169	-1.5	72	-0.03
8		Carbazole	1.075	1.096	-2.0	70	-0.03
9		Di-n-butylphthalate	1.311	1.340	-2.2	70	0.00
0	C	Fluoranthene	1.030	1.056	-2.5	71	-0.01
1	I	Chrysene-d12	1.000	1.000	0.0	74	-0.03
2		Benzidine	0.781	0.681	12.8	62	-0.04
3		Pyrene	1.716	1.708	0.5	72	-0.04
4	S	Terphenyl-d14	1.048	1.053	-0.5	72	-0.04
5		Butylbenzylphthalate	0.918	0.936	-2.0	70	-0.03
6		3,3'-Dichlorobenzidine	0.412	0.450	-9.2	76	-0.03
7		Benzo[a]anthracene	1.233	1.287	-4.4	75	-0.03
8		Chrysene	1.199	1.224	-2.1	74	-0.03
9		bis(2-Ethylhexyl)phthalate	0.989	1.018	-2.9	70	-0.02
0	I	Perylene-d12	1.000	1.000	0.0	83	-0.03
1	C	Di-n-octylphthalate	2.242	2.170	3.2	75	-0.02
2		Benzo[b]fluoranthene	1.378	1.446	-4.9	81	-0.03
3		Benzo[k]fluoranthene	1.398	1.349	3.5	79	-0.03
4	C	Benzo[a]pyrene	1.158	1.219	-5.3	83	-0.03
5		Indeno[1,2,3-cd]pyrene	0.872	1.014	-16.3	90	-0.02
6		Dibenz[a,h]anthracene	0.934	1.076	-15.2	90	-0.02
7		Benzo[g,h,i]perylene	0.960	1.071	-11.6	90	-0.02

(#) = Out of Range SPCC's out = 0 CCC's out = 0
W001400.D 8270C.M Thu Apr 20 11:34:40 2000 MSBNA01

Semivolatile Internal Standard Area Summary

Job Number: F6287
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Check Std: SW99-CC93 **Injection Date:** 04/20/00
Lab File ID: W001496.D **Injection Time:** 11:09
Instrument ID: GCMSW

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	215892	5.01	772632	6.21	364496	8.53	465658	10.98	291679	15.88	210686	18.37
Upper Limit [a]	431784	5.51	1545264	6.71	728992	9.03	931316	11.48	583358	16.38	421372	18.87
Lower Limit [b]	107946	4.51	386316	5.71	182248	8.03	232829	10.48	145840	15.38	105343	17.87

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP1462-BS	239210	5.00	905228	6.21	459189	8.52	618690	10.98	333751	15.87	199492	18.36
OP1462-MB	186680	5.01	670092	6.20	325765	8.52	448343	10.97	276165	15.87	181301	18.36
ZZZZZZ	236425	5.00	862159	6.20	437184	8.52	614365	10.97	355691	15.87	210674	18.36
ZZZZZZ	216136	5.00	775979	6.20	380284	8.52	512380	10.97	294386	15.86	188150	18.36
ZZZZZZ	193008	5.00	683095	6.20	330460	8.52	444099	10.97	268665	15.86	179620	18.36
F6287-1	190650	5.00	691353	6.21	329859	8.52	455482	10.97	277412	15.86	182860	18.36
OP1462-MS	213191	5.00	773672	6.20	370387	8.52	482498	10.97	267510	15.87	171176	18.36
OP1462-MSD	217112	5.01	770613	6.21	373384	8.52	497703	10.97	278060	15.87	175822	18.36
F6287-4	248426	5.00	926095	6.20	501658	8.52	736780	10.97	479161	15.87	273129	18.36
F6287-8	184528	5.00	668862	6.20	330517	8.51	452256	10.97	279712	15.86	187633	18.36
ZZZZZZ	234203	5.00	869290	6.20	457758	8.52	668426	10.97	428736	15.87	261915	18.36
ZZZZZZ	225634	5.00	846198	6.20	435199	8.52	607296	10.97	318522	15.86	201919	18.36
ZZZZZZ	210956	5.01	765386	6.20	372791	8.52	513365	10.97	290498	15.86	186562	18.36
ZZZZZZ	255559	5.00	957510	6.21	518725	8.52	761947	10.97	472337	15.86	254385	18.36
ZZZZZZ	215166	5.00	795855	6.20	398516	8.52	561371	10.97	309540	15.87	178122	18.36
ZZZZZZ	201868	5.00	731312	6.21	375505	8.52	525414	10.97	276825	15.86	169652	18.36
ZZZZZZ	263301	5.00	984693	6.20	521863	8.52	761510	10.97	472085	15.87	257822	18.36
ZZZZZZ	214649	5.00	779001	6.20	387912	8.52	525798	10.97	269341	15.86	163327	18.36
ZZZZZZ	194006	5.00	697532	6.20	342299	8.52	459534	10.96	254445	15.86	156252	18.36

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Upper Limit = +100% of internal standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of internal standard area; Retention time -0.5 minutes.

Instrument Performance Check (DFTPP)

Job Number: F6287
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: SW100-DFTPP **Injection Date:** 04/24/00
Lab File ID: W001516.D **Injection Time:** 09:27
Instrument ID: GCMSW

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	87536	37.6		Pass
68	Less than 2.0% of mass 69	0	0.0	(0.0) [a]	Pass
69	Mass 69 relative abundance	64885	27.9		Pass
70	Less than 2.0% of mass 69	351	0.15	(0.54) [a]	Pass
127	40.0 - 60.0% of mass 198	104131	44.8		Pass
197	Less than 1.0% of mass 198	0	0.0		Pass
198	Base peak, 100% relative abundance	232515	100.0		Pass
199	5.0 - 9.0% of mass 198	15636	6.7		Pass
275	10.0 - 30.0% of mass 198	50136	21.6		Pass
365	1.0 - 100.0% of mass 198	5131	2.2		Pass
441	Present, but less than mass 443	24682	10.6	(75.9) [b]	Pass
442	40.0 - 100.0% of mass 198	164251	70.6		Pass
443	17.0 - 23.0% of mass 442	32525	14.0	(19.8) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
SW100-CC93	W001517.D	04/24/00	09:45	00:18	Continuing cal 75
OP1472-BS	W001518.D	04/24/00	10:35	01:08	Blank Spike
OP1472-MB	W001519.D	04/24/00	11:05	01:38	Method Blank
ZZZZZZ	W001520.D	04/24/00	11:35	02:08	(unrelated sample)
ZZZZZZ	W001521.D	04/24/00	12:06	02:39	(unrelated sample)
ZZZZZZ	W001522.D	04/24/00	12:36	03:09	(unrelated sample)
ZZZZZZ	W001523.D	04/24/00	13:07	03:40	(unrelated sample)
ZZZZZZ	W001524.D	04/24/00	13:37	04:10	(unrelated sample)
ZZZZZZ	W001525.D	04/24/00	14:08	04:41	(unrelated sample)
F6287-2	W001526.D	04/24/00	14:39	05:12	39DW00101
OP1472-MS	W001527.D	04/24/00	15:09	05:42	Matrix Spike
OP1472-MSD	W001528.D	04/24/00	15:39	06:12	Matrix Spike Duplicate
F6287-5	W001529.D	04/24/00	16:10	06:43	39DW00101D
F6287-9	W001530.D	04/24/00	16:40	07:13	39DV00101
ZZZZZZ	W001531.D	04/24/00	17:11	07:44	(unrelated sample)
ZZZZZZ	W001532.D	04/24/00	17:41	08:14	(unrelated sample)
ZZZZZZ	W001533.D	04/24/00	18:11	08:44	(unrelated sample)
ZZZZZZ	W001534.D	04/24/00	18:42	09:15	(unrelated sample)
ZZZZZZ	W001535.D	04/24/00	19:12	09:45	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: F6287
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: SW100-DFTPP
Lab File ID: W001516.D
Instrument ID: GCMSW
Injection Date: 04/24/00
Injection Time: 09:27

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	W001536.D	04/24/00	19:43	10:16	(unrelated sample)
ZZZZZZ	W001537.D	04/24/00	20:13	10:46	(unrelated sample)
ZZZZZZ	W001538.D	04/24/00	20:43	11:16	(unrelated sample)
ZZZZZZ	W001539.D	04/24/00	21:13	11:46	(unrelated sample)

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\042400\W001517.D Vial: 2
Acq On : 24 Apr 2000 9:45 am Operator: marke
Sample : cc93-75 Inst : MSBNA01
Misc : op1472,sw100,soil,,,1, Multiplr: 1.00
MS Integration Params: LSCINT.P

Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Thu Apr 20 11:21:46 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	73	-0.02
2		1,4-Dioxane	0.440	0.448	-1.8	71	-0.01
3		N-nitrosodimethylamine	0.726	0.733	-1.0	70	-0.10
4		Pyridine	1.101	1.090	1.0	68	-0.10
5		Aniline	1.640	1.581	3.6	71	-0.03
6	S	2-Fluorophenol	1.133	1.156	-2.0	73	-0.04
7		bis(2-Chloroethyl)ether	1.232	1.234	-0.2	71	-0.02
8	S	Phenol-d5	1.259	1.256	0.2	73	-0.02
9	C	Phenol	1.455	1.468	-0.9	73	-0.02
10		2-Chlorophenol	1.363	1.410	-3.4	73	-0.02
11		1,3-Dichlorobenzene	1.623	1.674	-3.1	74	-0.02
12	C	1,4-Dichlorobenzene	1.528	1.574	-3.0	74	-0.02
13		1,2-Dichlorobenzene	1.497	1.555	-3.9	74	-0.02
14		Benzyl alcohol	0.714	0.767	-7.4	71	-0.02
15		bis(2-chloroisopropyl)ether	2.495	2.498	-0.1	73	-0.02
16		2-Methylphenol	1.122	1.141	-1.7	70	-0.02
17		Hexachloroethane	0.527	0.550	-4.4	75	-0.02
18	P	N-Nitroso-di-n-propylamine	0.777	0.768	1.2	69	-0.02
19		3&4-Methylphenol	1.084	1.110	-2.4	71	-0.02
20	I	Naphthalene-d8	1.000	1.000	0.0	71	-0.03
21	S	Nitrobenzene-d5	0.293	0.303	-3.4	71	-0.03
22		Nitrobenzene	0.308	0.316	-2.6	71	-0.03
23		Isophorone	0.559	0.566	-1.3	69	-0.03
24	C	2-Nitrophenol	0.200	0.211	-5.5	70	-0.03
25		2,4-Dimethylphenol	0.312	0.317	-1.6	70	-0.03
26		bis(2-Chloroethoxy)methane	0.377	0.381	-1.1	71	-0.03
27		Benzoic Acid	0.210	0.226	-7.6	68	-0.05
28	C	2,4-Dichlorophenol	0.289	0.305	-5.5	71	-0.03
29		1,2,4-Trichlorobenzene	0.327	0.342	-4.6	73	-0.03
30		Naphthalene	0.973	1.001	-2.9	73	-0.03
31		4-Chloroaniline	0.409	0.421	-2.9	71	-0.02
32		2,6-Dichlorophenol	0.281	0.292	-3.9	71	-0.03
33	C	Hexachlorobutadiene	0.184	0.194	-5.4	74	-0.03
34	C	4-Chloro-3-methylphenol	0.254	0.262	-3.1	68	-0.03
35		2-Methylnaphthalene	0.688	0.706	-2.6	71	-0.02
36		1-Methylnaphthalene	0.603	0.612	-1.5	70	-0.03
37	I	Acenaphthene-d10	1.000	1.000	0.0	70	-0.03
38	P	Hexachlorocyclopentadiene	0.372	0.401	-7.8	70	-0.03
39	C	2,4,6-Trichlorophenol	0.368	0.383	-4.1	70	-0.03
40		2,4,5-Trichlorophenol	0.383	0.400	-4.4	68	-0.03
41	S	2-Fluorobiphenyl	1.386	1.413	-1.9	72	-0.04
42		2-Chloronaphthalene	1.178	1.202	-2.0	71	-0.03
43		2-Nitroaniline	0.306	0.314	-2.6	67	-0.03

44		Acenaphthylene	1.730	1.765	-2.0	71	-0.03
45		Dimethylphthalate	1.316	1.342	-2.0	69	-0.03
46		2,6-Dinitrotoluene	0.269	0.284	-5.6	70	-0.03
47	C	Acenaphthene	1.172	1.184	-1.0	70	-0.03
48		3-Nitroaniline	0.344	0.359	-4.4	67	-0.03
49	P	2,4-Dinitrophenol	0.181	0.193	-6.6	66	-0.03
50		Dibenzofuran	1.623	1.656	-2.0	70	-0.03
51		2,4-Dinitrotoluene	0.361	0.376	-4.2	67	-0.04
52	P	4-Nitrophenol	0.147	0.153	-4.1	66	-0.04
53		2,3,4,6-Tetrachlorophenol	0.272	0.293	-7.7	69	-0.03
54		Fluorene	1.240	1.259	-1.5	70	-0.03
55		4-Chlorophenyl-phenylether	0.631	0.643	-1.9	71	-0.02
56		Diethylphthalate	1.191	1.220	-2.4	68	-0.02
57		4-Nitroaniline	0.322	0.333	-3.4	66	-0.04
58	I	Phenanthrene-d10	1.000	1.000	0.0	67	-0.03
59		4,6-Dinitro-2-methylphenol	0.163	0.172	-5.5	65	-0.04
60	C	n-Nitrosodiphenylamine	0.618	0.637	-3.1	68	-0.04
61		1,2-Diphenylhydrazine	0.735	0.755	-2.7	69	-0.04
62	S	2,4,6-Tribromophenol	0.077	0.084	-9.1	70	-0.04
63		4-Bromophenyl-phenylether	0.215	0.224	-4.2	69	-0.03
64		Hexachlorobenzene	0.203	0.212	-4.4	70	-0.03
65	C	Pentachlorophenol	0.119	0.131	-10.1	70	-0.03
66		Phenanthrene	1.135	1.166	-2.7	68	-0.03
67		Anthracene	1.152	1.183	-2.7	68	-0.03
68		Carbazole	1.075	1.104	-2.7	66	-0.03
69		Di-n-butylphthalate	1.311	1.379	-5.2	67	0.00
70	C	Fluoranthene	1.030	1.056	-2.5	67	-0.02
71	I	Chrysene-d12	1.000	1.000	0.0	65	-0.03
72		Benzidine	0.781	0.730	6.5	58	-0.04
73		Pyrene	1.716	1.803	-5.1	66	-0.05
74	S	Terphenyl-d14	1.048	1.116	-6.5	66	-0.04
75		Butylbenzylphthalate	0.918	0.977	-6.4	64	-0.03
76		3,3'-Dichlorobenzidine	0.412	0.434	-5.3	64	-0.03
77		Benzo[a]anthracene	1.233	1.277	-3.6	65	-0.04
78		Chrysene	1.199	1.215	-1.3	64	-0.04
79		bis(2-Ethylhexyl)phthalate	0.989	1.067	-7.9	64	-0.02
80	I	Perylene-d12	1.000	1.000	0.0	61	-0.03
81	C	Di-n-octylphthalate	2.242	2.514	-12.1	64	-0.02
82		Benzo[b]fluoranthene	1.378	1.499	-8.8	62	-0.04
83		Benzo[k]fluoranthene	1.398	1.483	-6.1	64	-0.04
84	C	Benzo[a]pyrene	1.158	1.219	-5.3	61	-0.04
85		Indeno[1,2,3-cd]pyrene	0.872	0.948	-8.7	62	-0.03
86		Dibenz[a,h]anthracene	0.934	1.010	-8.1	63	-0.03
87		Benzo[g,h,i]perylene	0.960	1.037	-8.0	64	-0.03

(#) = Out of Range SPCC's out = 0 CCC's out = 0
W001400.D 8270C.M Mon Apr 24 10:30:23 2000 MSBNA01

Semivolatile Internal Standard Area Summary

Job Number: F6287
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Check Std: SW100-CC93 **Injection Date:** 04/24/00
Lab File ID: W001517.D **Injection Time:** 09:45
Instrument ID: GCMSW

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	187187	5.00	681493	6.21	336243	8.52	437706	10.98	254389	15.87	155725	18.36
Upper Limit [a]	374374	5.50	1362986	6.71	672486	9.02	875412	11.48	508778	16.37	311450	18.86
Lower Limit [b]	93594	4.50	340747	5.71	168122	8.02	218853	10.48	127195	15.37	77863	17.86

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP1472-BS	200626	5.01	727253	6.21	345067	8.52	434084	10.97	249423	15.87	159873	18.36
OP1472-MB	221891	5.01	794504	6.20	393123	8.51	523214	10.97	271367	15.87	161270	18.36
ZZZZZZ	225340	5.00	830834	6.20	415469	8.52	565714	10.97	298939	15.86	174419	18.36
ZZZZZZ	209291	5.00	737601	6.20	351681	8.52	460724	10.97	251037	15.86	162077	18.36
ZZZZZZ	190628	5.00	670730	6.20	318986	8.52	427804	10.97	240302	15.86	160082	18.36
ZZZZZZ	209392	5.00	764738	6.20	375872	8.52	516162	10.97	293338	15.86	175527	18.36
ZZZZZZ	199524	5.00	727563	6.20	361761	8.52	500054	10.97	285476	15.86	181175	18.36
ZZZZZZ	186392	5.00	645078	6.20	297482	8.52	393074	10.97	222407	15.86	153564	18.36
F6287-2	220510	5.00	808670	6.20	408068	8.52	559375	10.97	319688	15.86	185770	18.36
OP1472-MS	212231	5.00	743186	6.21	346117	8.52	439793	10.97	254643	15.86	170903	18.36
OP1472-MSD	199145	5.00	712251	6.21	343428	8.52	456443	10.97	257703	15.86	169972	18.36
F6287-5	236947	5.00	871308	6.20	434668	8.52	597543	10.97	313359	15.86	177826	18.36
F6287-9	242511	5.00	891096	6.20	439195	8.52	590344	10.97	278765	15.86	160834	18.35
ZZZZZZ	245068	5.00	898265	6.20	439089	8.52	576324	10.97	279826	15.86	170714	18.36
ZZZZZZ	193308	5.00	659185	6.20	290666	8.52	376589	10.97	226409	15.86	158332	18.36
ZZZZZZ	231345	5.00	849160	6.20	427104	8.52	578804	10.97	296871	15.86	164753	18.36
ZZZZZZ	203639	5.00	689707	6.20	314151	8.52	397563	10.97	213063	15.86	146124	18.36
ZZZZZZ	206711	5.00	698242	6.20	313241	8.52	400118	10.96	222810	15.86	151667	18.35
ZZZZZZ	195548	5.00	669312	6.20	313691	8.52	402218	10.97	220825	15.86	149585	18.36
ZZZZZZ	187696	5.00	631001	6.20	276696	8.52	359150	10.96	201791	15.86	143504	18.36
ZZZZZZ	259444	5.00	951952	6.20	462152	8.52	579377	10.97	256724	15.86	161566	18.35
ZZZZZZ	171333	5.00	583111	6.20	262198	8.51	344181	10.97	205584	15.86	149624	18.35

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Upper Limit = +100% of internal standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of internal standard area; Retention time -0.5 minutes.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: F6287
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1460-MS	ST04431.D	10	04/26/00	SKW	04/18/00	OP1460	GST164
OP1460-MSD	ST04432.D	10	04/26/00	SKW	04/18/00	OP1460	GST164
F6287-2	ST04430.D	10	04/26/00	SKW	04/18/00	OP1460	GST164

The QC reported here applies to the following samples: **Method:** SW846 3550B/8081A

F6287-2, F6287-5, F6287-9, F6287-11, F6287-12, F6287-13, F6287-14

CAS No.	Compound	F6287-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
309-00-2	Aldrin	ND		21.7	16.8	77	15.8	73	6	35-157/48
319-84-6	alpha-BHC	ND		21.7	16.0	74	15.0	69	6	48-132/36
319-85-7	beta-BHC	ND		21.7	19.5	90	18.2	84	7	45-135/30
319-86-8	delta-BHC	ND		21.7	15.2	70	13.6	63	11	11-130/48
58-89-9	gamma-BHC (Lindane)	ND		21.7	17.0	78	15.8	73	7	47-129/38
5103-71-9	alpha-Chlordane	ND		21.7	18.1	83	17.0	78	6	45-128/28
5103-74-2	gamma-Chlordane	ND		21.7	17.9	82	17.5	81	2	45-128/28
60-57-1	Dieldrin	ND		21.7	16.4	76	14.8	68	10	12-182/35
72-54-8	4,4'-DDD	ND		21.7	18.7	86	17.5	81	7	50-141/32
72-55-9	4,4'-DDE	ND		21.7	16.5	76	15.8	73	4	57-156/33
50-29-3	4,4'-DDT	ND		21.7	10.9	50	9.1	42	18	33-157/41
72-20-8	Endrin	ND		21.7	18.5	85	18.2	84	2	36-174/36
1031-07-8	Endosulfan sulfate	ND		21.7	18.1	83	16.7	77	8	5-188/42
7421-93-4	Endrin aldehyde	ND		22	ND	0* a	ND	0* a	na	5-120/51
53494-70-5	Endrin ketone	ND		21.7	17.8	82	15.7	72	12	41-145/36
959-98-8	Endosulfan-I	ND		21.7	18.2	84	16.8	77	8	47-127/34
33213-65-9	Endosulfan-II	ND		21.7	18.4	85	16.6	76	10	36-149/59
76-44-8	Heptachlor	ND		21.7	15.7	72	14.7	68	6	59-134/33
1024-57-3	Heptachlor epoxide	ND		21.7	18.0	83	16.8	77	7	37-157/30
72-43-5	Methoxychlor	ND		21.7	13.5	62	11.6	53	15	40-148/40

CAS No.	Surrogate Recoveries	MS	MSD	F6287-2	Limits
877-09-8	Tetrachloro-m-xylene	83%	77%	85%	50-144%
2051-24-3	Decachlorobiphenyl	74%	68%	68%	10-180%

(a) Low recovery due to sulfur cleaning procedure.

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0414PESA\ST04301.D\ECD1B.CH Vial: 9
Signal #2 : C:\HPCHEM\1\DATA\0414PESA\ST04301.D\ECD2A.CH
Acq On : 14 Apr 2000 6:04 pm Operator: stephw
Sample : 40ppb ICV p491 Inst : ECD 3
Misc : op1437,gst161,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Mon Apr 17 08:54:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

Compound	Amount	Calc.	%Dev	Area%	Dev(min)
alpha-BHC	40.000	38.976	2.6	92	0.00
gamma-BHC (Lindane)	40.000	38.694	3.3	92	0.00
beta-BHC	40.000	37.407	6.5	93	0.00
Heptachlor	40.000	40.372	-0.9	96	0.00
delta-BHC	40.000	37.966	5.1	89	0.00
Aldrin	40.000	38.761	3.1	91	0.00
Heptachlor Epoxide	40.000	38.631	3.4	94	0.00
gamma-Chlordane	40.000	37.510	6.2	90	0.00
alpha-Chlordane	40.000	38.502	3.7	92	0.00
Endosulfan I	40.000	37.737	5.7	90	0.00
4,4'-DDE	40.000	38.271	4.3	88	0.00
Dieldrin	40.000	36.938	7.7	86	0.00
Endrin	40.000	41.137	-2.8	95	0.00
4,4'-DDD	40.000	37.717	5.7	88	0.00
Endosulfan II	40.000	35.730	10.7	87	0.00
4,4'-DDT	40.000	43.505	-8.8	107	0.00
Endrin Aldehyde	40.000	36.782	8.0	88	0.00
Endosulfan Sulfate	40.000	36.601	8.5	87	0.00
Methoxychlor	40.000	38.715	3.2	104	0.00
Endrin Ketone	40.000	35.988	10.0	92	0.00

OK

Signal #2

alpha-BHC	40.000	38.592	3.5	91	0.00
gamma-BHC (Lindane)	40.000	38.558	3.6	92	0.00
beta-BHC	40.000	37.159	7.1	93	0.00
Heptachlor	40.000	38.597	3.5	93	0.00
delta-BHC	40.000	37.882	5.3	89	0.00
Aldrin	40.000	38.740	3.1	93	0.00
Heptachlor Epoxide	40.000	37.718	5.7	90	0.00
gamma-Chlordane	40.000	36.931	7.7	89	0.00
alpha-Chlordane	40.000	37.923	5.2	89	0.00
Endosulfan I	40.000	38.114	4.7	90	0.00
4,4'-DDE	40.000	37.719	5.7	89	0.00
Dieldrin	40.000	36.419	9.0	87	0.00
Endrin	40.000	42.108	-5.3	100	0.00
4,4'-DDD	40.000	37.031	7.4	82	0.00
Endosulfan II	40.000	37.055	7.4	89	0.00
4,4'-DDT	40.000	44.466	-11.2	114	0.00
Endrin Aldehyde	40.000	35.173	12.1	86	0.00

OK

) = Out of Range

000452

Evaluate Continuing Calibration Report

gnal #1 : C:\HPCHEM\1\DATA\0414PESA\ST04301.D\ECD1B.CH Vial: 9
gnal #2 : C:\HPCHEM\1\DATA\0414PESA\ST04301.D\ECD2A.CH
q On : 14 Apr 2000 6:04 pm Operator: stephw
mple : 40ppb ICV p491 Inst : ECD 3
sc : op1437,gst161,soil,,,10, Multiplr: 1.00
tFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

ethod : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
tle : Pesticides by 608 or 8081
st Update : Mon Apr 17 08:54:02 2000
esponse via : Multiple Level Calibration

in. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
ax. RRF Dev : 15% Max. Rel. Area : 150%

Compound	Amount	Calc.	%Dev	Area%	Dev(min)
Endosulfan Sulfate	40.000	37.189	7.0	92	0.00
Methoxychlor	40.000	39.404	1.5	100	0.00
Endrin Ketone	40.000	34.781	13.0	85	0.00

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0426PEST\ST04426.D\ECD1B.CH Vial: 16
Signal #2 : C:\HPCHEM\1\DATA\0426PEST\ST04426.D\ECD2A.CH
Acq On : 26 Apr 2000 3:07 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst164,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Wed Apr 26 13:48:14 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	S	Tetrachloro-m-xylene	40.000	39.991	0.0	97	0.00
2		alpha-BHC	40.000	42.391	-6.0	101	0.00
3		gamma-BHC (Lindane)	40.000	40.234	-0.6	97	0.00
4		beta-BHC	40.000	38.950	2.6	98	0.00
5		Heptachlor	40.000	40.755	-1.9	99	0.00
6		delta-BHC	40.000	41.651	-4.1	102	0.00
7		Aldrin	40.000	40.000	0.0	96	0.00
8		Heptachlor Epoxide	40.000	38.374	4.1	95	0.00
9		gamma-Chlordane	40.000	38.485	3.8	96	0.00
0		alpha-Chlordane	40.000	37.380	6.5	94	0.00
1		Endosulfan I	40.000	36.437	8.9	91	0.00
2		4,4'-DDE	40.000	37.315	6.7	91	0.00
3		Dieldrin	40.000	37.403	6.5	94	0.00
4		Endrin	40.000	36.993	7.5	93	0.00
5		4,4'-DDD	40.000	35.942	10.1	90	0.00
6		Endosulfan II	40.000	35.737	10.7	88	0.00
7		4,4'-DDT — out Both columns	40.000	29.436	26.4#	71	0.00
8		Endrin Aldehyde	40.000	36.520	8.7	95	0.00
9		Endosulfan Sulfate	40.000	33.265	16.8#	86	0.00
0		Methoxychlor — out Both columns	40.000	29.466	26.3#	74	0.00
1		Endrin Ketone	40.000	35.380	11.5	91	0.00
9	SC	Decachlorobiphenyl	40.000	24.136	39.7#	64	0.00

Signal #2

1	S	Tetrachloro-m-xylene	40.000	40.383	-1.0	99	0.00
2		alpha-BHC	40.000	42.094	-5.2	99	0.00
3		gamma-BHC (Lindane)	40.000	41.875	-4.7	100	0.00
4		beta-BHC	40.000	38.020	4.9	98	0.00
5		Heptachlor	40.000	41.860	-4.6	100	0.00
6		delta-BHC	40.000	41.307	-3.3	101	0.00
7		Aldrin	40.000	40.141	-0.4	99	0.00
8		Heptachlor Epoxide	40.000	39.321	1.7	97	0.00
9		gamma-Chlordane	40.000	39.822	0.4	98	0.00
0		alpha-Chlordane	40.000	37.915	5.2	95	0.00
1		Endosulfan I	40.000	38.680	3.3	96	0.00
2		4,4'-DDE	40.000	39.019	2.5	96	0.00
3		Dieldrin	40.000	38.207	4.5	95	0.00
4		Endrin	40.000	38.221	4.4	93	0.00
5		4,4'-DDD	40.000	38.237	4.4	97	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0426PEST\ST04426.D\ECD1B.CH Vial: 16
Signal #2 : C:\HPCHEM\1\DATA\0426PEST\ST04426.D\ECD2A.CH
Acq On : 26 Apr 2000 3:07 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst164,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Wed Apr 26 13:48:14 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
6		Endosulfan II	40.000	36.935	7.7	91	0.00
7		4,4'-DDT	40.000	29.939	25.2#	76	0.00
8		Endrin Aldehyde	40.000	38.026	4.9	98	0.00
9		Endosulfan Sulfate	40.000	35.691	10.8	92	0.00
0		Methoxychlor	40.000	31.075	22.3#	77	0.00
1		Endrin Ketone	40.000	37.251	6.9	95	0.00
9	SC	Decachlorobiphenyl	40.000	25.108	37.2#	65	0.00

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0426PEST\ST04427.D\ECD1B.CH Vial: 17
Signal #2 : C:\HPCHEM\1\DATA\0426PEST\ST04427.D\ECD2A.CH
Acq On : 26 Apr 2000 3:29 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst164,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Wed Apr 26 13:48:14 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	S	Tetrachloro-m-xylene	40.000	39.769	0.6	96	0.00
2		alpha-BHC	40.000	41.708	-4.3	99	0.00
3		gamma-BHC (Lindane)	40.000	41.126	-2.8	99	0.00
4		beta-BHC	40.000	38.666	3.3	97	0.00
5		Heptachlor	40.000	40.899	-2.2	99	0.00
6		delta-BHC	40.000	41.424	-3.6	102	0.00
7		Aldrin	40.000	40.872	-2.2	98	0.00
8		Heptachlor Epoxide	40.000	38.343	4.1	95	0.00
9		gamma-Chlordane	40.000	39.198	2.0	98	0.00
0		alpha-Chlordane	40.000	39.540	1.2	99	0.00
1		Endosulfan I	40.000	40.506	-1.3	101	0.00
2		4,4'-DDE	40.000	37.897	5.3	92	0.00
3		Dieldrin	40.000	38.094	4.8	95	0.00
4		Endrin	40.000	39.524	1.2	99	0.00
5		4,4'-DDD	40.000	40.286	-0.7	101	0.00
6		Endosulfan II	40.000	38.002	5.0	94	0.00
7		4,4'-DDT	40.000	32.973	17.6#	79	0.00
8		Endrin Aldehyde	40.000	38.979	2.6	102	0.00
9		Endosulfan Sulfate	40.000	37.723	5.7	97	0.00
0		Methoxychlor	40.000	33.438	16.4#	84	0.00
1		Endrin Ketone	40.000	40.082	-0.2	103	0.00
9	SC	Decachlorobiphenyl	40.000	27.094	32.3#	72	0.00

OK

Signal #2

1	S	Tetrachloro-m-xylene	40.000	40.782	-2.0	100	0.00
2		alpha-BHC	40.000	42.377	-5.9	99	0.00
3		gamma-BHC (Lindane)	40.000	42.650	-6.6	102	0.00
4		beta-BHC	40.000	38.953	2.6	100	0.00
5		Heptachlor	40.000	42.521	-6.3	102	0.00
6		delta-BHC	40.000	42.801	-7.0	104	0.00
7		Aldrin	40.000	40.749	-1.9	100	0.00
8		Heptachlor Epoxide	40.000	39.557	1.1	97	0.00
9		gamma-Chlordane	40.000	40.171	-0.4	98	0.00
0		alpha-Chlordane	40.000	40.022	-0.1	100	0.00
1		Endosulfan I	40.000	40.893	-2.2	101	0.00
2		4,4'-DDE	40.000	41.985	-5.0	104	0.00
3		Dieldrin	40.000	40.298	-0.7	100	0.00
4		Endrin	40.000	40.503	-1.3	99	0.00
5		4,4'-DDD	40.000	42.282	-5.7	107	0.00

OK

(#) = Out of Range

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0426PEST\ST04427.D\ECD1B.CH Vial: 17
Signal #2 : C:\HPCHEM\1\DATA\0426PEST\ST04427.D\ECD2A.CH
Acq On : 26 Apr 2000 3:29 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst164,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Wed Apr 26 13:48:14 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
6	Endosulfan II	40.000	39.771	0.6	99	0.00
7	4,4'-DDT	40.000	35.130	12.2	90	0.00
8	Endrin Aldehyde	40.000	40.938	-2.3	105	0.00
9	Endosulfan Sulfate	40.000	37.319	6.7	97	0.00
0	Methoxychlor	40.000	34.485	13.8	85	0.00
1	Endrin Ketone	40.000	40.552	-1.4	104	0.00
9 SC	Decachlorobiphenyl	40.000	29.190	27.0	76	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 1

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0426PEST\ST04433.D\ECD1B.CH Vial: 23
Signal #2 : C:\HPCHEM\1\DATA\0426PEST\ST04433.D\ECD2A.CH
Acq On : 26 Apr 2000 5:37 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst164,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Wed Apr 26 13:48:14 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
S	Tetrachloro-m-xylene	40.000	40.379	-0.9	98	0.00
	alpha-BHC	40.000	41.356	-3.4	98	0.00
	gamma-BHC (Lindane)	40.000	40.160	-0.4	97	0.00
	beta-BHC	40.000	39.133	2.2	99	0.00
	Heptachlor	40.000	36.502	8.7	89	0.00
	delta-BHC	40.000	42.174	-5.4	104	0.00
	Aldrin	40.000	40.326	-0.8	97	0.00
	Heptachlor Epoxide	40.000	39.882	0.3	99	0.00
	gamma-Chlordane	40.000	39.581	1.0	99	0.00
	alpha-Chlordane	40.000	38.243	4.4	96	0.00
	Endosulfan I	40.000	38.065	4.8	95	0.00
	4,4'-DDE	40.000	39.455	1.4	96	0.00
	Dieldrin	40.000	39.110	2.2	98	0.00
	Endrin	40.000	38.452	3.9	96	0.00
	4,4'-DDD	40.000	43.574	-8.9	109	0.00
	Endosulfan II	40.000	37.654	5.9	93	0.00
	4,4'-DDT Out, Both	40.000	17.538	56.2#	42	0.00
	Endrin Aldehyde	40.000	38.636	3.4	101	0.00
	Endosulfan Sulfate	40.000	36.567	8.6	94	0.00
	Methoxychlor Out, Both	40.000	20.445	48.9#	52	0.00
	Endrin Ketone	40.000	36.318	9.2	93	0.00
SC	Decachlorobiphenyl	40.000	25.777	35.6#	68	0.00

Signal #2

S	Tetrachloro-m-xylene	40.000	40.356	-0.9	99	0.00
	alpha-BHC	40.000	42.264	-5.7	99	0.00
	gamma-BHC (Lindane)	40.000	42.041	-5.1	101	0.00
	beta-BHC	40.000	38.930	2.7	100	0.00
	Heptachlor	40.000	37.177	7.1	89	0.00
	delta-BHC	40.000	42.140	-5.4	103	0.00
	Aldrin	40.000	41.225	-3.1	102	0.00
	Heptachlor Epoxide	40.000	40.744	-1.9	100	0.00
	gamma-Chlordane	40.000	40.448	-1.1	99	0.00
	alpha-Chlordane	40.000	39.800	0.5	100	0.00
	Endosulfan I	40.000	40.314	-0.8	100	0.00
	4,4'-DDE	40.000	40.949	-2.4	101	0.00
	Dieldrin	40.000	41.041	-2.6	102	0.00
	Endrin	40.000	38.267	4.3	93	0.00
	4,4'-DDD	40.000	46.855	-17.1#	119	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0426PEST\ST04433.D\ECD1B.CH Vial: 23
Signal #2 : C:\HPCHEM\1\DATA\0426PEST\ST04433.D\ECD2A.CH
Acq On : 26 Apr 2000 5:37 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst164,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Wed Apr 26 13:48:14 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
6		Endosulfan II	40.000	39.444	1.4	98	0.00
7		4,4'-DDT	40.000	17.768	55.6#	45	0.00
8		Endrin Aldehyde	40.000	40.155	-0.4	103	0.00
9		Endosulfan Sulfate	40.000	38.655	3.4	100	0.00
0		Methoxychlor	40.000	21.522	46.2#	53	0.00
1		Endrin Ketone	40.000	38.243	4.4	98	0.00
9	SC	Decachlorobiphenyl	40.000	28.065	29.8	73	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 1
ST04433.D 8081A.M Wed Apr 26 17:56:08 2000 GCECD2

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0426PEST\ST04434.D\ECD1B.CH Vial: 23
Signal #2 : C:\HPCHEM\1\DATA\0426PEST\ST04434.D\ECD2A.CH
Acq On : 26 Apr 2000 5:58 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst164,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Wed Apr 26 13:48:14 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
S	Tetrachloro-m-xylene	40.000	41.628	-4.1	101	0.00
	alpha-BHC	40.000	42.129	-5.3	100	0.00
	gamma-BHC (Lindane)	40.000	41.336	-3.3	100	0.00
	beta-BHC	40.000	38.579	3.6	97	0.00
	Heptachlor	40.000	37.634	5.9	91	0.00
	delta-BHC	40.000	42.494	-6.2	104	0.00
	Aldrin	40.000	40.818	-2.0	98	0.00
	Heptachlor Epoxide	40.000	41.311	-3.3	102	0.00
	gamma-Chlordane	40.000	39.993	0.0	100	0.00
	alpha-Chlordane	40.000	38.499	3.8	96	0.00
	Endosulfan I	40.000	39.156	2.1	98	0.00
	4,4'-DDE	40.000	39.547	1.1	96	0.00
	Dieldrin	40.000	38.744	3.1	97	0.00
	Endrin	40.000	38.904	2.7	97	0.00
	4,4'-DDD out, Both	40.000	46.471	-16.2#	117	0.00
	Endosulfan II	40.000	36.869	7.8	91	0.00
	4,4'-DDT out, Both	40.000	17.490	56.3#	42	0.00
	Endrin Aldehyde	40.000	37.725	5.7	98	0.00
	Endosulfan Sulfate	40.000	38.425	3.9	99	0.00
	Methoxychlor out, Both	40.000	21.304	46.7#	54	0.00
	Endrin Ketone	40.000	36.533	8.7	94	0.00
SC	Decachlorobiphenyl	40.000	27.530	31.2#	73	0.00

Signal #2

S	Tetrachloro-m-xylene	40.000	40.532	-1.3	99	0.00
	alpha-BHC	40.000	41.926	-4.8	98	0.00
	gamma-BHC (Lindane)	40.000	41.972	-4.9	101	0.00
	beta-BHC	40.000	39.274	1.8	101	0.00
	Heptachlor	40.000	37.867	5.3	91	0.00
	delta-BHC	40.000	42.301	-5.8	103	0.00
	Aldrin	40.000	41.220	-3.0	102	0.00
	Heptachlor Epoxide	40.000	39.978	0.1	99	0.00
	gamma-Chlordane	40.000	41.260	-3.1	101	0.00
	alpha-Chlordane	40.000	41.379	-3.4	103	0.00
	Endosulfan I	40.000	40.803	-2.0	101	0.00
	4,4'-DDE	40.000	41.927	-4.8	103	0.00
	Dieldrin	40.000	40.658	-1.6	101	0.00
	Endrin	40.000	40.492	-1.2	99	0.00
	4,4'-DDD	40.000	46.782	-17.0#	118	0.00

#) = Out of Range

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0426PEST\ST04434.D\ECD1B.CH Vial: 23
Signal #2 : C:\HPCHEM\1\DATA\0426PEST\ST04434.D\ECD2A.CH
Acq On : 26 Apr 2000 5:58 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst164,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Wed Apr 26 13:48:14 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
6	Endosulfan II	40.000	39.241	1.9	97	0.00
7	4,4'-DDT	40.000	17.394	56.5#	44	0.00
8	Endrin Aldehyde	40.000	40.411	-1.0	104	0.00
9	Endosulfan Sulfate	40.000	38.620	3.5	100	0.00
0	Methoxychlor	40.000	22.315	44.2#	55	0.00
1	Endrin Ketone	40.000	39.251	1.9	101	0.00
9 SC	Decachlorobiphenyl	40.000	29.241	26.9	76	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 1

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0419PEST\ST04348.D\ECD1B.CH Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\0419PEST\ST04348.D\ECD2A.CH
Acq On : 19 Apr 2000 9:47 am Operator: stephw
Sample : 40ppb ccv p508 Inst : ECD 3
Misc : op1460,gst163,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Mon Apr 17 08:54:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	S	Tetrachloro-m-xylene	40.000	40.591	-1.5	99	0.00
2		alpha-BHC	40.000	42.157	-5.4	99	0.00
3		gamma-BHC (Lindane)	40.000	41.826	-4.6	100	0.00
4		beta-BHC	40.000	40.287	-0.7	100	0.00
5		Heptachlor	40.000	41.184	-3.0	98	0.00
6		delta-BHC	40.000	41.717	-4.3	98	0.00
7		Aldrin	40.000	42.438	-6.1	100	0.00
8		Heptachlor Epoxide	40.000	41.629	-4.1	102	0.00
9		gamma-Chlordane	40.000	40.508	-1.3	97	0.00
10		alpha-Chlordane	40.000	38.920	2.7	93	0.00
11		Endosulfan I	40.000	43.475	-8.7	103	0.00
12		4,4'-DDE	40.000	41.099	-2.7	95	0.00
13		Dieldrin	40.000	40.388	-1.0	94	0.00
14		Endrin	40.000	40.893	-2.2	94	0.00
15		4,4'-DDD	40.000	42.661	-6.7	99	0.00
16		Endosulfan II	40.000	40.636	-1.6	98	0.00
17		4,4'-DDT	40.000	37.521	6.2	93	0.00
18		Endrin Aldehyde	40.000	41.016	-2.5	99	0.00
19		Endosulfan Sulfate	40.000	41.065	-2.7	98	0.00
20		Methoxychlor	40.000	35.636	10.9	96	0.00
21		Endrin Ketone	40.000	41.249	-3.1	105	0.00
29	SC	Decachlorobiphenyl	40.000	41.226	-3.1	106	-0.01

Signal #2

1	S	Tetrachloro-m-xylene	40.000	40.550	-1.4	101	0.00
2		alpha-BHC	40.000	42.455	-6.1	101	0.00
3		gamma-BHC (Lindane)	40.000	42.263	-5.7	101	0.00
4		beta-BHC	40.000	40.585	-1.5	101	0.00
5		Heptachlor	40.000	39.205	2.0	94	0.00
6		delta-BHC	40.000	42.469	-6.2	100	0.00
7		Aldrin	40.000	42.850	-7.1	103	0.00
8		Heptachlor Epoxide	40.000	40.065	-0.2	95	0.00
9		gamma-Chlordane	40.000	41.031	-2.6	99	0.00
10		alpha-Chlordane	40.000	39.975	0.1	94	0.00
11		Endosulfan I	40.000	41.122	-2.8	97	0.00
12		4,4'-DDE	40.000	39.770	0.6	94	0.00
13		Dieldrin	40.000	41.053	-2.6	98	0.00
14		Endrin	40.000	39.789	0.5	95	0.00
15		4,4'-DDD	40.000	42.493	-6.2	95	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0419PEST\ST04348.D\ECD1B.CH Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\0419PEST\ST04348.D\ECD2A.CH
Acq On : 19 Apr 2000 9:47 am Operator: stephw
Sample : 40ppb ccv p508 Inst : ECD 3
Misc : op1460,gst163,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Mon Apr 17 08:54:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
16	Endosulfan II	40.000	41.578	-3.9	100	0.00
17	4,4'-DDT	40.000	37.648	5.9	96	0.00
18	Endrin Aldehyde	40.000	41.965	-4.9	103	0.00
19	Endosulfan Sulfate	40.000	39.398	1.5	98	0.00
20	Methoxychlor	40.000	34.316	14.2	87	0.00
21	Endrin Ketone	40.000	40.860	-2.1	100	0.00
29 SC	Decachlorobiphenyl	40.000	40.783	-2.0	107	0.00

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0419PEST\ST04358.D\ECD1B.CH Vial: 13
Signal #2 : C:\HPCHEM\1\DATA\0419PEST\ST04358.D\ECD2A.CH
Acq On : 19 Apr 2000 1:20 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst163,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Mon Apr 17 08:54:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	S	Tetrachloro-m-xylene	40.000	40.274	-0.7	99	0.00
2		alpha-BHC	40.000	41.790	-4.5	98	0.00
3		gamma-BHC (Lindane)	40.000	41.394	-3.5	99	0.00
4		beta-BHC	40.000	39.728	0.7	99	0.00
5		Heptachlor	40.000	40.122	-0.3	95	0.00
6		delta-BHC	40.000	41.229	-3.1	97	0.00
7		Aldrin	40.000	41.428	-3.6	98	0.00
8		Heptachlor Epoxide	40.000	40.109	-0.3	98	0.00
9		gamma-Chlordane	40.000	40.522	-1.3	97	0.00
0		alpha-Chlordane	40.000	40.628	-1.6	97	0.00
1		Endosulfan I	40.000	40.552	-1.4	97	0.00
2		4,4'-DDE	40.000	41.274	-3.2	95	0.00
3		Dieldrin	40.000	41.881	-4.7	97	0.00
4		Endrin	40.000	39.570	1.1	91	0.00
5		4,4'-DDD	40.000	40.991	-2.5	95	0.00
6		Endosulfan II	40.000	38.936	2.7	94	0.00
7		4,4'-DDT	40.000	37.279	6.8	92	0.00
8		Endrin Aldehyde	40.000	39.436	1.4	95	0.00
9		Endosulfan Sulfate	40.000	37.461	~~6.3~~	89	0.00
0		Methoxychlor	40.000	33.439	16.4#	90	0.00
1		Endrin Ketone	40.000	40.066	~~-0.2~~	102	0.00
9	SC	Decachlorobiphenyl	40.000	39.198	2.0	101	-0.01

Signal #2

1	S	Tetrachloro-m-xylene	40.000	40.457	-1.1	100	0.00
2		alpha-BHC	40.000	42.309	-5.8	100	0.00
3		gamma-BHC (Lindane)	40.000	42.128	-5.3	101	0.00
4		beta-BHC	40.000	40.376	-0.9	101	0.00
5		Heptachlor	40.000	40.068	-0.2	96	0.00
6		delta-BHC	40.000	42.304	-5.8	100	0.00
7		Aldrin	40.000	41.081	-2.7	99	0.00
8		Heptachlor Epoxide	40.000	40.923	-2.3	97	0.00
9		gamma-Chlordane	40.000	40.972	-2.4	99	0.00
0		alpha-Chlordane	40.000	40.672	-1.7	96	0.00
1		Endosulfan I	40.000	40.781	-2.0	96	0.00
2		4,4'-DDE	40.000	42.127	-5.3	99	0.00
3		Dieldrin	40.000	42.668	-6.7	102	0.00
4		Endrin	40.000	40.473	-1.2	96	0.00
5		4,4'-DDD	40.000	42.382	-6.0	94	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0419PEST\ST04358.D\ECD1B.CH Vial: 13
Signal #2 : C:\HPCHEM\1\DATA\0419PEST\ST04358.D\ECD2A.CH
Acq On : 19 Apr 2000 1:20 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst163,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Mon Apr 17 08:54:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
6		Endosulfan II	40.000	41.689	-4.2	100	0.00
7		4,4'-DDT	40.000	37.729	5.7	96	0.00
8		Endrin Aldehyde	40.000	40.152	-0.4	98	0.00
9		Endosulfan Sulfate	40.000	38.747	3.1	96	0.00
0		Methoxychlor	40.000	35.525	11.2	90	0.00
1		Endrin Ketone	40.000	40.570	-1.4	100	0.00
9	SC	Decachlorobiphenyl	40.000	39.209	2.0	103	0.00

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0419PEST\ST04365.D\ECD1B.CH Vial: 20
Signal #2 : C:\HPCHEM\1\DATA\0419PEST\ST04365.D\ECD2A.CH
Acq On : 19 Apr 2000 3:54 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst163,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Mon Apr 17 08:54:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	S	Tetrachloro-m-xylene	40.000	39.325	1.7	96	0.00
2		alpha-BHC	40.000	41.192	-3.0	97	0.00
3		gamma-BHC (Lindane)	40.000	40.485	-1.2	96	0.00
4		beta-BHC	40.000	38.564	3.6	96	0.00
5		Heptachlor	40.000	37.580	6.1	89	0.00
6		delta-BHC	40.000	40.560	-1.4	96	0.00
7		Aldrin	40.000	38.892	2.8	92	0.00
8		Heptachlor Epoxide	40.000	38.566	3.6	94	0.00
9		gamma-Chlordane	40.000	38.173	4.6	92	0.00
0		alpha-Chlordane	40.000	36.639	8.4	87	0.00
1		Endosulfan I	40.000	38.161	4.6	91	0.00
2		4,4'-DDE	40.000	39.310	1.7	91	0.00
3		Dieldrin	40.000	35.971	10.1	84	0.00
4		Endrin	40.000	37.837	5.4	87	0.00
5		4,4'-DDD	40.000	40.099	-0.2	93	0.00
6		Endosulfan II	40.000	34.809	13.0	84	0.00
7		4,4'-DDT — out, Both	40.000	20.370	49.1#	50	0.00
8		Endrin Aldehyde	40.000	32.738	18.2#	79	0.00
9		Endosulfan Sulfate	40.000	32.960	17.6#	78	0.00
0		Methoxychlor	40.000	21.963	45.1#	59	-0.01
1		Endrin Ketone out, Both	40.000	31.226	21.9#	79	-0.01
9	SC	Decachlorobiphenyl	40.000	30.421	23.9	78	-0.01

Signal #2

1	S	Tetrachloro-m-xylene	40.000	39.860	0.4	99	0.00
2		alpha-BHC	40.000	41.691	-4.2	99	0.00
3		gamma-BHC (Lindane)	40.000	41.388	-3.5	99	0.00
4		beta-BHC	40.000	39.197	2.0	98	0.00
5		Heptachlor	40.000	37.853	5.4	91	0.00
6		delta-BHC	40.000	41.256	-3.1	97	0.00
7		Aldrin	40.000	40.937	-2.3	98	0.00
8		Heptachlor Epoxide	40.000	39.054	2.4	93	0.00
9		gamma-Chlordane	40.000	40.219	-0.5	97	0.00
0		alpha-Chlordane	40.000	38.795	3.0	91	0.00
1		Endosulfan I	40.000	39.574	1.1	93	0.00
2		4,4'-DDE	40.000	42.531	-6.3	100	0.00
3		Dieldrin	40.000	39.895	0.3	95	0.00
4		Endrin	40.000	43.245	-8.1	103	0.00
5		4,4'-DDD	40.000	44.277	-10.7	99	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0419PEST\ST04365.D\ECD1B.CH Vial: 20
Signal #2 : C:\HPCHEM\1\DATA\0419PEST\ST04365.D\ECD2A.CH
Acq On : 19 Apr 2000 3:54 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst163,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Mon Apr 17 08:54:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
	Endosulfan II	40.000	38.164	4.6	92	0.00
	4,4'-DDT	40.000	21.087	47.3#	54	0.00
	Endrin Aldehyde	40.000	37.483	6.3	92	0.00
	Endosulfan Sulfate	40.000	35.274	11.8	88	0.00
	Methoxychlor	40.000	23.765	40.6#	60	0.00
	Endrin Ketone	40.000	31.733	20.7#	78	0.00
SC	Decachlorobiphenyl	40.000	34.563	13.6	91	0.00

#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0419PEST\ST04366.D\ECD1B.CH Vial: 21
Signal #2 : C:\HPCHEM\1\DATA\0419PEST\ST04366.D\ECD2A.CH
Acq On : 19 Apr 2000 4:15 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst163,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Mon Apr 17 08:54:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	S	Tetrachloro-m-xylene	40.000	39.790	0.5	97	0.00
2		alpha-BHC	40.000	41.236	-3.1	97	0.00
3		gamma-BHC (Lindane)	40.000	40.590	-1.5	97	0.00
4		beta-BHC	40.000	38.662	3.3	96	0.00
5		Heptachlor	40.000	38.849	2.9	92	0.00
6		delta-BHC	40.000	40.786	-2.0	96	0.00
7		Aldrin	40.000	39.465	1.3	93	0.00
8		Heptachlor Epoxide	40.000	38.529	3.7	94	0.00
9		gamma-Chlordane	40.000	38.279	4.3	92	0.00
0		alpha-Chlordane	40.000	37.894	5.3	90	0.00
1		Endosulfan I	40.000	37.945	5.1	90	0.00
2		4,4'-DDE	40.000	39.021	2.4	90	0.00
3		Dieldrin	40.000	38.013	5.0	88	0.00
4		Endrin	40.000	38.541	3.6	89	0.00
5		4,4'-DDD	40.000	41.904	-4.8	98	0.00
6		Endosulfan II	40.000	34.344	14.1	83	0.00
7		4,4'-DDT – out, Bch	40.000	20.409	49.0#	50	0.00
8		Endrin Aldehyde	40.000	34.019	15.0	82	0.00
9		Endosulfan Sulfate	40.000	33.507	16.2#	80	0.00
0		Methoxychlor – out, Bch	40.000	21.387	46.5#	58	0.00
1		Endrin Ketone out, Bch	40.000	30.570	23.6#	78	0.00
9	SC	Decachlorobiphenyl	40.000	33.246	16.9	86	0.00

Signal #2

1	S	Tetrachloro-m-xylene	40.000	39.908	0.2	99	0.00
2		alpha-BHC	40.000	41.781	-4.5	99	0.00
3		gamma-BHC (Lindane)	40.000	41.316	-3.3	99	0.00
4		beta-BHC	40.000	39.263	1.8	98	0.00
5		Heptachlor	40.000	37.746	5.6	91	0.00
6		delta-BHC	40.000	41.236	-3.1	97	0.00
7		Aldrin	40.000	40.215	-0.5	97	0.00
8		Heptachlor Epoxide	40.000	39.570	1.1	94	0.00
9		gamma-Chlordane	40.000	40.485	-1.2	98	0.00
0		alpha-Chlordane	40.000	38.419	4.0	90	0.00
1		Endosulfan I	40.000	39.476	1.3	93	0.00
2		4,4'-DDE	40.000	43.265	-8.2	102	0.00
3		Dieldrin	40.000	39.190	2.0	93	0.00
4		Endrin	40.000	40.694	-1.7	97	0.00
5		4,4'-DDD	40.000	45.500	-13.8	101	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0419PEST\ST04366.D\ECD1B.CH Vial: 21
Signal #2 : C:\HPCHEM\1\DATA\0419PEST\ST04366.D\ECD2A.CH
Acq On : 19 Apr 2000 4:15 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst163,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Mon Apr 17 08:54:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
	Endosulfan II	40.000	38.624	3.4	93	0.00
	4,4'-DDT	40.000	21.711	45.7#	55	0.00
	Endrin Aldehyde	40.000	37.443	6.4	92	0.00
	Endosulfan Sulfate	40.000	35.552	11.1	88	0.00
	Methoxychlor	40.000	24.408	39.0#	62	0.00
	Endrin Ketone	40.000	33.565	16.1#	83	0.00
SC	Decachlorobiphenyl	40.000	36.112	9.7	95	0.00

#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0419PEST\ST04372.D\ECD1B.CH Vial: 27
Signal #2 : C:\HPCHEM\1\DATA\0419PEST\ST04372.D\ECD2A.CH
Acq On : 19 Apr 2000 6:29 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst163,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Mon Apr 17 08:54:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	S	Tetrachloro-m-xylene	40.000	39.817	0.5	98	0.00
2		alpha-BHC	40.000	41.703	-4.3	98	0.00
3		gamma-BHC (Lindane)	40.000	38.136	4.7	91	0.00
4		beta-BHC	40.000	37.796	5.5	94	0.00
5		Heptachlor out, Bch	40.000	21.085	47.3#	50	0.00
6		delta-BHC	40.000	41.048	-2.6	97	0.00
7		Aldrin	40.000	39.743	0.6	94	0.00
8		Heptachlor Epoxide	40.000	39.835	0.4	97	0.00
9		gamma-Chlordane	40.000	38.023	4.9	91	0.00
10		alpha-Chlordane	40.000	38.509	3.7	92	0.00
11		Endosulfan I	40.000	38.272	4.3	91	0.00
12		4,4'-DDE	40.000	40.095	-0.2	92	0.00
13		Dieldrin	40.000	37.734	5.7	88	0.00
14		Endrin	40.000	34.113	14.7	78	0.00
15		4,4'-DDD out	40.000	48.056	-20.1#	112	0.00
16		Endosulfan II	40.000	36.118	9.7	88	0.00
17		4,4'-DDT out	40.000	1.628	95.9#	4	0.00
18		Endrin Aldehyde	40.000	33.170	17.1#	80	0.00
19		Endosulfan Sulfate	40.000	34.707	13.2	83	0.00
20		Methoxychlor out	40.000	3.112	92.2#	8	-0.01
21		Endrin Ketone	40.000	20.019	50.0#	51	0.00
22	SC	Decachlorobiphenyl	40.000	34.638	13.4	89	-0.01

Signal #2

	S	Tetrachloro-m-xylene	40.000	39.999	0.0	99	0.00
		alpha-BHC	40.000	42.015	-5.0	100	0.00
		gamma-BHC (Lindane)	40.000	38.570	3.6	92	0.00
		beta-BHC	40.000	38.056	4.9	95	0.00
		Heptachlor	40.000	20.630	48.4#	50	0.00
		delta-BHC	40.000	41.612	-4.0	98	0.00
		Aldrin	40.000	40.844	-2.1	98	0.00
		Heptachlor Epoxide	40.000	39.274	1.8	93	0.00
		gamma-Chlordane	40.000	39.497	1.3	96	0.00
		alpha-Chlordane	40.000	39.333	1.7	93	0.00
		Endosulfan I	40.000	39.899	0.3	94	0.00
		4,4'-DDE	40.000	42.094	-5.2	99	0.00
		Dieldrin	40.000	39.937	0.2	95	0.00
		Endrin	40.000	36.141	9.6	86	0.00
		4,4'-DDD	40.000	51.741	-29.4#	115	0.00

#) = Out of Range

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0419PEST\ST04372.D\ECD1B.CH Vial: 27
Signal #2 : C:\HPCHEM\1\DATA\0419PEST\ST04372.D\ECD2A.CH
Acq On : 19 Apr 2000 6:29 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst163,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Mon Apr 17 08:54:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
5		Endosulfan II	40.000	37.927	5.2	91	0.00
7		4,4'-DDT	40.000	1.575	96.1#	4	0.00
8		Endrin Aldehyde	40.000	37.474	6.3	92	0.00
9		Endosulfan Sulfate	40.000	34.649	13.4	86	0.00
0		Methoxychlor	40.000	2.929	92.7#	7	0.00
		Endrin Ketone	40.000	20.504	48.7#	50	0.00
9	SC	Decachlorobiphenyl	40.000	36.974	7.6	97	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
ST04372.D 8081A.M Fri Apr 21 15:57:50 2000 GCECD2 Page 30

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0419PEST\ST04373.D\ECD1B.CH Vial: 27
Signal #2 : C:\HPCHEM\1\DATA\0419PEST\ST04373.D\ECD2A.CH
Acq On : 19 Apr 2000 6:50 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst163,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Mon Apr 17 08:54:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
S	Tetrachloro-m-xylene	40.000	39.253	1.9	96	0.00
	alpha-BHC	40.000	41.052	-2.6	97	0.00
	gamma-BHC (Lindane)	40.000	37.749	5.6	90	0.00
	beta-BHC	40.000	37.262	6.8	92	0.00
	Heptachlor	40.000	22.591	43.5#	54	0.00
	delta-BHC	40.000	40.074	-0.2	94	0.00
	Aldrin	40.000	40.621	-1.6	96	0.00
	Heptachlor Epoxide	40.000	38.426	3.9	94	0.00
	gamma-Chlordane	40.000	38.682	3.3	93	0.00
	alpha-Chlordane	40.000	37.233	6.9	89	0.00
	Endosulfan I	40.000	38.614	3.5	92	0.00
	4,4'-DDE	40.000	40.067	-0.2	92	0.00
	Dieldrin	40.000	38.241	4.4	89	0.00
	Endrin	40.000	34.008	15.0	78	0.00
	4,4'-DDD	40.000	47.169	-17.9#	110	0.00
	Endosulfan II	40.000	35.713	10.7	87	0.00
	4,4'-DDT	40.000	2.107	94.7#	5	0.00
	Endrin Aldehyde	40.000	33.209	17.0#	80	0.00
	Endosulfan Sulfate	40.000	33.864	15.3#	81	0.00
	Methoxychlor	40.000	3.904	90.2#	10	-0.01
	Endrin Ketone	40.000	21.863	45.3#	56	-0.01
SC	Decachlorobiphenyl	40.000	33.067	17.3	85	-0.01

Out Rehr

Signal #2

S	Tetrachloro-m-xylene	40.000	39.426	1.4	98	0.00
	alpha-BHC	40.000	41.361	-3.4	98	0.00
	gamma-BHC (Lindane)	40.000	38.086	4.8	91	0.00
	beta-BHC	40.000	37.388	6.5	93	0.00
	Heptachlor	40.000	22.077	44.8#	53	0.00
	delta-BHC	40.000	40.584	-1.5	96	0.00
	Aldrin	40.000	40.315	-0.8	97	0.00
	Heptachlor Epoxide	40.000	38.807	3.0	92	0.00
	gamma-Chlordane	40.000	37.969	5.1	92	0.00
	alpha-Chlordane	40.000	39.192	2.0	92	0.00
	Endosulfan I	40.000	39.144	2.1	92	0.00
	4,4'-DDE	40.000	41.023	-2.6	97	0.00
	Dieldrin	40.000	39.910	0.2	95	0.00
	Endrin	40.000	35.950	10.1	85	0.00
	4,4'-DDD	40.000	49.401	-23.5#	110	0.00

#) = Out of Range

000533

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\0419PEST\ST04373.D\ECD1B.CH Vial: 27
Signal #2 : C:\HPCHEM\1\DATA\0419PEST\ST04373.D\ECD2A.CH
Acq On : 19 Apr 2000 6:50 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 3
Misc : op1460,gst163,soil,,,10, Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: EVENTS2.E

Method : C:\HPCHEM\1\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Mon Apr 17 08:54:02 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
6		Endosulfan II	40.000	36.745	8.1	89	0.00
7		4,4'-DDT	40.000	2.000	95.0#	5	0.00
8		Endrin Aldehyde	40.000	36.081	9.8	88	0.00
9		Endosulfan Sulfate	40.000	35.061	12.3	87	0.00
0		Methoxychlor	40.000	3.694	90.8#	9	0.00
1		Endrin Ketone	40.000	21.518	46.2#	53	0.00
9	SC	Decachlorobiphenyl	40.000	35.509	11.2	93	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\2\DATA\0424PEST\MN06771.D\ECD1A.CH Vial: 22
Signal #2 : C:\HPCHEM\2\DATA\0424PEST\MN06771.D\ECD2B.CH
Acq On : 24 Apr 2000 10:37 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 2
Misc : op1466,gmn275,water,,,10, Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\2\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Tue Apr 25 09:06:33 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
	S	Tetrachloro-m-xylene	40.000	40.781	-2.0	102	-0.01
2		alpha-BHC	40.000	43.377	-8.4	101	0.00
3		gamma-BHC (Lindane)	40.000	42.441	-6.1	101	0.00
4		beta-BHC	40.000	40.204	-0.5	101	0.00
5		Heptachlor	40.000	41.307	-3.3	100	-0.01
6		delta-BHC	40.000	42.949	-7.4	101	0.00
7		Aldrin	40.000	42.535	-6.3	101	0.00
8		Heptachlor Epoxide	40.000	42.007	-5.0	102	-0.01
9		gamma-Chlordane	40.000	41.643	-4.1	100	0.00
0		alpha-Chlordane	40.000	41.056	-2.6	100	0.00
1		Endosulfan I	40.000	42.279	-5.7	101	0.00
2		4,4'-DDE	40.000	43.085	-7.7	100	0.00
3		Dieldrin	40.000	43.032	-7.6	101	-0.01
4		Endrin	40.000	40.544	-1.4	95	0.00
5		4,4'-DDD	40.000	45.273	-13.2	107	0.00
6		Endosulfan II	40.000	41.931	-4.8	101	0.00
7		4,4'-DDT	40.000	36.963	7.6	86	-0.01
8		Endrin Aldehyde	40.000	41.431	-3.6	102	-0.01
9		Endosulfan Sulfate	40.000	40.136	-0.3	100	-0.01
0		Methoxychlor	40.000	35.588	11.0	88	-0.01
1		Endrin Ketone	40.000	42.350	-5.9	102	-0.02
9	S	Decachlorobiphenyl	40.000	36.031	9.9	100	-0.02

Signal #2

1	S	Tetrachloro-m-xylene	40.000	38.809	3.0	97	0.00
2		alpha-BHC	40.000	40.867	-2.2	98	0.00
3		gamma-BHC (Lindane)	40.000	40.146	-0.4	96	0.00
4		beta-BHC	40.000	37.996	5.0	95	0.00
5		Heptachlor	40.000	39.854	0.4	98	0.00
6		delta-BHC	40.000	39.788	0.5	93	0.00
7		Aldrin	40.000	40.174	-0.4	96	0.00
8		Heptachlor Epoxide	40.000	39.459	1.4	97	0.00
9		gamma-Chlordane	40.000	39.215	2.0	97	0.00
0		alpha-Chlordane	40.000	40.257	-0.6	97	0.00
1		Endosulfan I	40.000	38.481	3.8	96	0.00
2		4,4'-DDE	40.000	39.765	0.6	93	0.00
3		Dieldrin	40.000	41.238	-3.1	98	0.00
4		Endrin	40.000	38.285	4.3	93	0.00
5		4,4'-DDD	40.000	42.236	-5.6	100	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\2\DATA\0424PEST\MN06771.D\ECD1A.CH Vial: 22
Signal #2 : C:\HPCHEM\2\DATA\0424PEST\MN06771.D\ECD2B.CH
Acq On : 24 Apr 2000 10:37 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 2
Misc : op1466,gmn275,water,,,10, Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\2\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Tue Apr 25 09:06:33 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
	Endosulfan II	40.000	39.249	1.9	97	0.00
	4,4'-DDT	40.000	37.712	5.7	90	0.00
	Endrin Aldehyde	40.000	38.924	2.7	98	0.00
	Endosulfan Sulfate	40.000	39.136	2.2	97	0.00
	Methoxychlor	40.000	34.392	14.0	86	0.00
	Endrin Ketone	40.000	39.949	0.1	100	0.00
S	Decachlorobiphenyl	40.000	34.432	13.9	93	0.00

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\2\DATA\0424PEST\MN06772.D\ECD1A.CH Vial: 22
Signal #2 : C:\HPCHEM\2\DATA\0424PEST\MN06772.D\ECD2B.CH
Acq On : 24 Apr 2000 10:58 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 2
Misc : op1466,gmn275,water,,,10, Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\2\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Tue Apr 25 09:06:33 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
S	Tetrachloro-m-xylene	40.000	40.423	-1.1	101	0.00
	alpha-BHC	40.000	42.582	-6.5	100	0.00
	gamma-BHC (Lindane)	40.000	42.109	-5.3	100	0.00
	beta-BHC	40.000	39.821	0.4	100	0.00
	Heptachlor	40.000	41.024	-2.6	99	0.00
	delta-BHC	40.000	42.527	-6.3	100	0.00
	Aldrin	40.000	42.135	-5.3	100	0.00
	Heptachlor Epoxide	40.000	41.260	-3.1	100	0.00
	gamma-Chlordane	40.000	41.875	-4.7	101	0.00
	alpha-Chlordane	40.000	41.404	-3.5	101	0.00
	Endosulfan I	40.000	42.323	-5.8	101	0.00
	4,4'-DDE	40.000	43.103	-7.8	100	0.00
	Dieldrin	40.000	42.912	-7.3	101	0.00
	Endrin	40.000	41.205	-3.0	97	0.00
	4,4'-DDD	40.000	43.844	-9.6	103	0.00
	Endosulfan II	40.000	41.781	-4.5	101	0.00
	4,4'-DDT	40.000	40.092	-0.2	94	0.00
	Endrin Aldehyde	40.000	41.388	-3.5	102	-0.01
	Endosulfan Sulfate	40.000	40.743	-1.9	101	-0.01
	Methoxychlor	40.000	38.029	4.9	94	-0.01
	Endrin Ketone	40.000	42.497	-6.2	103	-0.01
S	Decachlorobiphenyl	40.000	38.257	4.4	106	-0.02

Signal #2

S	Tetrachloro-m-xylene	40.000	38.900	2.8	97	0.00
	alpha-BHC	40.000	40.647	-1.6	97	0.00
	gamma-BHC (Lindane)	40.000	40.215	-0.5	96	0.00
	beta-BHC	40.000	37.845	5.4	94	0.00
	Heptachlor	40.000	40.382	-1.0	100	0.00
	delta-BHC	40.000	40.161	-0.4	94	0.00
	Aldrin	40.000	40.339	-0.8	97	0.00
	Heptachlor Epoxide	40.000	39.818	0.5	98	0.00
	gamma-Chlordane	40.000	39.528	1.2	98	0.00
	alpha-Chlordane	40.000	40.913	-2.3	99	0.00
	Endosulfan I	40.000	39.420	1.4	98	0.00
	4,4'-DDE	40.000	41.284	-3.2	97	0.00
	Dieldrin	40.000	41.412	-3.5	98	0.00
	Endrin	40.000	39.341	1.6	96	0.00
	4,4'-DDD	40.000	42.251	-5.6	100	0.00

#) = Out of Range

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\2\DATA\0424PEST\MN06772.D\ECD1A.CH Vial: 22
Signal #2 : C:\HPCHEM\2\DATA\0424PEST\MN06772.D\ECD2B.CH
Acq On : 24 Apr 2000 10:58 pm Operator: stephw
Sample : 40ppb ccv Inst : ECD 2
Misc : op1466,gmn275,water,,,10, Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\2\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Tue Apr 25 09:06:33 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
5	Endosulfan II	40.000	39.671	0.8	98	0.00
7	4,4'-DDT	40.000	40.864	-2.2	98	0.00
8	Endrin Aldehyde	40.000	39.751	0.6	100	0.00
9	Endosulfan Sulfate	40.000	39.498	1.3	98	0.00
0	Methoxychlor	40.000	37.165	7.1	93	0.00
	Endrin Ketone	40.000	39.858	0.4	100	0.00
0 S	Decachlorobiphenyl	40.000	37.018	7.5	100	0.00

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\2\DATA\0424PEST\MN06782.D\ECD1A.CH Vial: 32
Signal #2 : C:\HPCHEM\2\DATA\0424PEST\MN06782.D\ECD2B.CH
Acq On : 25 Apr 2000 2:35 am Operator: stephw
Sample : 40ppb ccv Inst : ECD 2
Misc : op1466,gmn275,water,,,10, Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\2\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Tue Apr 25 09:06:33 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
S	Tetrachloro-m-xylene	40.000	42.730	-6.8	107	0.00
	alpha-BHC	40.000	44.782	-12.0	105	0.00
	gamma-BHC (Lindane)	40.000	43.920	-9.8	104	0.00
	beta-BHC	40.000	42.138	-5.3	106	0.00
	Heptachlor	40.000	41.773	-4.4	101	0.00
	delta-BHC	40.000	45.305	-13.3	107	0.00
	Aldrin	40.000	44.721	-11.8	106	0.00
	Heptachlor Epoxide	40.000	43.382	-8.5	105	0.00
	gamma-Chlordane	40.000	43.899	-9.7	106	0.00
	alpha-Chlordane	40.000	43.721	-9.3	107	0.00
	Endosulfan I	40.000	44.870	-12.2	107	0.00
	4,4'-DDE	40.000	45.650	-14.1	106	0.00
	Dieldrin	40.000	44.926	-12.3	106	0.00
	Endrin	40.000	40.729	-1.8	96	0.00
	4,4'-DDD	40.000	49.371	-23.4#	116	0.00
	Endosulfan II	40.000	44.335	-10.8	107	0.00
	4,4'-DDT	40.000	32.785	18.0#	77	0.00
	Endrin Aldehyde	40.000	44.536	-11.3	110	0.00
	Endosulfan Sulfate	40.000	43.479	-8.7	108	0.00
	Methoxychlor	40.000	32.066	19.8#	79	-0.01
	Endrin Ketone	40.000	44.318	-10.8	107	-0.01
S	Decachlorobiphenyl	40.000	36.507	8.7	101	-0.02

Signal #2

S	Tetrachloro-m-xylene	40.000	40.715	-1.8	102	0.00
	alpha-BHC	40.000	42.842	-7.1	103	0.00
	gamma-BHC (Lindane)	40.000	42.071	-5.2	101	0.00
	beta-BHC	40.000	39.731	0.7	99	0.00
	Heptachlor	40.000	41.362	-3.4	102	0.00
	delta-BHC	40.000	41.959	-4.9	98	0.00
	Aldrin	40.000	42.208	-5.5	101	0.00
	Heptachlor Epoxide	40.000	41.092	-2.7	101	0.00
	gamma-Chlordane	40.000	41.424	-3.6	102	0.00
	alpha-Chlordane	40.000	42.329	-5.8	102	0.00
	Endosulfan I	40.000	41.347	-3.4	103	0.00
	4,4'-DDE	40.000	42.686	-6.7	100	0.00
	Dieldrin	40.000	43.748	-9.4	103	0.00
	Endrin	40.000	38.811	3.0	94	0.00
	4,4'-DDD	40.000	46.989	-17.5#	111	0.00

) = Out of Range

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\2\DATA\0424PEST\MN06782.D\ECD1A.CH Vial: 32
Signal #2 : C:\HPCHEM\2\DATA\0424PEST\MN06782.D\ECD2B.CH
Acq On : 25 Apr 2000 2:35 am
Sample : 40ppb ccv
Misc : op1466,gmn275,water,,,10,
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Operator: stephw
Inst : ECD 2
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Tue Apr 25 09:06:33 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
	Endosulfan II	40.000	41.140	-2.9	102	0.00
	4,4'-DDT	40.000	37.662	5.8	90	0.00
	Endrin Aldehyde	40.000	41.934	-4.8	105	0.00
	Endosulfan Sulfate	40.000	41.067	-2.7	102	0.00
	Methoxychlor	40.000	31.319	21.7#	78	0.00
	Endrin Ketone	40.000	41.423	-3.6	104	0.00
S	Decachlorobiphenyl	40.000	35.247	11.9	95	0.00

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\2\DATA\0424PEST\MN06783.D\ECD1A.CH Vial: 32
Signal #2 : C:\HPCHEM\2\DATA\0424PEST\MN06783.D\ECD2B.CH
Acq On : 25 Apr 2000 2:57 am Operator: stephw
Sample : 40ppb ccv Inst : ECD 2
Misc : op1466,gmn275,water,,,10, Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\2\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Tue Apr 25 09:06:33 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
S	Tetrachloro-m-xylene	40.000	43.471	-8.7	109	0.00
	alpha-BHC	40.000	45.770	-14.4	107	0.00
	gamma-BHC (Lindane)	40.000	44.628	-11.6	106	0.00
	beta-BHC	40.000	43.245	-8.1	109	0.00
	Heptachlor	40.000	42.896	-7.2	104	0.00
	delta-BHC	40.000	46.616	-16.5#	110	0.00
	Aldrin	40.000	45.298	-13.2	107	0.00
	Heptachlor Epoxide	40.000	44.446	-11.1	108	0.00
	gamma-Chlordane	40.000	45.141	-12.9	109	0.00
	alpha-Chlordane	40.000	44.755	-11.9	109	0.00
	Endosulfan I	40.000	45.542	-13.9	108	0.00
	4,4'-DDE	40.000	46.767	-16.9#	109	0.00
	Dieldrin	40.000	45.972	-14.9	108	0.00
	Endrin	40.000	42.294	-5.7	100	0.00
	4,4'-DDD	40.000	50.847	-27.1#	120	0.00
	Endosulfan II	40.000	45.274	-13.2	109	0.00
	4,4'-DDT	40.000	35.454	11.4	83	0.00
	Endrin Aldehyde	40.000	46.180	-15.5#	114	-0.01
	Endosulfan Sulfate	40.000	44.809	-12.0	111	0.00
	Methoxychlor	40.000	34.242	14.4	84	-0.01
	Endrin Ketone	40.000	45.586	-14.0	110	-0.01
S	Decachlorobiphenyl	40.000	37.292	6.8	104	-0.02

Signal #2

S	Tetrachloro-m-xylene	40.000	42.021	-5.1	105	0.00
	alpha-BHC	40.000	44.115	-10.3	106	0.00
	gamma-BHC (Lindane)	40.000	43.336	-8.3	104	0.00
	beta-BHC	40.000	41.088	-2.7	102	0.00
	Heptachlor	40.000	42.547	-6.4	105	0.00
	delta-BHC	40.000	43.904	-9.8	102	0.00
	Aldrin	40.000	43.403	-8.5	104	0.00
	Heptachlor Epoxide	40.000	42.301	-5.8	104	0.00
	gamma-Chlordane	40.000	42.767	-6.9	106	0.00
	alpha-Chlordane	40.000	44.127	-10.3	107	0.00
	Endosulfan I	40.000	42.219	-5.5	105	0.00
	4,4'-DDE	40.000	44.823	-12.1	105	0.00
	Dieldrin	40.000	44.937	-12.3	106	0.00
	Endrin	40.000	40.170	-0.4	98	0.00
	4,4'-DDD	40.000	48.154	-20.4#	114	0.00

) = Out of Range

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\2\DATA\0424PEST\MN06783.D\ECD1A.CH Vial: 32
Signal #2 : C:\HPCHEM\2\DATA\0424PEST\MN06783.D\ECD2B.CH
Acq On : 25 Apr 2000 2:57 am Operator: stephw
Sample : 40ppb ccv Inst : ECD 2
Misc : op1466,gmn275,water,,,10, Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\2\METHODS\8081A.M (Chemstation Integrator)
Title : Pesticides by 608 or 8081
Last Update : Tue Apr 25 09:06:33 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
	Endosulfan II	40.000	42.906	-7.3	106	0.00
	4,4'-DDT	40.000	39.906	0.2	96	0.00
	Endrin Aldehyde	40.000	43.693	-9.2	110	0.00
	Endosulfan Sulfate	40.000	42.854	-7.1	106	0.00
	Methoxychlor	40.000	34.274	14.3	86	0.00
	Endrin Ketone	40.000	43.293	-8.2	108	0.00
S	Decachlorobiphenyl	40.000	36.636	8.4	99	0.00

Sequence Name: C:\HPCHEM\1\SEQUENCE\0414PESa.S
Comment:
Operator: stephw
Data Path: C:\HPCHEM\1\DATA\0414pesa\
Pre-Seq Cmd:
Post-Seq Cmd:

gst161

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	ST04293	ACQ_PEST	cond std
2	Sample	2	ST04294	ACQ_PEST	ddt/endrin breakdown p485
3	Sample	3	ST04295	ACQ_PEST	40ppb ccv p508
4	Sample	4	ST04296	ACQ_PEST	5ppb pest p508
5	Sample	5	ST04297	ACQ_PEST	10ppb pest p508
6	Sample	6	ST04298	ACQ_PEST	20ppb pest p508
7	Sample	7	ST04299	ACQ_PEST	60ppb pest p508
8	Sample	8	ST04300	ACQ_PEST	80ppb pest p508
9	Sample	9	ST04301	ACQ_PEST	40ppb ICV p491
10	Sample	10	ST04302	ACQ_PEST	500ppb toxaphene p507
11	Sample	11	ST04303	ACQ_PEST	200ppb chlordane p500
12	Sample	12	ST04304	ACQ_PEST	ddt/endrin breakdown p485
13	Sample	13	ST04305	ACQ_PEST	op1437-mb2
14	Sample	14	ST04306	ACQ_PEST	op1437-bs2
15	Sample	15	ST04307	ACQ_PEST	F6262-1
16	Sample	16	ST04308	ACQ_PEST	40ppb ccv
17	Sample	16	ST04309	ACQ_PEST	40ppb ccv
18	Sample	17	ST04310	ACQ_PEST	op1451-mb
19	Sample	18	ST04311	ACQ_PEST	op1451-bs
20	Sample	19	ST04312	ACQ_PEST	F6234-2
21	Sample	20	ST04313	ACQ_PEST	F6268-1
22	Sample	21	ST04314	ACQ_PEST	F6268-3
23	Sample	22	ST04315	ACQ_PEST	F6268-5
24	Sample	23	ST04316	ACQ_PEST	op1451-ms
25	Sample	24	ST04317	ACQ_PEST	op1451-msd
26	Sample	25	ST04318	ACQ_PEST	40ppb ccv
27	Sample	26	ST04319	ACQ_PEST	op1449-LB2
28	Sample	27	ST04320	ACQ_PEST	op1449-LBS2
29	Sample	28	ST04321	ACQ_PEST	F6171-8R
30	Sample	29	ST04322	ACQ_PEST	F6171-10R
31	Sample	30	ST04323	ACQ_PEST	40ppb ccv
32	Sample	30	ST04324	ACQ_PEST	40ppb ccv

Sequence Name: C:\HPCHEM\1\SEQUENCE\0419pest.S
Comment:
Operator: stephw
Data Path: C:\HPCHEM\1\DATA\0419pest\
Pre-Seq Cmd:
Post-Seq Cmd:

gst 163

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	ST04346	ACQ_PEST	cond std
2	Sample	2	ST04347	ACQ_PEST	ddt/endrin breakdown p485
3	Sample	3	ST04348	ACQ_PEST	40ppb ccv p508 — OK
4	Sample	4	ST04349	ACQ_PEST	500ppb toxaphene p507
5	Sample	5	ST04350	ACQ_PEST	200ppb chlordane p500
6	Sample	6	ST04351	ACQ_PEST	op1460-mb
7	Sample	7	ST04352	ACQ_PEST	op1460-bs
8	Sample	8	ST04353	ACQ_PEST	F6268-4
9	Sample	9	ST04354	ACQ_PEST	F6268-6
10	Sample	10	ST04355	ACQ_PEST	F6270-5
11	Sample	11	ST04356	ACQ_PEST	F6270-8
12	Sample	12	ST04357	ACQ_PEST	F6287-9
13	Sample	13	ST04358	ACQ_PEST	40ppb ccv OK
14	Sample	14	ST04359	ACQ_PEST	F6268-2
15	Sample	15	ST04360	ACQ_PEST	F6270-2
16	Sample	16	ST04361	ACQ_PEST	F6287-11
17	Sample	17	ST04362	ACQ_PEST	F6287-12
18	Sample	18	ST04363	ACQ_PEST	F6287-13
19	Sample	19	ST04364	ACQ_PEST	F6287-14
20	Sample	20	ST04365	ACQ_PEST	40ppb ccv — DDT, Methoxy, Ern. Ketone
21	Sample	21	ST04366	ACQ_PEST	40ppb ccv — DDT, Methoxy Ern. Ket.
22	Sample	22	ST04367	ACQ_PEST	~~F6287-5~~ — NA
23	Sample	23	ST04368	ACQ_PEST	~~F6285-1~~
24	Sample	24	ST04369	ACQ_PEST	~~F6287-2~~ — NA
25	Sample	25	ST04370	ACQ_PEST	op1460-ms
26	Sample	26	ST04371	ACQ_PEST	op1460-msd
27	Sample	27	ST04372	ACQ_PEST	40ppb ccv — Heptachlor, DDD, DDT, Methoxy, Ern. Ket
28	Sample	27	ST04373	ACQ_PEST	40ppb ccv — Heptachlor, DDD, DDT, Methoxychlor, Endrin Ketone

000554

Sequence Name: C:\HPCHEM\2\SEQUENCE\0424pest.S
Comment:
Operator: stephw
Data Path: C:\HPCHEM\2\DATA\0424pest\
Pre-Seq Cmd:
Post-Seq Cmd:

gmn 275

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	MN06750	ACQ_PCB	cond std
2	Sample	2	MN06751	ACQ_PCB	ddt/endrin breakdown p510
3	Sample	3	MN06752	ACQ_PCB	5ppb pest p508
4	Sample	4	MN06753	ACQ_PCB	10ppb pest p508
5	Sample	5	MN06754	ACQ_PCB	20ppb pest p508
6	Sample	6	MN06755	ACQ_PCB	40ppb pest p508
7	Sample	7	MN06756	ACQ_PCB	60ppb pest p508
8	Sample	8	MN06757	ACQ_PCB	80ppb pest p508
9	Sample	9	MN06758	ACQ_PCB	5ppb pest p508
10	Sample	10	MN06759	ACQ_PCB	500ppb toxaphene p507
11	Sample	11	MN06760	ACQ_PCB	200ppb chlordane p500
12	Sample	12	MN06761	ACQ_PCB	op1466-mb
13	Sample	13	MN06762	ACQ_PCB	op1466-bs
14	Sample	14	MN06763	ACQ_PCB	F6270-1
15	Sample	15	MN06764	ACQ_PCB	F6270-4
16	Sample	16	MN06765	ACQ_PCB	F6270-7
17	Sample	17	MN06766	ACQ_PCB	F6287-1
18	Sample	18	MN06767	ACQ_PCB	op1466-ms
19	Sample	19	MN06768	ACQ_PCB	op1466-msd
20	Sample	20	MN06769	ACQ_PCB	F6287-4
21	Sample	21	MN06770	ACQ_PCB	F6287-8
22	Sample	22	MN06771	ACQ_PCB	40ppb ccv OK
23	Sample	22	MN06772	ACQ_PCB	40ppb ccv OK
24	Sample	23	MN06773	ACQ_PCB	F6291-1
25	Sample	24	MN06774	ACQ_PCB	F6292-1
26	Sample	25	MN06775	ACQ_PCB	F6292-4
27	Sample	26	MN06776	ACQ_PCB	F6292-7
28	Sample	27	MN06777	ACQ_PCB	F6292-10
29	Sample	28	MN06778	ACQ_PCB	F6292-13
30	Sample	29	MN06779	ACQ_PCB	F6292-16
31	Sample	30	MN06780	ACQ_PCB	F6295-1
32	Sample	31	MN06781	ACQ_PCB	F6295-3
33	Sample	32	MN06782	ACQ_PCB	40ppb ccv — DDD, methoxychlor
34	Sample	32	MN06783	ACQ_PCB	40ppb ccv DPD

Last Modified: Mon Apr 24 17:32:04 2000

Sequence Name: C:\HPCHEM\1\SEQUENCE\0426pest.S
Comment:
Operator: stephw
Data Path: C:\HPCHEM\1\DATA\0426pest\
Pre-Seq Cmd:
Post-Seq Cmd:

gst164

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	ST04411	ACQ_PEST	cond std
2	Sample	2	ST04412	ACQ_PEST	ddt/endrin breakdown p510
3	Sample	3	ST04413	ACQ_PEST	5ppb pest p508
4	Sample	4	ST04414	ACQ_PEST	10ppb pest p508
5	Sample	5	ST04415	ACQ_PEST	20ppb pest p508
6	Sample	6	ST04416	ACQ_PEST	40ppb pest p508
7	Sample	7	ST04417	ACQ_PEST	60ppb pest p508
8	Sample	8	ST04418	ACQ_PEST	80ppb pest p508
9	Sample	9	ST04419	ACQ_PEST	500ppb toxaphene p507
10	Sample	10	ST04420	ACQ_PEST	200ppb chlordane p500
11	Sample	11	ST04421	ACQ_PEST	op1460-mb
12	Sample	12	ST04422	ACQ_PEST	F6287-11
13	Sample	13	ST04423	ACQ_PEST	F6287-12
14	Sample	14	ST04424	ACQ_PEST	F6287-13
15	Sample	15	ST04425	ACQ_PEST	F6285-1,5x
16	Sample	16	ST04426	ACQ_PEST	40ppb ccv
17	Sample	17	ST04427	ACQ_PEST	40ppb ccv
18	Sample	18	ST04428	ACQ_PEST	~~500ppb toxaphene~~
19	Sample	19	ST04429	ACQ_PEST	F6287-5,10x
20	Sample	20	ST04430	ACQ_PEST	F6287-2,10x
21	Sample	21	ST04431	ACQ_PEST	op1460-ms,10x
22	Sample	22	ST04432	ACQ_PEST	op1460-msd,10x
23	Sample	23	ST04433	ACQ_PEST	40ppb ccv — ~~DDT, methoxychlor~~
24	Sample	23	ST04434	ACQ_PEST	40ppb ccv — DDT methoxychlor, DDD
25	Sample	24	ST04435	ACQ_PEST	200ppb 1016/1260

DDT methoxychlor

Response Factor Report DAD

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Thu Apr 20 10:02:23 2000

Calibration Files
L1 =AA000792.D L2 =AA000793.D L3 =AA000794.D
L4 =AA000795.D L5 =AA000796.D L6 =AA000797.D

		Compound	L1	L2	L3	L4	L5	L6	Avg		%RSD
1)		Naphthalene	4.515	4.186	4.041	3.943	4.146	4.195	4.171	E5	4.66
2)		Acenaphthylene	1.465	1.630	1.541	1.501	1.568	1.598	1.551	E5	3.95
3)		1-Methyl Naphthalen	3.669	3.653	3.538	3.450	3.628	3.673	3.602	E5	2.48
4)		2-Methyl Naphthalen	3.592	3.571	3.472	3.387	3.557	3.595	3.529	E5	2.35
5)		Acenaphthene	2.774	2.775	2.654	2.584	2.708	2.741	2.706	E5	2.78
6)		Fluorene	9.778	9.327	9.088	8.851	9.254	9.205	9.251	E5	3.32
7)		Phenanthrene	8.127	7.800	7.608	7.448	7.792	7.821	7.766	E5	2.94
8)	S	O-Terphenyl	3.721	3.742	3.526	3.439	3.595	3.605	3.605	E5	3.20
9)		Anthracene		6.077	5.470	5.027	4.895	4.841	5.262	E4	9.85
0)		Fluoranthene	7.387	6.955	6.796	6.612	6.950	6.973	6.945	E5	3.70
1)		Pyrene	1.514	1.458	1.400	1.331	1.363	1.332	1.400	E6	5.27
2)	S	P-Terphenyl	1.379	1.312	1.261	1.228	1.296	1.297	1.296	E6	3.95
3)		Benzo(a)Anthracene	2.110	2.046	2.005	1.940	2.043	2.044	2.031	E6	2.75
4)		Chrysene	3.167	3.038	2.838	2.621	2.526	2.370	2.760	E6	11.18
5)		Benzo(b)Fluoranthen	1.108	1.002	0.977	0.967	1.012	1.018	1.014	E6	4.96
6)		Benzo(k)Fluoranthen	7.293	6.613	6.432	6.316	6.628	6.664	6.658	E5	5.09
7)		Benzo(a) Pyrene	1.291	1.176	1.130	1.076	1.102	1.089	1.144	E6	7.02
8)		Dibenzo(a,h)anthrac	1.116	1.043	1.024	1.009	1.069	1.075	1.056	E6	3.66
9)		Benzo(g,h,i) Peryle	7.100	7.143	7.101	7.002	7.336	7.306	7.165	E5	1.81
0)		Indeno(1,2,3-cd)pyr	5.177	5.979	5.436	5.414	5.718	5.689	5.569	E5	5.08

Signal #2 Calibration Files
L1 =AA000792.D L2 =AA000793.D L3 =AA000794.D
L4 =AA000795.D L5 =AA000796.D L6 =AA000797.D

		Compound	L1	L2	L3	L4	L5	L6	Avg		%RSD
1)		Naphthalene	2.389	2.461	2.378	2.321	2.467	2.514	2.422	E5	2.94
2)		Acenaphthylene	1.554	1.626	1.545	1.520	1.617	1.659	1.587	E5	3.45
3)		1-Methyl Naphthalen	1.553	1.534	1.514	1.480	1.575	1.609	1.544	E5	2.94
4)		2-Methyl Naphthalen	2.087	2.077	2.068	2.018	2.145	2.176	2.095	E5	2.71
5)		Acenaphthene	9.713	9.752	9.501	9.165	9.780	9.921	9.639	E4	2.79
6)		Fluorene	1.137	1.121	1.082	1.051	1.111	1.117	1.103	E6	2.84
7)		Phenanthrene	2.764	2.712	2.625	2.491	2.528	2.446	2.595	E6	4.89
8)	S	O-Terphenyl	6.221	6.298	6.038	5.872	6.245	6.251	6.154	E5	~~2.68~~
9)		Anthracene	5.818	5.439	4.244	3.272	2.772	2.362	3.984	E6	35.77
10)		Fluoranthene	7.247	6.882	6.882	6.715	7.141	7.124	6.998	E5	2.90
11)		Pyrene	7.164	6.979	6.882	6.690	7.212	7.190	7.020	E5	2.96
12)	S	P-Terphenyl	6.768	6.542	6.323	6.195	6.686	6.642	6.526	E5	3.41
13)		Benzo(a)Anthracene	1.528	1.531	1.508	1.481	1.578	1.574	1.533	E6	2.47
14)		Chrysene	2.407	2.338	2.279	2.214	2.336	2.313	2.314	E6	2.79
15)		Benzo(b)Fluoranthen	1.619	1.577	1.549	1.528	1.624	1.622	1.587	E6	2.62
16)		Benzo(k)Fluoranthen	1.139	1.141	1.132	1.105	1.163	1.152	1.139	E6	1.75
17)		Benzo(a) Pyrene	1.399	1.362	1.318	1.260	1.319	1.302	1.327	E6	3.66
18)		Dibenzo(a,h)anthrac	2.997	3.298	3.219	3.158	3.402	3.390	3.244	E5	4.74

#) = Out of Range

6 04/20/00

Response Factor Report DAD

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Thu Apr 20 10:02:23 2000

Calibration Files
L1 =AA000792.D L2 =AA000793.D L3 =AA000794.D
L4 =AA000795.D L5 =AA000796.D L6 =AA000797.D

	Compound	L1	L2	L3	L4	L5	L6	Avg	%RSD
9)	Benzo(g,h,i) Peryle	5.166	4.852	5.021	4.918	5.186	5.214	5.059 E5	3.01
0)	Indeno(1,2,3-cd)pyr	1.062	1.141	1.109	1.085	1.132	1.127	1.109 E6	2.72

#) = Out of Range

000777

Evaluate Continuing Calibration Report

Signal #1 : D:\HPCHEM\1\DATA\0422PAH\AA000870.D\DAD1B.CH Vial: 2
Signal #2 : D:\HPCHEM\1\DATA\0422PAH\AA000870.D\DAD1A.CH
Acq On : 22-Apr-2000, 22:10:42 Operator: ChelseaJ
Sample : 8310 L4 CCV s808 Inst : DAD
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Thu Apr 20 10:02:23 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
		Naphthalene	20.000	19.308	3.5	102	0.00
2		Acenaphthylene	20.000	19.394	3.0	100	0.01
3		1-Methyl Naphthalene	20.000	19.663	1.7	103	0.01
4		2-Methyl Naphthalene	20.000	19.649	1.8	102	0.02
5		Acenaphthene	20.000	19.746	1.3	103	0.02
6		Fluorene	20.000	19.392	3.0	101	0.02
7		Phenanthrene	20.000	19.575	2.1	102	0.03
8	S	O-Terphenyl	20.000	19.460	2.7	102	0.02
9		Anthracene	20.000	18.395	8.0	96	0.04
0		Fluoranthene	20.000	19.831	0.8	104	0.05
1		Pyrene	20.000	19.579	2.1	103	0.05
2	S	P-Terphenyl	20.000	19.589	2.1	103	0.06
3		Benzo(a)Anthracene	10.000	9.929	0.7	104	0.04
4		Chrysene	10.000	9.465	5.4	100	0.04
5		Benzo(b)Fluoranthene	10.000	9.757	2.4	102	0.03
6		Benzo(k)Fluoranthene	10.000	9.677	3.2	102	0.04
7		Benzo(a) Pyrene	10.000	9.795	2.1	104	0.04
8		Dibenzo(a,h)anthracene	10.000	9.906	0.9	104	0.05
9		Benzo(g,h,i) Perylene	10.000	10.017	-0.2	103	0.05
0		Indeno(1,2,3-cd)pyrene	10.000	9.851	1.5	101	0.05
Signal #2							
1		Naphthalene	20.000	20.606	-3.0	107	0.00
2		Acenaphthylene	20.000	20.207	-1.0	105	0.01
3		1-Methyl Naphthalene	20.000	20.670	-3.4	108	0.01
4		2-Methyl Naphthalene	20.000	20.526	-2.6	107	0.02
5		Acenaphthene	20.000	20.718	-3.6	109	0.02
6		Fluorene	20.000	19.937	0.3	105	0.02
7		Phenanthrene	20.000	18.621	6.9	97	0.03
8	S	O-Terphenyl	20.000	19.535	2.3	102	0.02
9		Anthracene	20.000	16.212	18.9#	88	0.04
0		Fluoranthene	20.000	19.477	2.6	101	0.05
1		Pyrene	20.000	20.122	-0.6	106	0.05
2	S	P-Terphenyl	20.000	20.072	-0.4	106	0.06
3		Benzo(a)Anthracene	10.000	9.942	0.6	103	0.04
4		Chrysene	10.000	10.370	-3.7	108	0.04
5		Benzo(b)Fluoranthene	10.000	9.924	0.8	103	0.03
6		Benzo(k)Fluoranthene	10.000	9.418	5.8	97	0.04
7		Benzo(a) Pyrene	10.000	10.099	-1.0	106	0.04

(#) = Out of Range

6 04/25/00

Evaluate Continuing Calibration Report

Signal #1 : D:\HPCHEM\1\DATA\0422PAH\AA000870.D\DAD1B.CH Vial: 2
Signal #2 : D:\HPCHEM\1\DATA\0422PAH\AA000870.D\DAD1A.CH
Acq On : 22-Apr-2000, 22:10:42 Operator: ChelseaJ
Sample : 8310 L4 CCV s808 Inst : DAD
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Thu Apr 20 10:02:23 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

Compound	Amount	Calc.	%Dev	Area%	Dev(min)
Dibenzo(a,h)anthracene	10.000	10.439	-4.4	107	0.05
Benzo(g,h,i) Perylene	10.000	10.190	-1.9	105	0.05
Indeno(1,2,3-cd)pyrene	10.000	9.332	6.7	95	0.05

(#) = Out of Range SPCC's out = 0 CCC's out = 0
AA000870.D 8310_46.M Tue Apr 25 14:55:38 2000 HPLC1

Evaluate Continuing Calibration Report

Signal #1 : D:\HPCHEM\1\DATA\0422PAH\AA000881.D\DAD1B.CH Vial: 13
Signal #2 : D:\HPCHEM\1\DATA\0422PAH\AA000881.D\DAD1A.CH
Acq On : 23-Apr-2000, 02:32:45 Operator: ChelseaJ
Sample : 8310 L4 CCV s808 Inst : DAD
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Thu Apr 20 10:02:23 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1		Naphthalene	20.000	19.498	2.5	103	0.00
2		Acenaphthylene	20.000	19.700	1.5	102	0.00
3		1-Methyl Naphthalene	20.000	19.861	0.7	104	0.00
4		2-Methyl Naphthalene	20.000	19.821	0.9	103	0.00
5		Acenaphthene	20.000	19.909	0.5	104	0.00
6		Fluorene	20.000	19.443	2.8	102	0.02
7		Phenanthrene	20.000	19.648	1.8	102	0.02
8	S	O-Terphenyl	20.000	19.539	2.3	102	0.00
9		Anthracene	20.000	18.488	7.6	97	0.03
10		Fluoranthene	20.000	19.923	0.4	105	0.03
11		Pyrene	20.000	19.644	1.8	103	0.04
12	S	P-Terphenyl	20.000	19.685	1.6	104	0.05
13		Benzo(a)Anthracene	10.000	9.963	0.4	104	0.03
14		Chrysene	10.000	9.462	5.4	100	0.03
15		Benzo(b)Fluoranthene	10.000	9.789	2.1	103	0.03
16		Benzo(k)Fluoranthene	10.000	9.720	2.8	102	0.04
17		Benzo(a) Pyrene	10.000	9.908	0.9	105	0.05
18		Dibenzo(a,h)anthracene	10.000	9.935	0.6	104	0.06
19		Benzo(g,h,i) Perylene	10.000	10.090	-0.9	103	0.06
20		Indeno(1,2,3-cd)pyrene	10.000	9.940	0.6	102	0.08

Signal #2

1		Naphthalene	20.000	20.526	-2.6	107	0.00
2		Acenaphthylene	20.000	19.968	0.2	104	0.00
3		1-Methyl Naphthalene	20.000	20.519	-2.6	107	0.00
4		2-Methyl Naphthalene	20.000	20.456	-2.3	106	0.00
5		Acenaphthene	20.000	20.479	-2.4	108	0.01
6		Fluorene	20.000	19.984	0.1	105	0.02
7		Phenanthrene	20.000	18.628	6.9	97	0.02
8	S	O-Terphenyl	20.000	19.545	~~2.3~~	102	0.00
9		Anthracene	20.000	16.033	19.8#	87	0.03
10		Fluoranthene	20.000	19.493	2.5	102	0.03
11		Pyrene	20.000	20.202	-1.0	106	0.04
12	S	P-Terphenyl	20.000	20.142	-0.7	106	0.05
13		Benzo(a)Anthracene	10.000	9.970	0.3	103	0.03
14		Chrysene	10.000	10.393	-3.9	109	0.03
15		Benzo(b)Fluoranthene	10.000	9.957	0.4	103	0.03
16		Benzo(k)Fluoranthene	10.000	9.444	5.6	97	0.04
17		Benzo(a) Pyrene	10.000	10.225	-2.2	108	0.05

(#) = Out of Range

AA000881.D 8310_46.M Tue Apr 25 14:55:46 2000 HPLC1

04/25/00

Evaluate Continuing Calibration Report

Signal #1 : D:\HPCHEM\1\DATA\0422PAH\AA000881.D\DAD1B.CH Vial: 13
Signal #2 : D:\HPCHEM\1\DATA\0422PAH\AA000881.D\DAD1A.CH
Acq On : 23-Apr-2000, 02:32:45 Operator: ChelseaJ
Sample : 8310 L4 CCV s808 Inst : DAD
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Thu Apr 20 10:02:23 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
8	Dibenzo(a,h)anthracene	10.000	10.411	-4.1	107	0.06
9	Benzo(g,h,i) Perylene	10.000	10.186	-1.9	105	0.06
0	Indeno(1,2,3-cd)pyrene	10.000	9.364	6.4	96	0.08

#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Signal #1 : D:\HPCHEM\1\DATA\0425PAH\AA000896.D\DAD1B.CH Vial: 13
Signal #2 : D:\HPCHEM\1\DATA\0425PAH\AA000896.D\DAD1A.CH
Acq On : 25-Apr-2000, 18:17:57 Operator: ChelseaJ
Sample : 8310 L4 CCV s808 Inst : DAD
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Thu Apr 20 10:02:23 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
	Naphthalene	20.000	19.503	2.5	103	0.04
	Acenaphthylene	20.000	19.756	1.2	102	0.05
	1-Methyl Naphthalene	20.000	19.837	0.8	104	0.04
	2-Methyl Naphthalene	20.000	19.813	0.9	103	0.05
	Acenaphthene	20.000	20.030	-0.2	105	0.04
	Fluorene	20.000	19.535	2.3	102	0.05
	Phenanthrene	20.000	19.715	1.4	103	0.05
S	O-Terphenyl	20.000	19.550	2.2	102	0.04
	Anthracene	20.000	18.448	7.8	97	0.05
	Fluoranthene	20.000	19.970	0.2	105	0.06
	Pyrene	20.000	19.760	1.2	104	0.06
S	P-Terphenyl	20.000	19.724	1.4	104	0.06
	Benzo(a)Anthracene	10.000	9.986	0.1	105	0.04
	Chrysene	10.000	9.598	4.0	101	0.04
	Benzo(b)Fluoranthene	10.000	9.823	1.8	103	0.03
	Benzo(k)Fluoranthene	10.000	9.764	2.4	103	0.02
	Benzo(a) Pyrene	10.000	9.736	2.6	103	0.02
	Dibenzo(a,h)anthracene	10.000	9.970	0.3	104	0.00
	Benzo(g,h,i) Perylene	10.000	10.048	-0.5	103	0.00
	Indeno(1,2,3-cd)pyrene	10.000	9.979	0.2	103	0.00
	Signal #2					
	Naphthalene #2	20.000	20.528	-2.6	107	0.04
	Acenaphthylene #2	20.000	19.877	0.6	104	0.05
	1-Methyl Naphthalene #2	20.000	20.516	-2.6	107	0.04
	2-Methyl Naphthalene #2	20.000	20.500	-2.5	106	0.05
	Acenaphthene #2	20.000	20.871	-4.4	110	0.05
	Fluorene #2	20.000	20.058	-0.3	105	0.05
	Phenanthrene #2	20.000	18.801	6.0	98	0.05
S	O-Terphenyl #2	20.000	19.717	1.4	103	0.04
	Anthracene #2	20.000	16.543	17.3#	89	0.05
	Fluoranthene #2	20.000	19.630	1.9	102	0.06
	Pyrene #2	20.000	20.263	-1.3	106	0.06
S	P-Terphenyl #2	20.000	20.254	-1.3	107	0.06
	Benzo(a)Anthracene #2	10.000	10.031	-0.3	104	0.04
	Chrysene #2	10.000	10.460	-4.6	109	0.04
	Benzo(b)Fluoranthene #2	10.000	10.005	-0.1	104	0.03
	Benzo(k)Fluoranthene #2	10.000	9.497	5.0	98	0.02
	Benzo(a) Pyrene #2	10.000	10.026	-0.3	106	0.02

(#) = Out of Range

CL 04/26/00

000805

Evaluate Continuing Calibration Report

Signal #1 : D:\HPCHEM\1\DATA\0425PAH\AA000896.D\DAD1B.CH Vial: 13
Signal #2 : D:\HPCHEM\1\DATA\0425PAH\AA000896.D\DAD1A.CH
Acq On : 25-Apr-2000, 18:17:57 Operator: ChelseaJ
Sample : 8310 L4 CCV s808 Inst : DAD
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Thu Apr 20 10:02:23 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
9	Dibenzo(a,h)anthracene #2	10.000	10.550	-5.5	108	0.00
0	Benzo(g,h,i) Perylene #2	10.000	10.215	-2.1	105	0.00
1	Indeno(1,2,3-cd)pyrene #2	10.000	9.469	5.3	97	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Signal #1 : D:\HPCHEM\1\DATA\0425PAH\AA000904.D\DAD1B.CH Vial: 21
Signal #2 : D:\HPCHEM\1\DATA\0425PAH\AA000904.D\DAD1A.CH
Acq On : 25-Apr-2000, 21:28:36 Operator: ChelseaJ
Sample : 8310 L4 CCV s808 Inst : DAD
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Thu Apr 20 10:02:23 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1		Naphthalene	20.000	19.558	2.2	103	0.04
2		Acenaphthylene	20.000	19.753	1.2	102	0.04
3		1-Methyl Naphthalene	20.000	19.903	0.5	104	0.04
4		2-Methyl Naphthalene	20.000	19.855	0.7	103	0.04
5		Acenaphthene	20.000	20.045	-0.2	105	0.04
6		Fluorene	20.000	19.559	2.2	102	0.05
7		Phenanthrene	20.000	19.758	1.2	103	0.05
8	S	O-Terphenyl	20.000	19.616	1.9	103	0.04
9		Anthracene	20.000	18.527	7.4	97	0.06
10		Fluoranthene	20.000	20.032	-0.2	105	0.06
11		Pyrene	20.000	19.800	1.0	104	0.06
12	S	P-Terphenyl	20.000	19.788	1.1	104	0.07
13		Benzo(a)Anthracene	10.000	10.013	-0.1	105	0.04
14		Chrysene	10.000	9.626	3.7	101	0.04
15		Benzo(b)Fluoranthene	10.000	9.844	1.6	103	0.04
16		Benzo(k)Fluoranthene	10.000	9.772	2.3	103	0.04
17		Benzo(a) Pyrene	10.000	9.587	4.1	102	0.04
18		Dibenzo(a,h)anthracene	10.000	9.997	0.0	105	0.04
19		Benzo(g,h,i) Perylene	10.000	10.003	-0.0	102	0.04
20		Indeno(1,2,3-cd)pyrene	10.000	9.962	0.4	102	0.04
Signal #2							
22		Naphthalene #2	20.000	20.522	-2.6	107	0.04
23		Acenaphthylene #2	20.000	20.059	-0.3	105	0.04
24		1-Methyl Naphthalene #2	20.000	20.695	-3.5	108	0.04
25		2-Methyl Naphthalene #2	20.000	20.610	-3.0	107	0.04
26		Acenaphthene #2	20.000	20.933	-4.7	110	0.04
27		Fluorene #2	20.000	20.114	-0.6	106	0.05
28		Phenanthrene #2	20.000	18.805	6.0	98	0.05
29	S	O-Terphenyl #2	20.000	19.687	1.6	103	0.04
30		Anthracene #2	20.000	16.496	17.5#	89	0.06
31		Fluoranthene #2	20.000	19.616	1.9	102	0.06
32		Pyrene #2	20.000	20.272	-1.4	106	0.06
33	S	P-Terphenyl #2	20.000	20.304	-1.5	107	0.07
34		Benzo(a)Anthracene #2	10.000	10.026	-0.3	104	0.04
35		Chrysene #2	10.000	10.469	-4.7	109	0.04
36		Benzo(b)Fluoranthene #2	10.000	10.081	-0.8	105	0.04
37		Benzo(k)Fluoranthene #2	10.000	9.534	4.7	98	0.04
38		Benzo(a) Pyrene #2	10.000	9.909	0.9	104	0.04

(#) = Out of Range

cb 04/26/00

000809

Evaluate Continuing Calibration Report

Signal #1 : D:\HPCHEM\1\DATA\0425PAH\AA000904.D\DAD1B.CH Vial: 21
Signal #2 : D:\HPCHEM\1\DATA\0425PAH\AA000904.D\DAD1A.CH
Acq On : 25-Apr-2000, 21:28:36 Operator: ChelseaJ
Sample : 8310 L4 CCV s808 Inst : DAD
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Thu Apr 20 10:02:23 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
9	Dibenzo(a,h)anthracene #2	10.000	10.437	-4.4	107	0.04
0	Benzo(g,h,i) Perylene #2	10.000	10.084	-0.8	104	0.04
1	Indeno(1,2,3-cd)pyrene #2	10.000	9.412	5.9	96	0.04

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Signal #1 : D:\HPCHEM\1\DATA\0420PAH\AA000821.D\DAD1B.CH Vial: 2
Signal #2 : D:\HPCHEM\1\DATA\0420PAH\AA000821.D\DAD1A.CH
Acq On : 20-Apr-2000, 09:23:40 Operator: ChelseaJ
Sample : 8310 L4 CCV s808 Inst : DAD
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Thu Apr 20 10:02:23 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1		Naphthalene	20.000	19.167	4.2	101	0.02
2		Acenaphthylene	20.000	19.382	3.1	100	0.02
3		1-Methyl Naphthalene	20.000	19.532	2.3	102	0.02
4		2-Methyl Naphthalene	20.000	19.484	2.6	102	0.02
5		Acenaphthene	20.000	19.576	2.1	103	0.02
6		Fluorene	20.000	19.124	4.4	100	0.02
7		Phenanthrene	20.000	19.342	3.3	101	0.02
8	S	O-Terphenyl	20.000	19.224	3.9	101	0.01
9		Anthracene	20.000	18.243	8.8	95	0.02
10		Fluoranthene	20.000	19.613	1.9	103	0.02
11		Pyrene	20.000	19.293	3.5	101	0.02
12	S	P-Terphenyl	20.000	19.376	3.1	102	0.03
13		Benzo(a)Anthracene	10.000	9.814	1.9	103	0.00
14		Chrysene	10.000	9.300	7.0	98	0.00
15		Benzo(b)Fluoranthene	10.000	9.649	3.5	101	0.00
16		Benzo(k)Fluoranthene	10.000	9.577	4.2	101	0.00
17		Benzo(a) Pyrene	10.000	9.395	6.1	100	0.00
18		Dibenzo(a,h)anthracene	10.000	9.784	2.2	102	0.00
19		Benzo(g,h,i) Perylene	10.000	9.899	1.0	101	0.00
20		Indeno(1,2,3-cd)pyrene	10.000	9.785	2.1	101	0.00

Signal #2

1		Naphthalene	20.000	20.067	-0.3	105	0.02
2		Acenaphthylene	20.000	19.547	2.3	102	0.02
3		1-Methyl Naphthalene	20.000	20.144	-0.7	105	0.02
4		2-Methyl Naphthalene	20.000	20.031	-0.2	104	0.02
5		Acenaphthene	20.000	19.974	0.1	105	0.02
6		Fluorene	20.000	19.666	1.7	103	0.02
7		Phenanthrene	20.000	18.344	8.3	96	0.02
8	S	O-Terphenyl	20.000	19.153	4.2	100	0.01
9		Anthracene	20.000	15.831	20.8#	86	0.02
10		Fluoranthene	20.000	19.142	4.3	100	0.02
11		Pyrene	20.000	19.837	0.8	104	0.02
12	S	P-Terphenyl	20.000	19.947	0.3	105	0.03
13		Benzo(a)Anthracene	10.000	9.819	1.8	102	0.00
14		Chrysene	10.000	10.248	-2.5	107	0.00
15		Benzo(b)Fluoranthene	10.000	9.831	1.7	102	0.00
16		Benzo(k)Fluoranthene	10.000	9.309	6.9	96	0.00
17		Benzo(a) Pyrene	10.000	9.708	2.9	102	0.00

anthracene fails low (> 15%) on signal 2 → report from signal 1

(#) = Out of Range

Evaluate Continuing Calibration Report

Signal #1 : D:\HPCHEM\1\DATA\0420PAH\AA000821.D\DAD1B.CH Vial: 2
Signal #2 : D:\HPCHEM\1\DATA\0420PAH\AA000821.D\DAD1A.CH
Acq On : 20-Apr-2000, 09:23:40 Operator: ChelseaJ
Sample : 8310 L4 CCV s808 Inst : DAD
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Thu Apr 20 10:02:23 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
8	Dibenzo(a,h)anthracene	10.000	10.163	-1.6	104	0.00
9	Benzo(g,h,i) Perylene	10.000	9.923	0.8	102	0.00
0	Indeno(1,2,3-cd)pyrene	10.000	9.178	8.2	94	0.00

Evaluate Continuing Calibration Report

Signal #1 : D:\HPCHEM\1\DATA\0420PAH\AA000832.D\DAD1B.CH Vial: 13
Signal #2 : D:\HPCHEM\1\DATA\0420PAH\AA000832.D\DAD1A.CH
Acq On : 20-Apr-2000, 13:45:53 Operator: ChelseaJ
Sample : 8310 L4 CCV s808 Inst : DAD
Misc : op1459,gaa40,water,,,1, Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Thu Apr 20 10:02:23 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1		Naphthalene	20.000	19.155	4.2	101	0.00
2		Acenaphthylene	20.000	19.417	2.9	100	0.00
3		1-Methyl Naphthalene	20.000	19.577	2.1	102	0.00
4		2-Methyl Naphthalene	20.000	19.589	2.1	102	0.00
5		Acenaphthene	20.000	19.597	2.0	103	0.00
6		Fluorene	20.000	19.069	4.7	100	0.00
7		Phenanthrene	20.000	19.276	3.6	100	0.00
8	S	O-Terphenyl	20.000	19.143	4.3	100	0.00
9		Anthracene	20.000	18.045	9.8	94	0.00
0		Fluoranthene	20.000	19.542	2.3	103	0.00
1		Pyrene	20.000	19.323	3.4	102	0.01
2	S	P-Terphenyl	20.000	19.341	3.3	102	0.02
3		Benzo(a)Anthracene	10.000	9.797	2.0	103	0.00
4		Chrysene	10.000	9.367	6.3	99	-0.02
5		Benzo(b)Fluoranthene	10.000	9.642	3.6	101	-0.02
5		Benzo(k)Fluoranthene	10.000	9.589	4.1	101	-0.04
7		Benzo(a) Pyrene	10.000	9.328	6.7	99	-0.05
8		Dibenzo(a,h)anthracene	10.000	9.773	2.3	102	-0.09
9		Benzo(g,h,i) Perylene	10.000	9.860	1.4	101	-0.10
0		Indeno(1,2,3-cd)pyrene	10.000	9.776	2.2	101	-0.14

Signal #2

	Naphthalene	20.000	20.219	-1.1	105	0.00
	Acenaphthylene	20.000	19.921	0.4	104	0.00
	1-Methyl Naphthalene	20.000	20.520	-2.6	107	0.00
	2-Methyl Naphthalene	20.000	20.375	-1.9	106	0.00
	Acenaphthene	20.000	20.583	-2.9	108	0.00
	Fluorene	20.000	19.589	2.1	103	0.00
	Phenanthrene	20.000	18.380	8.1	96	0.00
S	O-Terphenyl	20.000	19.222	3.9	101	0.00
	Anthracene	20.000	15.947	20.3#	87	0.00
	Fluoranthene	20.000	19.210	3.9	100	0.00
	Pyrene	20.000	19.819	0.9	104	0.01
S	P-Terphenyl	20.000	19.858	0.7	105	0.02
	Benzo(a)Anthracene	10.000	9.816	1.8	102	0.00
	Chrysene	10.000	10.231	-2.3	107	-0.02
	Benzo(b)Fluoranthene	10.000	9.801	2.0	102	-0.02
	Benzo(k)Fluoranthene	10.000	9.332	6.7	96	-0.04
	Benzo(a) Pyrene	10.000	9.599	4.0	101	-0.05

anthracene fail low (71570) on signal ② → report signal ①

04/21/00

#) = Out of Range

040847

Evaluate Continuing Calibration Report

Signal #1 : D:\HPCHEM\1\DATA\0420PAH\AA000832.D\DAD1B.CH Vial: 13
Signal #2 : D:\HPCHEM\1\DATA\0420PAH\AA000832.D\DAD1A.CH
Acq On : 20-Apr-2000, 13:45:53 Operator: ChelseaJ
Sample : 8310 L4 CCV s808 Inst : DAD
Misc : op1459,gaa40,water,,,1, Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Thu Apr 20 10:02:23 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
8	Dibenzo(a,h)anthracene	10.000	10.274	-2.7	106	-0.09
9	Benzo(g,h,i) Perylene	10.000	10.030	-0.3	103	-0.10
0	Indeno(1,2,3-cd)pyrene	10.000	9.308	6.9	95	-0.14

(#) = Out of Range SPCC's out = 0 CCC's out = 0

000818

Evaluate Continuing Calibration Report

Signal #1 : D:\HPCHEM\1\DATA\0420PAH\AA000840.D\DAD1B.CH Vial: 21
Signal #2 : D:\HPCHEM\1\DATA\0420PAH\AA000840.D\DAD1A.CH
Acq On : 20-Apr-2000, 17:04:03 Operator: ChelseaJ
Sample : 8310 L4 CCV s808 Inst : DAD
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Thu Apr 20 10:02:23 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
	Naphthalene	20.000	19.080	4.6	101	0.00
	Acenaphthylene	20.000	19.284	3.6	100	0.00
	1-Methyl Naphthalene	20.000	19.407	3.0	101	0.00
	2-Methyl Naphthalene	20.000	19.391	3.0	101	0.00
	Acenaphthene	20.000	19.376	3.1	101	0.00
	Fluorene	20.000	19.098	4.5	100	0.00
	Phenanthrene	20.000	19.258	3.7	100	0.00
S	O-Terphenyl	20.000	19.124	4.4	100	0.00
	Anthracene	20.000	18.272	8.6	96	0.01
	Fluoranthene	20.000	19.447	2.8	102	0.01
	Pyrene	20.000	19.241	3.8	101	0.02
S	P-Terphenyl	20.000	19.238	3.8	101	0.03
	Benzo(a)Anthracene	10.000	9.744	2.6	102	0.00
	Chrysene	10.000	9.305	7.0	98	0.00
	Benzo(b)Fluoranthene	10.000	9.592	4.1	101	0.00
	Benzo(k)Fluoranthene	10.000	9.529	4.7	100	-0.01
	Benzo(a) Pyrene	10.000	9.407	5.9	100	-0.02
	Dibenzo(a,h)anthracene	10.000	9.717	2.8	102	-0.02
	Benzo(g,h,i) Perylene	10.000	9.795	2.1	100	-0.02
	Indeno(1,2,3-cd)pyrene	10.000	9.677	3.2	100	-0.02

Signal #2

	Naphthalene	20.000	19.948	0.3	104	0.00
	Acenaphthylene	20.000	19.486	2.6	102	0.00
	1-Methyl Naphthalene	20.000	20.025	-0.1	104	0.00
	2-Methyl Naphthalene	20.000	19.981	0.1	104	0.00
	Acenaphthene	20.000	19.864	0.7	104	0.00
	Fluorene	20.000	19.547	2.3	103	0.00
	Phenanthrene	20.000	18.340	8.3	95	0.00
S	O-Terphenyl	20.000	19.112	4.4	100	0.00
	Anthracene	20.000	16.074	19.6#	87	0.01
	Fluoranthene	20.000	19.073	4.6	99	0.01
	Pyrene	20.000	19.704	1.5	103	0.02
S	P-Terphenyl	20.000	19.728	1.4	104	0.03
	Benzo(a)Anthracene	10.000	9.773	2.3	101	0.00
	Chrysene	10.000	10.178	-1.8	106	0.00
	Benzo(b)Fluoranthene	10.000	9.766	2.3	101	0.00
	Benzo(k)Fluoranthene	10.000	9.275	7.2	96	-0.01
	Benzo(a) Pyrene	10.000	9.685	3.1	102	-0.02

anthracene fails low (71%) on sig ②
→ report signal ①

(#) = Out of Range
AA000840.D 8310_46.M Fri Apr 21 08:06:24 2000 HPLC1

Evaluate Continuing Calibration Report

Signal #1 : D:\HPCHEM\1\DATA\0420PAH\AA000840.D\DAD1B.CH Vial: 21
Signal #2 : D:\HPCHEM\1\DATA\0420PAH\AA000840.D\DAD1A.CH
Acq On : 20-Apr-2000, 17:04:03 Operator: ChelseaJ
Sample : 8310 L4 CCV s808 Inst : DAD
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Thu Apr 20 10:02:23 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
8	Dibenzo(a,h)anthracene	10.000	10.101	-1.0	104	-0.02
9	Benzo(g,h,i) Perylene	10.000	9.918	0.8	102	-0.02
0	Indeno(1,2,3-cd)pyrene	10.000	9.176	8.2	94	-0.02

ial Sequence: C:\HPCHEM\1\SEQUENCE\0422PAH.S GAA42

Sel	Run	Vial	Method	Datafile	SeqTable	Calib:RF:RT	Sample Name
No	1	1	8310_46	AA000869	01:01		SB
No	2	2	8310_46	AA000870	02:01		8310 L4 CCV s808
No	3	3	8310_46	AA000871	03:01		OP1473-MB
No	4	4	8310_46	AA000872	04:01		OP1473-BS
No	5	5	8310_46	AA000873	05:01		F6268-2
No	6	6	8310_46	AA000874	06:01		F6268-4
No	7	7	8310_46	AA000875	07:01		F6268-6
No	8	8	8310_46	AA000876	08:01		F6270-2
No	9	9	8310_46	AA000877	09:01		F6270-5
No	10	10	8310_46	AA000878	10:01		F6270-8
No	11	11	8310_46	AA000879	11:01		F6287-2
No	12	12	8310_46	AA000880	12:01		F6287-5
No	13	13	8310_46	AA000881	13:01		8310 L4 CCV s808
No	14	14	8310_46	AA000882	14:01		F6287-9
No	15	15	8310_46	AA000883	15:01		F6292-2

rtial Sequence: C:\HPCHEM\1\SEQUENCE\0420PAH.S

Sel	Run	Vial	Method	Datafile	SeqTable	Calib:RF:RT	Sample Name
						GAA40	
No	1	1	8310_46	AA000820	01:01		SB
No	2	2	8310_46	AA000821	02:01		8310 L4 CCV s808
No	3	3	8310_46	AA000822	03:01		OP1459-MB
No	4	4	8310_46	AA000823	04:01		F6283-8
No	5	5	8310_46	AA000824	05:01		F6283-9
No	6	6	8310_46	AA000825	06:01		F6283-10
No	7	7	8310_46	AA000826	07:01		F6284-1
No	8	8	8310_46	AA000827	08:01		F6284-2
No	9	9	8310_46	AA000828	09:01		F6284-3
No	10	10	8310_46	AA000829	10:01		F6284-4
No	11	11	8310_46	AA000830	11:01		F6270-1
No	12	12	8310_46	AA000831	12:01		F6270-4
No	13	13	8310_46	AA000832	13:01		8310 L4 CCV s808
No	14	14	8310_46	AA000833	14:01		F6270-7
No	15	15	8310_46	AA000834	15:01		F287-1
No	16	16	8310_46	AA000835	16:01		6284-4
No	17	17	8310_46	AA000836	17:01		F6287-8
No	18	18	8310_46	AA000837	18:01		OP1459-MS
No	19	19	8310_46	AA000838	19:01		OP1459-MSD
No	20	20	8310_46	AA000839	20:01		F6283-3,10x
No	21	21	8310_46	AA000840	21:01		8310 L4 CCV s808

tial Sequence: C:\HPCHEM\1\SEQUENCE\0419PAH.S

Sel	Run	Vial	Method	Datafile	SeqTable	Calib:RF:RT	Sample Name
No	1	1	8310_46	AA000791	01:01	GAA39	SB
No	2	2	8310_46	AA000792	02:01		8310 L1 s811
No	3	3	8310_46	AA000793	03:01		8310 L2 s810
No	4	4	8310_46	AA000794	04:01		8310 L3 s809
No	5	5	8310_46	AA000795	05:01		8310 L4 s808
No	6	6	8310_46	AA000796	06:01		8310 L5 s807
No	7	7	8310_46	AA000797	07:01		8310 L6 s806
No	8	8	8310_46	AA000798	08:01		8310 20 ppm ICV
No	9	9	8310_46	AA000799	09:01		OP1453-MB
No	10	10	8310_46	AA000800	10:01		F6278-9
No	11	11	8310_46	AA000801	11:01		OP1456-MB
No	12	12	8310_46	AA000802	12:01		F6274-14
No	13	13	8310_46	AA000803	13:01		F6274-15
No	14	14	8310_46	AA000804	14:01		F6261-11
No	15	15	8310_46	AA000805	15:01		F6261-12,10x
No	16	16	8310_46	AA000806	16:01		F6261-13
No	17	17	8310_46	AA000807	17:01		OP1456-MS
No	18	18	8310_46	AA000808	18:01		OP1456-MSD
No	19	19	8310_46	AA000809	19:01		8310 L4 CCV s808
No	20	20	8310_46	AA000810	20:01		OP1459-MB
No	21	21	8310_46	AA000811	21:01		OP1459-BS
No	22	1	8310_46	AA000812	22:01		F6283-1
No	23	2	8310_46	AA000813	23:01		F6283-2
No	24	3	8310_46	AA000814	24:01		F6283-3
No	25	4	8310_46	AA000815	25:01		F6283-4
No	26	5	8310_46	AA000816	26:01		F6283-5
No	27	6	8310_46	AA000817	27:01		F6283-6
No	28	7	8310_46	AA000818	28:01		F6283-7
No	29	8	8310_46	AA000819	29:01		8310 L4 CCV s808

tial Sequence: C:\HPCHEM\1\SEQUENCE\0425PAH.S GAA43

Sel	Run	Vial	Method	Datafile	SeqTable	Calib:RF:RT	Sample Name
No	1	1	8310_46	AA000884	01:01		SB
No	2	2	8310_46	AA000885	02:01		8310 L4 CCV s808
Yes	3	3	8310_46	AA000886	03:01		OP1473-MB
Yes	4	4	8310_46	AA000887	04:01		F6287-9
Yes	5	5	8310_46	AA000888	05:01		F6292-2
Yes	6	6	8310_46	AA000889	06:01		F6292-5
Yes	7	7	8310_46	AA000890	07:01		F6292-8
Yes	8	8	8310_46	AA000891	08:01		F6292-11
Yes	9	9	8310_46	AA000892	09:01		F6292-14
Yes	10	10	8310_46	AA000893	10:01		F6292-17
Yes	11	11	8310_46	AA000894	11:01		F6295-2
Yes	12	12	8310_46	AA000895	12:01		F6295-4
Yes	13	13	8310_46	AA000896	13:01		8310 L4 CCV s808
Yes	14	14	8310_46	AA000897	14:01		F6298-2
Yes	15	15	8310_46	AA000898	15:01		F6298-4
Yes	16	16	8310_46	AA000899	16:01		F6298-6
Yes	17	17	8310_46	AA000900	17:01		OP1473-MS
Yes	18	18	8310_46	AA000901	18:01		OP1473-MSD
Yes	19	19	8310_46	AA000902	19:01		OP1469-MB
Yes	20	20	8310_46	AA000903	20:01		F6305-6,4x
Yes	21	21	8310_46	AA000904	21:01		8310 L4 CCV s808

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**T. HANSEN**	**DATE:**	**NOVEMBER 6, 2000**
FROM:	**JENNIFER MALLE**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION-TAL METALS, CYANIDE AND MISCELLANEOUS PARAMETERS**
CTO 079 –NAS WHITING FIELD
SDG – F6287

SAMPLES: 3/Aqueous/

39WV00101 39WW00101 39WW00101D

4/Soil/

05DSB102 05DSB202 05DSB302 05DSB402

3/Sediment/

39DV00101 39DW00101 39DW00101D

Overview

The sample set for CTO 079, NAS Whiting Field, SDG F6287 consists of three (3) aqueous environmental samples, four (4) soil environmental samples and three (3) sediment environmental samples. Two (2) field duplicate pairs (39WW00101/39WW00101D and 39DW00101/39DW00101D) were included within this SDG.

The three aqueous samples, 39WV00101, 39WW00101 and 39WW00101D, were analyzed for Target Analyte List (TAL) metals, cyanide and total organic carbon (TOC). Sediment samples 39DV00101, 39DW00101, and 39DW00101D were analyzed for TAL metals, cyanide and particle analyses. Soil samples 05DSB102, 05DSB202, 05DSB302 and 05DSB402 were analyzed for TAL metals only. The samples were collected by Tetra Tech NUS on April 14, 2000 and analyzed by Accutest Laboratories under Naval Facilities Engineering Service Center (NFESC) Guidance Document, "Navy Installation Restoration Chemical Data Quality Manual" (September 1999). All metal analyses, with the exception of mercury, were conducted under analytical method SW846 6010B. Mercury analyses were conducted under SW846 method 7470/7471. Analyses for cyanide were conducted under EPA method 335.2 and SW 846 method 9010. Particle size analyses were conducted under ASTM E422-63. Analyses for TOC were conducted under EPA method 415.1.

The data was evaluated based on the following parameters:

- Data Completeness
- * Holding Times
- Calibration Verification
- Laboratory Blank Analysis
- ICP Interference Check Sample Results
- * Matrix Spike/Matrix Spike Duplicate Recoveries
- * Laboratory Duplicate Precision

* • Laboratory Control Sample Recoveries
* • Field Duplicate Precision
• ICP Serial Dilution Recoveries
* • Sample Quanitation
* • Detection Limits

* - All quality control criteria were met for this parameter.

Laboratory Blank Analyses

The following contaminants were detected in the laboratory method/preparation blanks at the following maximum concentrations:

Affected samples : All

Analyte	Maximum Concentration	Action Level (soil/sediment)	Action Level (aqueous)
Antimony	5.2 ug/L	2.6 mg/kg	26 ug/L
Arsenic	4.0 ug/L	2.0 mg/kg	20 ug/L
Barium (1)	0.15 ug/L	0.75 mg/kg	NA
Barium	0.72 ug/L	NA	3.6 ug/L
Beryllium	1.6 ug/L	0.80 mg/kg	8.0 ug/L
Cadmium	0.63 ug/L	0.315 mg/kg	3.15 ug/L
Calcium (1)	4.6 mg/kg	23 mg/kg	NA
Chromium (1)	2.1 mg/kg	10.5 mg/kg	NA
Chromium	0.80 ug/L	NA	4.0 ug/L
Lead (1)	0.19 mg/kg	0.95 mg/kg	NA
Lead (2)	1.9 ug/L	NA	9.5 ug/L
Magnesium	24.8 ug/L	12.4 mg/kg	124 ug/L
Manganese	0.71 ug/L	0.355 mg/kg	NA
Manganese (2)	2.5 ug/L	NA	12.5 ug/L
Mercury	0.1 ug/L	0.083 mg/kg	0.50 ug/L
Nickel	1.3 ug/L	0.65 mg/kg	NA
Nickel (2)	14.6 ug/L	NA	73 ug/L
Potassium	695 ug/L	347.5 mg/kg	3475 ug/L
Selenium	3.2 ug/L	1.6 mg/kg	16 ug/L
Thallium (1)	0.64 mg/kg	3.2 mg/kg	NA
Thallium	6.2 ug/L	NA	31 ug/L
Zinc (1)	0.62 mg/kg	3.1 mg/kg	NA

(1) - Maximum concentration is present in a soil/sediment preparation blank
(2) - Maximum concentration is present in an aqueous preparation blank
NA -Maximum concentration is not applicable to the matrix

An action level of 5X the maximum concentration was used to evaluate the sample data for blank contamination. Sample aliquot, percent solids and dilution factors were taken into consideration in evaluation for blank contamination. Positive results less than the action level for antimony, arsenic, beryllium, cadmium, chromium, lead, magnesium, manganese, mercury, nickel, potassium, selenium, thallium and zinc were qualified as nondetected, "U", due to laboratory blank contamination. No validation action was required for the remaining analytes since the results reported for these analytes were either greater than the action level or nondetected.

ICP Interference Check Sample Results

The interfering analyte iron was present in sample 05DSB302 at a concentration which was comparable to the level of iron in the Interference Check Sample (ICS) solution. Several analytes namely antimony, barium, beryllium, chromium, copper, lead, manganese, nickel, potassium, selenium, sodium, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for nickel, selenium, sodium and thallium in the affected sample. The positive results reported for nickel, selenium and sodium were qualified as estimated, "J". The nondetected result reported for thallium was qualified as estimated, "UJ".

The interfering analytes aluminum and iron were present in sample 05DSB402 at concentrations which where comparable to the levels of aluminum and iron in the Interference Check Sample (ICS) solution. Several analytes namely antimony, barium, beryllium, chromium, copper, lead, manganese, nickel, potassium, selenium, sodium, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for nickel, selenium, sodium and thallium in the affected sample. The positive results reported for nickel, selenium and sodium were qualified as estimated, "J". The nondetected result reported for thallium was qualified as estimated, "UJ".

Notes

Incorrect Form I's were sent by the laboratory for the soil samples. The laboratory was contacted and notified of the problem and the correct Form I's were provided.

Results were reported for molybdenum and tin and were not requested analytes as per the Chain of Custody. Molybdenum and tin results were removed from the database. However, results on the Form I's remain unchanged and contain the molybdenum and tin results as originally reported.

Results for sample 39DW00101D were not entered into the database. However, the Form I was provided for this sample and the results reported on the Form I were entered into the database.

The mercury preparation logs were missing from the data package. The laboratory was contacted and the missing data was provided.

The laboratory preps mercury at 1g/100mL for samples within this SDG instead of the laboratory's usual 0.6g/100mL prep.

Part of the analysis run log (Form XIV equivalent) was missing from the package. The laboratory was contacted and the missing data was provided.

The Contract Required Detection Limit (CRDL) Percent Recoveries for calcium and silver were greater than the 120% quality control limt. However, validation action was not required as per regional guidance.

Several Continuing Calibration Verification (CCV) Percent Recoveries (%Rs) for potassium were greater than the 110% quality control limits. However, potassium results were not reported from the bracketing noncompliant CCVs. Results reported for potassium were bracketed by compliant CCVs which met the 90-110% quality control limits.

Cyanide units on the Electronic Deliverable Data were changed in the aqueous matrix from mg/L to ug/L for database purposes. Form 1s were not altered and remain in the units of mg/L.

TOC summary quality control data was not included within this package. The laboratory was contacted and the missing data was provided.

Serial dilution %Ds for barium and manganese were greater than 10% and 50x their respective IDL. However, the sample analyzed for serial dilution was not taken from this SDG. The decision not to qualify for the noncompliance was based on this factor.

Laboratory Performance: Several contaminants were present in the laboratory method/preparation blanks.

Other Factors Affecting Data Quality: The intefering analytes aluminum and iron were present in a couple of samples.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994 and the NFESC document entitled "Navy IRCDQM" (NFESC 9/99).

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
Jennifer Malle
Environmental Scientist

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

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

APPENDIX A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

SOIL DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	05DSB102			05DSB202			05DSB302			05DSB402		
SAMPLE DATE:	04/14/00			04/14/00			04/14/00			04/14/00		
LABORATORY ID:	F6287-11			F6287-12			F6287-13			F6287-14		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	89.2 %			93.8 %			90.0 %			87.9 %		
UNITS:	MG/KG			MG/KG			MG/KG			MG/KG		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	6740			10300			22300			31600		
ANTIMONY	2.2	U	A	0.40	U	A	0.56	U	A	0.81	U	A
ARSENIC	2.1	U	A	1.4	U	A	3.1			4.2		
BARIUM	23.0			33.1			20.0			18.2		
BERYLLIUM	0.06	U	A	0.14	U	A	0.12	U	A	0.19	U	A
CADMIUM	0.20	U	A	0.20	U	A	0.09	U	A	0.04	U	
CALCIUM.	315			166			130			719		
CHROMIUM	9.2	U	A	10.9	U	A	20.5			21.5		
COBALT	0.57			1.4			1.0			1.5		
COPPER	11.8			10.7			27.1			10.2		
IRON	7130			5670			12600			17400		
LEAD	133			122			23.6			14.4		
MAGNESIUM	174			179			241			294		
MANGANESE	16.0			184			75.7			123		
MERCURY	0.14			0.05	U	A	0.04	U	A	0.02	U	A
NICKEL	2.6			3.3			5.2	J	K	6.0	J	K
POTASSIUM	245	U	A	177	U	A	259	U	A	294	U	A
SELENIUM	1.5	U	A	0.88	U	A	2.1	J	K	2.5	J	K
SILVER	0.15			0.10	U		0.11	U		0.11	U	
SODIUM	206			74.5			126	J	K	114	J	K
THALLIUM	0.31	U		0.28	U		0.30	UJ	K	0.31	UJ	K
VANADIUM	16.4			15.4			32.5			44.9		
ZINC	27.7			19.1			15.9			16.3		

SOIL DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	39DV00101			39DW00101			39DW00101D					
SAMPLE DATE:	04/14/00			04/14/00			04/14/00			/ /		
LABORATORY ID:	F6287-9			F6287-2			F6287-5					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	73.1 %			76.4 %			76.7 %			100.0 %		
UNITS:	MG/KG			MG/KG			MG/KG					
FIELD DUPLICATE OF:							39DW00101					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	851			508			495					
ANTIMONY	0.32	U		0.39	U	A	0.29	U				
ARSENIC	0.47	U		0.45	U		0.41	U				
BARIUM	3.6			2.4			3.0					
BERYLLIUM	0.05	U	A	0.16	U	A	0.04	U				
CADMIUM	0.04	U		0.04	U		0.04	U				
CALCIUM	95.5			75.8			59.1					
CHROMIUM	2.0	U	A	0.89	U	A	0.83	U	A			
COBALT	0.11	U		0.10	U		0.10	U				
COPPER	2.4			1.7			1.7					
IRON	1040			1010			991					
LEAD	2.6			1.3			1.6					
MAGNESIUM	17.1			44.1			9.4	U	A			
MANGANESE	2.7			2.0			1.8					
MERCURY	0.01	U	A	0.01	U	A	0.01	U	A			
NICKEL	0.53	U	A	2.6			0.23	U	A			
POTASSIUM	102	U	A	94.4	U	A	83.3	U	A			
SELENIUM	0.28	U		0.49	U	A	0.36	U	A			
SILVER	0.13	U		0.13	U		0.12	U				
SODIUM	125			127			114					
THALLIUM	0.36	U		0.35	U		0.32	U				
VANADIUM	1.8			1.0			1.1					
ZINC	6.0			3.7	U	A	2.9	U	A			

WATER DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	39WV00101			39WW00101			39WW00101D			/ /		
SAMPLE DATE:	04/14/00			04/14/00			04/14/00					
LABORATORY ID:	F6287-8			F6287-1			F6287-4					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:							39WW00101					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	125			147			156					
ANTIMONY	4.0	U	A	3.0	U	A	2.4	U	A			
ARSENIC	3.4	U		3.4	U		3.4	U				
BARIUM	19.6			19.7			20.1					
BERYLLIUM	1.1	U	A	1.1	U	A	1.2	U	A			
CADMIUM	0.33	U		0.33	U		0.33	U				
CALCIUM	900			1000			1050					
CHROMIUM	34.1			1.5	U	A	1.8	U	A			
COBALT	0.80	U		0.80	U		0.80	U				
COPPER	0.75	U		0.75	U		0.75	U				
IRON	667			611			672					
LEAD	2.0	U	A	1.6	U		1.8	U	A			
MAGNESIUM	799			797			814					
MANGANESE	10.6	U	A	10.6	U	A	11.4	U	A			
MERCURY	0.06	U		0.06	U		0.06	U				
NICKEL	6.7	U	A	1.0	U		2.9	U	A			
POTASSIUM	818	U	A	841	U	A	832	U	A			
SELENIUM	2.0	U		2.4	U	A	2.5	U	A			
SILVER	0.96	U		0.96	U		0.96	U				
SODIUM	1860			1920			1990					
THALLIUM	2.7	U		3.6	U	A	2.7	U	A			
VANADIUM	0.72	U		0.72	U		0.72	U				
ZINC	3.4			2.1			3.7					

SOIL DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	39DV00101	39DW00101	39DW00101D	
SAMPLE DATE:	04/14/00	04/14/00	04/14/00	/ /
LABORATORY ID:	F6287-9	F6287-2	F6287-5	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	73.1 %	76.4 %	76.7 %	100.0 %
FIELD DUPLICATE OF:			39DW00101	

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
CYANIDE(MG/KG)	0.65	U		0.65	U		0.65	U				
NO. 10 SIEVE(%)	99.9			98.8			99.5					
NO. 120 SIEVE(%)	0			0			0					
NO. 18 SIEVE(%)	92.8			85.7			90.2					
NO. 230 SIEVE(%)	0			0			0					
NO. 4 SIEVE(%)	100			100			100					
NO. 40 SIEVE(%)	34.4			22.2			19.4					
NO. 60 SIEVE(%)	1.2			1.9			1.9					

WATER DATA
Accutest, NJ
SDG: F6287

SAMPLE NUMBER:	39WV00101	39WW00101	39WW00101D	
SAMPLE DATE:	04/14/00	04/14/00	04/14/00	/ /
LABORATORY ID:	F6287-8	F6287-1	F6287-4	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	0.0 %	0.0 %	0.0 %	100.0 %
FIELD DUPLICATE OF:			39WW00101	

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
CYANIDE(MG/L)	0.005	U		0.005	U		0.005	U				
TOTAL ORGANIC CARBON(MG/L)	1	U		1	U		1	U				

APPENDIX B

Results as Reported by the Laboratory

Report of Analysis

Client Sample ID:	39WV00101		
Lab Sample ID:	F6287-8	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
		Percent Solids:	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	125 B	200	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Antimony	4.0 B	5.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Arsenic	3.4 U	10.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Barium	19.6 B	200	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Beryllium	1.1 B	5.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Cadmium	0.33 U	5.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Calcium	900 B	1000	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Chromium	34.1	10.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Cobalt	0.80 U	50.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Copper	0.75 U	25.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Iron	667	300	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Lead	2.0 B	5.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Magnesium	799 B	5000	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Manganese	10.6 B	15.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Mercury	0.06 U	1.0	ug/l	1	04/20/00	04/21/00	SJL	SW846 7470A
Nickel	6.7 B	40.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Potassium	818 B	5000	ug/l	1	04/18/00	04/20/00	JK	SW846 6010A
Selenium	2.0 U	10.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Silver	0.96 U	10.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Sodium	1860 B	5000	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Thallium	2.7 U	10.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Vanadium	0.72 U	50.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Zinc	3.4 B	20.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID: 39WW00101
Lab Sample ID: F6287-1
Matrix: AQ - Water
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Date Sampled: 04/14/00
Date Received: 04/15/00
Percent Solids: n/a

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	147 B	200	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Antimony	3.0 B	5.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Arsenic	3.4 U	10.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Barium	19.7 B	200	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Beryllium	1.1 B	5.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Cadmium	0.33 U	5.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Calcium	1000	1000	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Chromium	1.5 B	10.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Cobalt	0.80 U	50.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Copper	0.75 U	25.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Iron	611	300	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Lead	1.6 U	5.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Magnesium	797 B	5000	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Manganese	10.6 B	15.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Mercury	0.06 U	1.0	ug/l	1	04/20/00	04/21/00	SJL	SW846 7470A
Nickel	1.0 U	40.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Potassium	841 B	5000	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Selenium	2.4 B	10.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Silver	0.96 U	10.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Sodium	1920 B	5000	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Thallium	3.6 B	10.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Vanadium	0.72 U	50.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Zinc	2.1 B	20.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	39WW00101D		
Lab Sample ID:	F6287-4	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
		Percent Solids:	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	156 B	200	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Antimony	2.4 B	5.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Arsenic	3.4 U	10.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Barium	20.1 B	200	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Beryllium	1.2 B	5.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Cadmium	0.33 U	5.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Calcium	1050	1000	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Chromium	1.8 B	10.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Cobalt	0.80 U	50.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Copper	0.75 U	25.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Iron	672	300	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Lead	1.8 B	5.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Magnesium	814 B	5000	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Manganese	11.4 B	15.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Mercury	0.06 U	1.0	ug/l	1	04/20/00	04/21/00	SJL	SW846 7470A
Nickel	2.9 B	40.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Potassium	832 B	5000	ug/l	1	04/18/00	04/20/00	JK	SW846 6010A
Selenium	2.5 B	10.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Silver	0.96 U	10.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Sodium	1990 B	5000	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Thallium	2.7 B	10.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Vanadium	0.72 U	50.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A
Zinc	3.7 B	20.0	ug/l	1	04/18/00	04/19/00	JK	SW846 6010A

RL = Reporting Limit

ACCUTEST.

Report of Analysis

Client Sample ID:	05DSB102		
Lab Sample ID:	F6287-11	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
		Percent Solids:	89.2
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By		Method
Aluminum	6740	22.9	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Antimony	2.2 B	6.9	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Arsenic	2.1	0.57	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Barium	23.0	22.9	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Beryllium	0.06 B	0.57	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Cadmium	0.20 B	0.46	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Calcium	315 B	572	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Chromium	9.2	1.1	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Cobalt	0.57 B	5.7	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Copper	11.8	2.9	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Iron	7130	11.4	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Lead	133	11.4	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Magnesium	1744 B	572	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Manganese	16.0	1.7	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Mercury	0.14	0.11	mg/kg	1	04/20/00	04/21/00	SJL	SW846 7471A
Molybdenum	0.47 B	5.7	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Nickel	2.6 B	4.6	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Potassium	245 B	572	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Selenium	1.5 B	11.4	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Silver	0.15 B	1.1	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Sodium	206 B	572	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Thallium	0.33 B*	1.1	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Tin	0.97 B	5.7	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Vanadium	16.4	5.7	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Zinc	27.7	2.3	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A

RL = Reporting Limit

ACCUTEST.

Report of Analysis

Client Sample ID:	05DSB202		
Lab Sample ID:	F6287-12	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
		Percent Solids:	93.8
Project:	NAS Whiting Field PO#N0052-MSA0200-014		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	10300	21.1	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Antimony	0.40 B	6.3	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Arsenic	1.4	0.53	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Barium	33.1	21.1	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Beryllium	0.14 B	0.53	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Cadmium	0.20 B	0.42	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Calcium	166 B	528	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Chromium	10.9	1.1	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Cobalt	1.4 B	5.3	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Copper	10.7	2.6	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Iron	5670	10.6	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Lead	122	10.6	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Magnesium	179 B	528	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Manganese	184	1.6	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Mercury	0.05 B	0.1	mg/kg	1	04/20/00	04/21/00	SIL	SW846 7471A
Molybdenum	0.10 B	5.3	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Nickel	3.3 B	4.2	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Potassium	177 B	528	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Selenium	0.88 B	10.6	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Silver	0.10 U	1.1	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Sodium	74.5 B	528	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Thallium	0.28 B	1.1	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Tin	1.1 B	5.3	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Vanadium	15.4	5.3	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Zinc	19.1	2.1	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A

RL = Reporting Limit

ACCUTEST.

Report of Analysis

Client Sample ID:	05DSB302		
Lab Sample ID:	F6287-13	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
		Percent Solids:	90.0
Project:	NAS Whiting Field PO#N0052-MSA0200-014		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	22300	22.7	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Antimony	0.56 B	6.8	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Arsenic	3.1	0.57	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Barium	20.0 B	22.7	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Beryllium	0.12 B	0.57	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Cadmium	0.09 B	0.45	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Calcium	130 B	567	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Chromium	20.3	1.1	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Cobalt	1.0 B	5.7	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Copper	27.1	2.8	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Iron	12600	11.3	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Lead	23.6	11.3	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Magnesium	241 B	567	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Manganese	75.7	1.7	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Mercury	0.04 B	0.12	mg/kg	1	04/20/00	04/21/00	SJL	SW846 7471A
Molybdenum	0.31 B	5.7	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Nickel	3.2	4.5	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Potassium	259 B	567	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Selenium	2.1 B	11.3	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Silver	0.11 U	1.1	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Sodium	126 B	567	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Thallium	0.30 U*	1.1	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Tin	1.2 B	5.7	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Vanadium	32.5	5.7	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Zinc	15.9	2.3	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A

RL = Reporting Limit

ACCUTEST.

Report of Analysis

Client Sample ID:	05DSB402		
Lab Sample ID:	F6287-14	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
		Percent Solids:	87.9
Project:	NAS Whiting Field PO#N0052-MSA0200-014		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	31600	23.2	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Antimony	0.81 B	7.0	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Arsenic	4.2	0.58	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Barium	18.2 B	23.2	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Beryllium	0.19 B	0.58	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Cadmium	0.04 U	0.46	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Calcium	710	580	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Chromium	21.5	1.2	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Cobalt	1.5 B	5.8	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Copper	10.2	2.9	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Iron	17400	11.6	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Lead	14.4	11.6	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Magnesium	294 B	580	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Manganese	123	1.7	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Mercury	0.02 B	0.12	mg/kg	1	04/20/00	04/21/00	SJL	SW846 7471A
Molybdenum	1.0 B	5.8	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Nickel	6.0	4.6	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Potassium	294 B	580	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Selenium	2.5 B	11.6	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Silver	0.11 U	1.2	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Sodium	114 B	580	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Thallium	0.31 B*	1.2	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Tin	0.35 B	5.8	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Vanadium	44.9	5.8	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Zinc	16.3	2.3	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A

RL = Reporting Limit

ACCUTEST.

Report of Analysis

Client Sample ID:	39DV00101		
Lab Sample ID:	F6287-9	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
		Percent Solids:	73.1
Project:	NAS Whiting Field PO#N0052-MSA0200-014		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	851	27.1	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Antimony	0.32 U	8.1	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Arsenic	0.47 U	0.68	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Barium	3.6 B	27.1	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Beryllium	0.05 B	0.68	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Cadmium	0.04 U	0.54	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Calcium	95.5 B	677	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Chromium	2.0	1.4	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Cobalt	0.11 U	6.8	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Copper	2.4 B	3.4	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Iron	1040	13.5	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Lead	2.6 B	13.5	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Magnesium	17.1 B	677	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Manganese	2.7	2.0	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Mercury	0.01 B	0.15	mg/kg	1	04/20/00	04/21/00	SJL	SW846 7471A
Molybdenum	0.09 U	6.8	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Nickel	0.58 B	5.4	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Potassium	102 B	677	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Selenium	0.28 U	13.5	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Silver	0.19 U	1.4	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Sodium	125 B	677	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Thallium	0.36 U	1.4	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Tin	0.72 B	6.8	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Vanadium	1.8 B	6.8	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Zinc	6.0	2.7	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A

RL = Reporting Limit

ACCUTEST.

Report of Analysis

Client Sample ID:	39DW00101		
Lab Sample ID:	F6287-2	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
		Percent Solids:	76.4
Project:	NAS Whiting Field PO#N0052-MSA0200-014		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	508	26.2	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Antimony	0.39 B	7.9	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Arsenic	0.45 U	0.65	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Barium	2.4 B	26.2	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Beryllium	0.14 B	0.65	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Cadmium	0.04 U	0.52	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Calcium	75.8 B	654	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Chromium	0.89 B	1.3	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Cobalt	0.10 U	6.5	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Copper	1.7 B	3.3	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Iron	1010	13.1	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Lead	1.1 B	13.1	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Magnesium	44.1 B	654	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Manganese	2.0	2.0	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Mercury	0.01 B	0.13	mg/kg	1	04/20/00	04/21/00	SJL	SW846 7471A
Nickel	2.6 B	5.2	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Potassium	94.4 B	654	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Selenium	0.49 B	13.1	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Silver	0.13 U	1.3	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Sodium	127 B	654	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Thallium	0.36 U	1.3	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Vanadium	1.0 B	6.5	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A
Zinc	5.7	2.6	mg/kg	1	04/18/00	04/19/00	JK	SW846 6010A

RL = Reporting Limit

ACCUTEST.

Report of Analysis

Client Sample ID: 39DW00101D
Lab Sample ID: F6287-5
Matrix: SO - Soil
Date Sampled: 04/14/00
Date Received: 04/15/00
Percent Solids: 76.7
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	495	23.9	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Antimony	0.29 U	7.2	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Arsenic	0.41 U	0.60	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Barium	3.0 B	23.9	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Beryllium	0.04 U	0.60	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Cadmium	0.04 U	0.48	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Calcium	59.1 B	598	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Chromium	0.83 B	1.2	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Cobalt	0.13 U	6.0	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Copper	1.7 B	3.0	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Iron	991	12.0	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Lead	1.6 B	12.0	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Magnesium	9.4 B	598	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Manganese	1.9	1.8	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Mercury	0.01 B	0.14	mg/kg	1	04/20/00	04/21/00	SJL	SW846 7471A
Molybdenum	0.08 U	6.0	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Nickel	0.73 B	4.8	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Potassium	83.3 B	598	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Selenium	0.36 B	12.0	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Silver	0.12 U	1.2	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Sodium	114 B	598	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Thallium	0.12 U	1.2	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Tin	0.57 B	6.0	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Vanadium	1.1 B	6.0	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A
Zinc	2.9	2.4	mg/kg	1	04/18/00	04/20/00	JK	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	39WV00101		
Lab Sample ID:	F6287-8	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
		Percent Solids:	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed By	Method
Cyanide, Total	<0.0050	0.0050	mg/l	1	04/19/00 JK	EPA 335.2
Total Organic Carbon	<1.0	1.0	mg/l	1	04/21/00 ANJ	EPA415.1/SW8469060M

RL = Reporting Limit

Report of Analysis

Client Sample ID:	39WW00101		
Lab Sample ID:	F6287-1	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
		Percent Solids:	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed By	Method
Cyanide, Total	<0.0050	0.0050	mg/l	1	04/19/00 JK	EPA 335.2
Total Organic Carbon	<1.0	1.0	mg/l	1	04/21/00 ANJ	EPA415.1/SW8469060M

RL = Reporting Limit

Report of Analysis

Client Sample ID:	39WW00101D		
Lab Sample ID:	F6287-4	**Date Sampled:**	04/14/00
Matrix:	AQ - Water	**Date Received:**	04/15/00
		Percent Solids:	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed By	Method
Cyanide, Total	<0.0050	0.0050	mg/l	1	04/19/00 JK	EPA 335.2
Total Organic Carbon	<1.0	1.0	mg/l	1	04/21/00 ANJ	EPA415.1/SW8469060M

RL = Reporting Limit

Report of Analysis

Client Sample ID:	39DV00101		
Lab Sample ID:	F6287-9	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
		Percent Solids:	73.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed By		Method
Sieve Test - Particle Sizing							
No. 4 Sieve	100		%	1	04/23/00	SJL	ASTM E422-63
No. 10 Sieve	99.9		%	1	04/23/00	SJL	ASTM E422-63
No. 18 Sieve	92.8		%	1	04/23/00	SJL	ASTM E422-63
No. 40 Sieve	34.4		%	1	04/23/00	SJL	ASTM E422-63
No. 60 Sieve	1.2		%	1	04/23/00	SJL	ASTM E422-63
No. 120 Sieve	0.0		%	1	04/23/00	SJL	ASTM E422-63
No. 230 Sieve	0.0		%	1	04/23/00	SJL	ASTM E422-63
Cyanide, Total	<0.65	0.65	mg/kg	1	04/20/00	JK	SW846 9010
Solids, Percent	73.1		%	1	04/18/00	JK	EPA 160.3 M

RL = Reporting Limit

Report of Analysis

Client Sample ID:	39DW00101		
Lab Sample ID:	F6287-2	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
		Percent Solids:	76.4
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed By		Method
Sieve Test - Particle Sizing							
No. 4 Sieve	100		%	1	04/23/00	SJL	ASTM E422-63
No. 10 Sieve	98.8		%	1	04/23/00	SJL	ASTM E422-63
No. 18 Sieve	85.7		%	1	04/23/00	SJL	ASTM E422-63
No. 40 Sieve	22.2		%	1	04/23/00	SJL	ASTM E422-63
No. 60 Sieve	1.9		%	1	04/23/00	SJL	ASTM E422-63
No. 120 Sieve	0.0		%	1	04/23/00	SJL	ASTM E422-63
No. 230 Sieve	0.0		%	1	04/23/00	SJL	ASTM E422-63
Cyanide, Total	<0.65	0.65	mg/kg	1	04/20/00	JK	SW846 9010
Solids, Percent	76.4		%	1	04/18/00	JK	EPA 160.3 M

RL = Reporting Limit

Report of Analysis

Client Sample ID:	39DW00101D		
Lab Sample ID:	F6287-5	**Date Sampled:**	04/14/00
Matrix:	SO - Soil	**Date Received:**	04/15/00
		Percent Solids:	76.7
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed By		Method
Sieve Test - Particle Sizing							
No. 4 Sieve	100		%	1	04/23/00	SJL	ASTM E422-63
No. 10 Sieve	99.5		%	1	04/23/00	SJL	ASTM E422-63
No. 18 Sieve	90.2		%	1	04/23/00	SJL	ASTM E422-63
No. 40 Sieve	19.4		%	1	04/23/00	SJL	ASTM E422-63
No. 60 Sieve	1.9		%	1	04/23/00	SJL	ASTM E422-63
No. 120 Sieve	0.0		%	1	04/23/00	SJL	ASTM E422-63
No. 230 Sieve	0.0		%	1	04/23/00	SJL	ASTM E422-63
Cyanide, Total	<0.65	0.65	mg/kg	1	04/20/00	JK	SW846 9010
Solids, Percent	76.7		%	1	04/18/00	JK	EPA 160.3 M

RL = Reporting Limit

APPENDIX C

Support Documentation

ACCUTEST

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST QUOTE #: 0007

CLIENT INFORMATION

NAME: Tetra Tech NUS Inc.
ADDRESS: 1401 Oven Park Dr. Suite 102
CITY, STATE, ZIP: Tallahassee FL 32312
SEND REPORT TO:
PHONE #: 850-385-9899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting Field
LOCATION: Milton, FL
PROJECT NO.: 0052
FAX #: 850-385-9860

ANALYTICAL INFORMATION

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	VOC TCL (HCl)	SVOC	PAH	Pest PCB	Metals	CN	TOC	VOC	SVOC/PAH/Pest PCB/Metals	Grain Size
F6287-1	39WW00101 MS/MSD	4-14-00	0907		SW							3	2	2	2	1	1	1			
-2	39DW00101 MS/MSD	4-14-00	0914		SD														1	2	1
-3	39GW00101 MS/MSD	4-14-00	0943		GW							3									
-4	39WW00101D	4-14-00	0907		SW							3	2	2	2	1	1	1			
-5	39DW00101D	4-14-00	0914		SD														1	2	1
-6	39GW00101D	4-14-00	0943		GW							3									
-1	39WW00101MS	4-14-00	0907		SW							3	2	2	2	1	1	1			
-2	39DW00101MS	4-14-00	0914		SD														1	2	1
-3	39GW00101MS	4-14-00	0943		GW							3									
-7	39TB041400											2			(Trip	Blank	s)				

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

LAB USE ONLY

DATA TURNAROUND INFORMATION

- ☐ STANDARD
- ☐ 48 HOUR RUSH
- ☐ 24 HOUR EMERGENCY
- ☐ OTHER

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- ☐ STANDARD
- ☐ COMMERCIAL "B"
- ☐ DISK DELIVERABLE
- ☐ STATE FORMS
- ☐ OTHER (SPECIFY)

COMMENTS/REMARKS

SW- Surface Water
SD- Sediment

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
[redacted]	4-14-00	1. Rachel 4/500/1000	2.		2.
[redacted]		3.	4.		4.
[redacted]		5.	SEAL #	PRESERVE WHERE APPLICABLE ☐	ON ICE (4 Coolers) TEMPERATURE 1.4, 1.4, 1.2, 1.2 C

ACCUTEST

CHAIN OF CUSTODY

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #:

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: Tetra Tech NUS Inc.
ADDRESS: 1401 Oven Park Drive suite 102
CITY, STATE, ZIP: Tallahassee Fl. 32312
SEND REPORT TO:
PHONE #: 850-385-9899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting Field
LOCATION: Milton Fl.
PROJECT NO.: 0052
FAX #: 850-385-9860

ANALYTICAL INFORMATION

TCL Pest/PCB's/Metals

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	TCL Pest/PCB's/Metals	LAB USE ONLY
-11	05DSB102	4-14-00	0848	JRN	SO	2					X	X	
-12	05DSB202	↓	0900	↓	SO	2					X	X	
-13	05DSB302	↓	0920	↓	SO	2					X	X	
-14	05DSB402	↓	0935	↓	SO	2					X	X	

DATA TURNAROUND INFORMATION

- [X] STANDARD
- [ ] 48 HOUR RUSH
- [ ] 24 HOUR EMERGENCY
- [ ] OTHER _____

APPROVED BY: _____

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- [ ] STANDARD
- [ ] COMMERCIAL "B"
- [ ] DISK DELIVERABLE
- [ ] STATE FORMS
- [ ] OTHER (SPECIFY) _____

COMMENTS/REMARKS

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME: 4/14/00	RECEIVED BY: 1. Radio 1500/10	RELINQUISHED BY: 2.	DATE TIME:	RECEIVED BY: 2.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY: 3.	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
	DATE TIME:	RECEIVED BY: 5.	SEAL #	PRESERVE WHERE APPLICABLE ☐	ON ICE ☐ TEMPERATURE C

ACCUTEST

CHAIN OF CUSTODY

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #:

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: Tetra Tech NUS Inc.
ADDRESS: 1401 Oven Park Dr. Suite 102
CITY, STATE, ZIP: Tallahassee FL 32312
SEND REPORT TO:
PHONE #: 850-385-9899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting Field
LOCATION: Milton, FL
PROJECT NO.: 0052
FAX #: 850-385-9860

ANALYTICAL INFORMATION

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	VOC TCL (HCl)	SVOC	PAH	Pest PCB	Metals	CN	TOC	VOC	SVOC/Pest/Pest, PCB/Metals	Grain Size
-1	39WW00101MD	4-14-00	0907		SW							3	2	2	2	1	1	1			
-2	39DW00101MD	4-14-00	0914		SD														1	2	1
-3	39GW00101MD	4-14-00	0943		GW							3									
-8	39WV00101	4-14-00	1405		SW							3	2	2	2	1	1	1			
-9	39DV00101	4-14-00	1409		SD														1	2	1
-10	39GV00101	4-14-00	1422		GW							3									

MATRIX CODE

DW - DRINKING WATER
GW - GROUNDWATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

LAB USE ONLY

DATA TURNAROUND INFORMATION

- ☐ STANDARD
- ☐ 48 HOUR RUSH
- ☐ 24 HOUR EMERGENCY
- ☐ OTHER

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- ☐ STANDARD
- ☐ COMMERCIAL "B"
- ☐ DISK DELIVERABLE
- ☐ STATE FORMS
- ☐ OTHER (SPECIFY)

COMMENTS/REMARKS

SW - Surface Water
SD - Sediment

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME: 4-14-00	RECEIVED BY: 1. Rachel 4/15/00 1000	RELINQUISHED BY: 2.	DATE TIME:	RECEIVED BY: 2.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY: 3.	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
	DATE TIME:	RECEIVED BY: 5.	SEAL #	PRESERVE WHERE APPLICABLE ☐	ON ICE ☐ TEMPERATURE

HOLDING TIME
05/17/00

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/KG	39DV00101	F6287-9	NORMAL	F6287	CN	04/14/00	04/20/00	04/20/00	6	0	6
MG/KG	39DW00101	F6287-2	NORMAL	F6287	CN	04/14/00	04/20/00	04/20/00	6	0	6
MG/KG	39DW00101D	F6287-5	NORMAL	F6287	CN	04/14/00	04/20/00	04/20/00	6	0	6
MG/L	39WV00101	F6287-8	NORMAL	F6287	CN	04/14/00	04/18/00	04/19/00	4	1	5
MG/L	39WW00101	F6287-1	NORMAL	F6287	CN	04/14/00	04/18/00	04/19/00	4	1	5
MG/L	39WW00101D	F6287-4	NORMAL	F6287	CN	04/14/00	04/18/00	04/19/00	4	1	5
%	39DV00101	F6287-9	NORMAL	F6287	GRSZ	04/14/00	/ /	04/23/00	0	0	9
%	39DW00101	F6287-2	NORMAL	F6287	GRSZ	04/14/00	/ /	04/23/00	0	0	9
%	39DW00101D	F6287-5	NORMAL	F6287	GRSZ	04/14/00	/ /	04/23/00	0	0	9
MG/KG	05DSB102	F6287-11	NORMAL	F6287	HG	04/14/00	04/20/00	04/21/00	6	1	7
MG/KG	05DSB202	F6287-12	NORMAL	F6287	HG	04/14/00	04/20/00	04/21/00	6	1	7
MG/KG	05DSB302	F6287-13	NORMAL	F6287	HG	04/14/00	04/20/00	04/21/00	6	1	7
MG/KG	05DSB402	F6287-14	NORMAL	F6287	HG	04/14/00	04/20/00	04/21/00	6	1	7
MG/KG	39DV00101	F6287-9	NORMAL	F6287	HG	04/14/00	04/20/00	04/21/00	6	1	7
MG/KG	39DW00101	F6287-2	NORMAL	F6287	HG	04/14/00	04/20/00	04/21/00	6	1	7
MG/KG	39DW00101D	F6287-5	NORMAL	F6287	HG	04/14/00	04/20/00	04/21/00	6	1	7
UG/L	39WV00101	F6287-8	NORMAL	F6287	HG	04/14/00	04/20/00	04/21/00	6	1	7
UG/L	39WW00101	F6287-1	NORMAL	F6287	HG	04/14/00	04/20/00	04/21/00	6	1	7
UG/L	39WW00101D	F6287-4	NORMAL	F6287	HG	04/14/00	04/20/00	04/21/00	6	1	7
MG/KG	05DSB102	F6287-11	NORMAL	F6287	M	04/14/00	04/18/00	04/20/00	4	2	6
MG/KG	05DSB202	F6287-12	NORMAL	F6287	M	04/14/00	04/18/00	04/20/00	4	2	6
MG/KG	05DSB302	F6287-13	NORMAL	F6287	M	04/14/00	04/18/00	04/20/00	4	2	6
MG/KG	05DSB402	F6287-14	NORMAL	F6287	M	04/14/00	04/18/00	04/20/00	4	2	6
MG/KG	39DV00101	F6287-9	NORMAL	F6287	M	04/14/00	04/18/00	04/20/00	4	2	6
MG/KG	39DW00101	F6287-2	NORMAL	F6287	M	04/14/00	04/18/00	04/19/00	4	1	5

									EXTR_DATE	ANAL_DATE	ANAL_DATE
MG/KG	39DW00101D	F6287-5	NORMAL	F6287	M	04/14/00	04/18/00	04/20/00	4	2	6
UG/L	39WV00101	F6287-8	NORMAL	F6287	M	04/14/00	04/18/00	04/19/00	4	1	5
UG/L	39WW00101	F6287-1	NORMAL	F6287	M	04/14/00	04/18/00	04/19/00	4	1	5
UG/L	39WW00101D	F6287-4	NORMAL	F6287	M	04/14/00	04/18/00	04/19/00	4	1	5
UG/KG	39DV00101	F6287-9	NORMAL	F6287	OS	04/14/00	04/21/00	04/24/00	7	3	10
UG/KG	39DW00101	F6287-2	NORMAL	F6287	OS	04/14/00	04/21/00	04/24/00	7	3	10
UG/KG	39DW00101D	F6287-5	NORMAL	F6287	OS	04/14/00	04/21/00	04/24/00	7	3	10
UG/L	39WV00101	F6287-8	NORMAL	F6287	OS	04/14/00	04/19/00	04/20/00	5	1	6
UG/L	39WW00101	F6287-1	NORMAL	F6287	OS	04/14/00	04/19/00	04/20/00	5	1	6
UG/L	39WW00101D	F6287-4	NORMAL	F6287	OS	04/14/00	04/19/00	04/20/00	5	1	6
UG/KG	39DV00101	F6287-9	NORMAL	F6287	OV	04/14/00	/ /	04/20/00	0	0	6
UG/KG	39DW00101	F6287-2	NORMAL	F6287	OV	04/14/00	/ /	04/20/00	0	0	6
UG/KG	39DW00101D	F6287-5	NORMAL	F6287	OV	04/14/00	/ /	04/20/00	0	0	6
UG/L	39GV00101	F6287-10	NORMAL	F6287	OV	04/14/00	/ /	04/21/00	0	0	7
UG/L	39GW00101	F6287-3	NORMAL	F6287	OV	04/14/00	/ /	04/21/00	0	0	7
UG/L	39GW00101D	F6287-6	NORMAL	F6287	OV	04/14/00	/ /	04/21/00	0	0	7
UG/L	39TB041400	F6287-7	NORMAL	F6287	OV	04/14/00	/ /	04/21/00	0	0	7
UG/L	39WV00101	F6287-8	NORMAL	F6287	OV	04/14/00	/ /	04/21/00	0	0	7
UG/L	39WW00101	F6287-1	NORMAL	F6287	OV	04/14/00	/ /	04/20/00	0	0	6
UG/L	39WW00101D	F6287-4	NORMAL	F6287	OV	04/14/00	/ /	04/21/00	0	0	7
UG/KG	39DV00101	F6287-9	NORMAL	F6287	PAH	04/14/00	04/22/00	04/25/00	8	3	11
UG/KG	39DW00101	F6287-2	NORMAL	F6287	PAH	04/14/00	04/22/00	04/23/00	8	1	9
UG/KG	39DW00101D	F6287-5	NORMAL	F6287	PAH	04/14/00	04/22/00	04/23/00	8	1	9
UG/L	39WV00101	F6287-8	NORMAL	F6287	PAH	04/14/00	04/18/00	04/20/00	4	2	6
UG/L	39WW00101	F6287-1	NORMAL	F6287	PAH	04/14/00	04/18/00	04/20/00	4	2	6
UG/L	39WW00101D	F6287-4	NORMAL	F6287	PAH	04/14/00	04/18/00	04/20/00	4	2	6
UG/KG	05DSB102	F6287-11	NORMAL	F6287	PCB	04/14/00	04/18/00	04/19/00	4	1	5

									TO EXTR_DATE	TO ANAL_DATE	TO ANAL_DATE
UG/KG	05DSB202	F6287-12	NORMAL	F6287	PCB	04/14/00	04/18/00	04/19/00	4	1	5
UG/KG	05DSB302	F6287-13	NORMAL	F6287	PCB	04/14/00	04/18/00	04/19/00	4	1	5
UG/KG	05DSB402	F6287-14	NORMAL	F6287	PCB	04/14/00	04/18/00	04/20/00	4	2	6
UG/KG	39DV00101	F6287-9	NORMAL	F6287	PCB	04/14/00	04/18/00	04/19/00	4	1	5
UG/KG	39DW00101	F6287-2	NORMAL	F6287	PCB	04/14/00	04/18/00	04/19/00	4	1	5
UG/KG	39DW00101D	F6287-5	NORMAL	F6287	PCB	04/14/00	04/18/00	04/19/00	4	1	5
UG/L	39WV00101	F6287-8	NORMAL	F6287	PCB	04/14/00	04/19/00	04/21/00	5	2	7
UG/L	39WW00101	F6287-1	NORMAL	F6287	PCB	04/14/00	04/19/00	04/21/00	5	2	7
UG/L	39WW00101D	F6287-4	NORMAL	F6287	PCB	04/14/00	04/19/00	04/21/00	5	2	7
UG/KG	05DSB102	F6287-11	NORMAL	F6287	PEST	04/14/00	04/18/00	04/26/00	4	8	12
UG/KG	05DSB202	F6287-12	NORMAL	F6287	PEST	04/14/00	04/18/00	04/26/00	4	8	12
UG/KG	05DSB302	F6287-13	NORMAL	F6287	PEST	04/14/00	04/18/00	04/26/00	4	8	12
UG/KG	05DSB402	F6287-14	NORMAL	F6287	PEST	04/14/00	04/18/00	04/19/00	4	1	5
UG/KG	39DV00101	F6287-9	NORMAL	F6287	PEST	04/14/00	04/18/00	04/19/00	4	1	5
UG/KG	39DW00101	F6287-2	NORMAL	F6287	PEST	04/14/00	04/18/00	04/26/00	4	8	12
UG/KG	39DW00101D	F6287-5	NORMAL	F6287	PEST	04/14/00	04/18/00	04/26/00	4	8	12
UG/L	39WV00101	F6287-8	NORMAL	F6287	PEST	04/14/00	04/19/00	04/24/00	5	5	10
UG/L	39WW00101	F6287-1	NORMAL	F6287	PEST	04/14/00	04/19/00	04/24/00	5	5	10
UG/L	39WW00101D	F6287-4	NORMAL	F6287	PEST	04/14/00	04/19/00	04/24/00	5	5	10
MG/L	39WV00101	F6287-8	NORMAL	F6287	TOC	04/14/00	04/20/00	04/21/00	6	1	7
MG/L	39WW00101	F6287-1	NORMAL	F6287	TOC	04/14/00	04/20/00	04/21/00	6	1	7
MG/L	39WW00101D	F6287-4	NORMAL	F6287	TOC	04/14/00	04/20/00	04/21/00	6	1	7

FIELD DUPLICATE PRECISION

COMPOUND	39WW00101	39WW00101D	RPD
	ug/L	ug/L	%
Aluminum	147	156	5.94
Antimony	3	2.4	22.22
Arsenic	3.4	3.4	0.00
Barium	19.7	20.1	2.01
Beryllium	1.1	1.2	8.70
Cadmium	0.33	0.33	0.00
Calcium	1000	1050	4.88
Chromium	1.5	1.8	18.18
Cobalt	0.8	0.8	0.00
Copper	0.75	0.75	0.00
Iron	611	672	9.51
Lead	1.6	1.8	11.76
Magnesium	797	814	2.11
Manganese	10.6	11.4	7.27
Mercury	0.06	0.06	0.00
Nickel	1	2.9	97.44
Potassium	841	832	1.08
Selenium	2.4	2.5	4.08
Silver	0.96	0.96	0.00
Sodium	1920	1990	3.58
Thallium	3.6	2.7	28.57
Vanadium	0.72	0.72	0.00
Zinc	2.1	3.7	55.17

FIELD DUPLICATE PRECISION

COMPOUND	39DW00101	39DW00101D	RPD
	mg/kg	mg/kg	%
Aluminum	508	495	2.59
Antimony	0.39	0.29	29.41
Arsenic	0.45	0.41	9.30
Barium	2.4	3	22.22
Beryllium	0.16	0.04	120.00
Cadmium	0.04	0.04	0.00
Calcium	75.8	59.1	24.76
Chromium	0.89	0.83	6.98
Cobalt	0.1	0.1	0.00
Copper	1.7	1.7	0.00
Iron	1010	991	1.90
Lead	1.3	1.6	20.69
Magnesium	44.1	9.4	129.72
Manganese	2	1.8	10.53
Mercury	0.01	0.01	0.00
Nickel	2.6	0.23	167.49
Potassium	94.4	83.3	12.49
Selenium	0.49	0.36	30.59
Silver	0.13	0.12	8.00
Sodium	127	114	10.79
Thallium	0.35	0.32	8.96
Vanadium	1	1.1	9.52
Zinc	3.7	2.9	24.24

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0419M1.ASC Date Analyzed: 04/19/00 Methods: SW846 6010A
QC Limits: 70 to 130 % Recovery Run ID: MA1827 Units: ug/l

Metal	CRI True	CRIA True	CRI Results	% Rec	CRIA Results	% Rec
Aluminum	200		221	110.5		
Antimony		5.0			5.4	108.0
Arsenic		10			10.4	104.0
Barium	200		202	101.0		
Beryllium	5.0		5.9	118.0		
Cadmium	5.0		5.2	104.0		
Calcium	1000		1260	126.0		
Chromium	10		10.6	106.0		
Cobalt	50		50.6	101.2		
Copper	25		24.5	98.0		
Iron	400		416	104.0		
Lead		6.0			6.6	110.0
Magnesium	5000		6000	120.0		
Manganese	15		15.7	104.7		
Molybdenum	50		anr			
Nickel	40		42.1	105.2		
Potassium	5000		4880	97.6		
Selenium		10			12.4	124.0
Silver	10		9.7	97.0		
Sodium	500		476	95.0		
Thallium		10			11.9	119.0
Tin	50		anr			
Vanadium	50		51.9	103.8		
Zinc	20		22.6	113.0		

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0419M1.ASC Date Analyzed: 04/19/00 Methods: SW846 6010A
QC Limits: 90 to 110 % Recovery Run ID: MA1827 Units: ug/l

Metal	ICV True	ICV Results	% Rec	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Aluminum	40000	40100	100.2	40000	39100	97.8	40000	39300	98.2
Antimony	2000	2060	103.0	2000	2010	100.5	2000	2010	100.5
Arsenic	2000	2040	102.0	2000	2000	100.0	2000	2030	101.5
Barium	2000	2030	101.5	2000	2000	100.0	2000	2040	102.0
Beryllium	2000	2080	104.0	2000	2050	102.5	2000	2050	102.5
Cadmium	2000	2070	103.5	2000	2040	102.0	2000	2050	102.5
Calcium	40000	41400	103.5	40000	40800	102.0	40000	41200	103.0
Chromium	2000	2050	102.5	2000	2010	100.5	2000	2010	100.5
Cobalt	2000	2060	103.0	2000	2020	101.0	2000	2010	100.5
Copper	2000	2000	100.0	2000	1960	98.0	2000	1960	98.0
Iron	40000	42400	106.0	40000	41600	104.0	40000	41900	104.8
Lead	2000	2060	103.0	2000	2020	101.0	2000	2020	101.0
Magnesium	40000	41000	102.5	40000	40300	100.8	40000	40700	101.8
Manganese	2000	2070	103.5	2000	2030	101.5	2000	2030	101.5
Molybdenum	anr								
Nickel	2000	2070	103.5	2000	2040	102.0	2000	2050	102.5
Potassium	40000	38700	96.8	40000	37700	94.2	40000	37400	93.5
Selenium	2000	2050	102.5	2000	2030	101.5	2000	2040	102.0
Silver	250	241	96.4	250	235	94.0	250	233	93.2
Sodium	40000	40300	100.8	40000	39300	98.2	40000	39200	98.0
Thallium	2000	2120	106.0	2000	2100	105.0	2000	2130	106.5
Tin	anr								
Vanadium	2000	2050	102.5	2000	2010	100.5	2000	2020	101.0
Zinc	2000	2080	104.0	2000	2050	102.5	2000	2050	102.5

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0419M1.ASC Date Analyzed: 04/19/00 Methods: SW846 6010A
QC Limits: 90 to 110 % Recovery Run ID: MA1827 Units: ug/l

Metal	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Aluminum	40000	38500	96.4	40000	38600	96.5	40000	39000	97.6
Antimony	2000	1980	99.3	2000	1990	99.4	2000	2000	100.2
Arsenic	2000	1990	99.5	2000	1990	99.6	2000	2000	99.9
Barium	2000	2000	100.2	2000	2040	101.9	2000	2000	100.0
Beryllium	2000	2010	100.4	2000	1990	99.4	2000	2020	100.8
Cadmium	2000	2020	100.8	2000	1990	99.6	2000	2020	101.0
Calcium	40000	40300	100.8	40000	40100	100.2	40000	40500	101.2
Chromium	2000	1970	98.5	2000	1950	97.5	2000	1980	99.1
Cobalt	2000	1960	98.2	2000	1940	96.9	2000	1980	99.2
Copper	2000	1930	96.7	2000	1950	97.5	2000	1950	97.5
Iron	40000	41000	102.4	40000	40700	101.7	40000	41100	102.8
Lead	2000	1980	99.2	2000	1960	98.1	2000	2000	99.9
Magnesium	40000	39900	99.8	40000	39800	99.6	40000	40000	100.0
Manganese	2000	1990	99.5	2000	1980	98.9	2000	2000	100.0
Molybdenum	anr								
Nickel	2000	2010	100.7	2000	2000	100.2	2000	2020	101.3
Potassium	40000	37000	92.5	40000	36600	91.4	40000	46300	115.8*(a
Selenium	2000	2010	100.5	2000	2000	100.3	2000	2030	101.4
Silver	250	229	91.5	250	227	90.9	250	231	92.4
Sodium	40000	38700	96.8	40000	38800	97.0	40000	39400	98.5
Thallium	2000	2090	104.7	2000	2100	104.8	2000	2100	104.9
Tin	anr								
Vanadium	2000	1980	99.2	2000	1980	99.0	2000	1990	99.7
Zinc	2000	2000	99.9	2000	1950	97.7	2000	2010	100.7

(*) Outside of QC limits
(anr) Analyte not requested
(a) Not bracketing any reportable samples.

Result not
Reported
SMM 6/2/00

000855

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0420M1.ASC Date Analyzed: 04/20/00 Methods: SW846 6010A
QC Limits: 90 to 110 % Recovery Run ID: MA1828 Units: ug/l

Metal	ICV True	ICV Results	% Rec	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	anr								
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Potassium	40000	38100	95.2	40000	37800	94.5	40000	37100	92.8
Selenium	anr								
Silver	anr								
Sodium	anr								
Thallium	anr								
Tin	anr								
Vanadium	anr								
Zinc	anr								

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N00052-MSA0200-014

File ID: IR0420M1.ASC Date Analyzed: 04/20/00 Methods: SW846 6010A
QC Limits: 90 to 110 % Recovery Run ID: MA1828 Units: ug/l

Metal	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	anr								
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Potassium	40000	37700	94.3	40000	38300	95.7	40000	38000	94.9
Selenium	anr								
Silver	anr								
Sodium	anr								
Thallium	anr								
Tin	anr								
Vanadium	anr								
Zinc	anr								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0421S1.HGX
QC Limits: result < RL

Date Analyzed: 04/21/00
Run ID: MA1833

Methods: SW846 7471A
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Mercury	1.0	.06	0.1	<1.0B	0.1	<1.0B	0	<1.0	0.1	<1.0B

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0421W1.HGX
QC Limits: result < RL

Date Analyzed: 04/21/00
Run ID: MA1832

Methods: SW846 7470A
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Mercury	1.0	.06	0	<1.0	-0.1	<1.0B	-0.1	<1.0B	0.1	<1.0B

(*) Outside of QC limits
(anr) Analyte not requested

000858

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N00052-MSA0200-014

File ID: IR0420M1.ASC Date Analyzed: 04/20/00 Methods: SW846 6010A
QC Limits: result < RL Run ID: MA1828 Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	anr							
Antimony	5.0	2.39	anr							
Arsenic	10	3.4	anr							
Barium	200	.39	anr							
Beryllium	5.0	.36	anr							
Cadmium	5.0	.33	anr							
Calcium	1000	19.5	anr							
Chromium	10	.637	anr							
Cobalt	50	.797	anr							
Copper	25	.747	anr							
Iron	300	32	anr							
Lead	5.0	1.59	anr							
Magnesium	5000	17.6	anr							
Manganese	15	.16	anr							
Molybdenum	50	.68	anr							
Nickel	40	1	anr							
Potassium	5000	28.2	657	<5000<	648	<5000<	636	<5000<	637	<5000B
Selenium	10	2	anr							
Silver	10	.96	anr							
Sodium	5000	153	anr							
Thallium	10	2.69	anr							
Tin	50	2.2	anr							
Vanadium	50	.717	anr							
Zinc	20	.83	anr							

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0420M1.ASC
QC Limits: result < RL

Date Analyzed: 04/20/00
Run ID: MA1828

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final
Aluminum	200	30	anr			
Antimony	5.0	2.39	anr			
Arsenic	10	3.4	anr			
Barium	200	.39	anr			
Beryllium	5.0	.36	anr			
Cadmium	5.0	.33	anr			
Calcium	1000	19.5	anr			
Chromium	10	.637	anr			
Cobalt	50	.797	anr			
Copper	25	.747	anr			
Iron	300	32	anr			
Lead	5.0	1.59	anr			
Magnesium	5000	17.6	anr			
Manganese	15	.16	anr			
Molybdenum	50	.68	anr			
Nickel	40	1	anr			
Potassium	5000	28.2	664	<5000B	613	<5000B
Selenium	10	2	anr			
Silver	10	.96	anr			
Sodium	5000	153	anr			
Thallium	10	2.69	anr			
Tin	50	2.2	anr			
Vanadium	50	.717	anr			
Zinc	20	.83	anr			

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0419M1.ASC Date Analyzed: 04/19/00 Methods: SW846 6010A
QC Limits: result < RL Run ID: MA1827 Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	11.3	<200	8.6	<200	28.5	<200	15.1	<200
Antimony	5.0	2.39	2.4	<5.0	1.2	<5.0	2.9	<5.0	1.2	<5.0
Arsenic	10	3.4	2.3	<10	2.5	<10	1.1	<10	1.3	<10.0
Barium	200	.39	0.42	<200	0.38	<200	0.48	<200	0.40	<200B
Beryllium	5.0	.36	0.75	<5.0	0.92	<5.0	1.6	<5.0<	1.4	<5.0B
Cadmium	5.0	.33	0.63	<5.0	0.44	<5.0	0.50	<5.0	0.60	<5.0B
Calcium	1000	19.5	5.6	<1000	5.3	<1000	14.4	<1000	0.30	<1000
Chromium	10	.637	0.55	<10	0.45	<10	0.30	<10	0.60	<10.0
Cobalt	50	.797	0.51	<50	0.60	<50	0.37	<50	0.60	<50.0
Copper	25	.747	-0.16	<25	-0.54	<25	-1.4	<25	-1.2	<25.0B
Iron	300	32	12.6	<300	8.7	<300	16.2	<300	6.1	<300
Lead	5.0	1.59	1.8	<5.0	1.4	<5.0	0.89	<5.0	1.1	<5.0
Magnesium	5000	17.6	7.5	<5000	4.9	<5000	24.8	<5000	7.5	<5000
Manganese	15	.16	0.38	<15	0.37	<15	0.42	<15	0.40	<15.0B
Molybdenum	50	.68	anr							
Nickel	40	1	0.57	<40	0.37	<40	0.55	<40	0.20	<40.0
Potassium	5000	28.2	678	<5000<	672	<5000<	667	<5000<	680	<5000B
Selenium	10	2	2.0	<10	2.0	<10	1.8	<10	1.0	<10.0
Silver	10	.96	-0.020	<10	-0.15	<10	0.11	<10	0.20	<10.0
Sodium	5000	153	-120	<5000	-160	<5000	-290	<5000	-130	<5000
Thallium	10	2.69	0.88	<10	3.9	<10	4.9	<10	3.9	<10.0B
Tin	50	2.2	anr							
Vanadium	50	.717	0.090	<50	0.30	<50	0.12	<50	0.10	<50.0
Zinc	20	.83	0.66	<20	0.54	<20	0.38	<20	0.50	<20.0

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0419M1.ASC Date Analyzed: 04/19/00 Methods: SW846 6010A
QC Limits: result < RL Run ID: MA1827 Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	17.5	<200	19.0	<200	19.7	<200
Antimony	5.0	2.39	1.8	<5.0	3.0	<5.0B	5.2	<6.0<
Arsenic	10	3.4	0.30	<10.0	1.4	<10.0	4.0	<10
Barium	200	.39	0.30	<200	0.50	<200B	0.72	<200
Beryllium	5.0	.36	1.4	<5.0B	1.1	<5.0B	1.6	<5.0<
Cadmium	5.0	.33	0.30	<5.0	0.40	<5.0B	0.62	<5.0
Calcium	1000	19.5	1.2	<1000	4.8	<1000	7.0	<1000
Chromium	10	.637	0.70	<10.0B	0.80	<10.0B	0.80	<10
Cobalt	50	.797	0.40	<50.0	0.60	<50.0	0.63	<50
Copper	25	.747	-1.6	<25.0B	-0.80	<25.0B	-0.88	<25
Iron	300	32	5.1	<300	12.8	<300	14.0	<300
Lead	5.0	1.59	0.50	<5.0	1.2	<5.0	1.8	<5.0
Magnesium	5000	17.6	4.6	<5000	14.4	<5000	14.2	<5000
Manganese	15	.16	0.30	<15.0B	0.50	<15.0B	0.71	<15
Molybdenum	50	.68	anr					
Nickel	40	1	0.80	<40.0	0.50	<40.0	1.3	<40
Potassium	5000	28.2	669	<5000B	686	<5000B	695	<5000<
Selenium	10	2	3.2	<10.0B	0.30	<10.0	2.3	<10
Silver	10	.96	0.70	<10.0	-0.10	<10.0	0.39	<10
Sodium	5000	153	-165	<5000B	-219	<5000B	-160	<5000
Thallium	10	2.69	3.8	<10.0B	6.0	<10.0B	5.2	<10
Tin	50	2.2	anr					
Vanadium	50	.717	0.1	<50.0	0.30	<50.0	0.47	<50
Zinc	20	.83	0.40	<20.0	0.40	<20.0	0.67	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2640
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 04/20/00

Metal	RL	IDL	MB raw	final
Mercury	0.17	.01	0.006	<0.17

Associated samples MP2640: F6287-2, F6287-5, F6287-9, F6287-11, F6287-12, F6287-13, F6287-14

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2639
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 04/20/00

Metal	RL	IDL	MB raw	final
Mercury	1.0	.06	-0.07	<1.0

Associated samples MP2639: F6287-1, F6287-4, F6287-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

000854

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2633
Matrix Type: AQUEOUS

Methods: SW846 6010A
Units: ug/l

Prep Date: 04/18/00

Metal	RL	IDL	MB raw	final
Aluminum	200	30	10	<200
Antimony	5.0	2.4	-1.5	<5.0
Arsenic	10.0	3.4	0.16	<10.0
Barium	200	.39	0	<200
Beryllium	5.0	.36	1.0	<5.0
Cadmium	5.0	.33	-0.12	<5.0
Calcium	1000	19.5	-8.0	<1000
Chromium	10.0	.64	2.1	<10.0
Cobalt	50.0	.8	0.22	<50.0
Copper	25.0	.75	-1.5	<25.0
Iron	300	32	17.9	<300
Lead	5.0	1.6	1.9	<5.0
Magnesium	5000	17.6	-1.2	<5000
Manganese	15.0	.16	2.5	<15.0
Molybdenum	50.0	.68	anr	
Nickel	40.0	1	14.6	<40.0
Potassium	5000	28.2	643	<5000
Selenium	10.0	2	2.8	<10.0
Silver	10.0	.96	-0.24	<10.0
Sodium	5000	153	-396	<5000
Thallium	10.0	2.7	6.2	<10.0
Tin	50.0	2.2	anr	
Vanadium	50.0	.72	-0.34	<50.0
Zinc	20.0	.83	0.29	<20.0

Associated samples MP2633: F6287-1, F6287-4, F6287-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2631
Matrix Type: SOLID

Methods: SW846 6010A
Units: mg/kg

Prep Date: 04/18/00

Metal	RL	IDL	MB raw	final
Aluminum	20.0	3	2.5	<20.0
Antimony	6.0	.24	-0.02	<6.0
Arsenic	0.50	.34	-0.04	<0.50
Barium	20.0	.04	0.15	<20.0
Beryllium	0.50	.04	0.12	<0.50
Cadmium	0.40	.03	-0.003	<0.40
Calcium	500	2	4.6	<500
Chromium	1.0	.06	0.04	<1.0
Cobalt	5.0	.08	0.01	<5.0
Copper	2.5	.07	-0.01	<2.5
Iron	10.0	3.2	0.91	<10.0
Lead	10.0	.16	0.19	<10.0
Magnesium	500	1.8	1.2	<500
Manganese	1.5	.02	0.05	<1.5
Molybdenum	5.0	.07	anr	
Nickel	4.0	.1	0.03	<4.0
Potassium	500	2.8	66.4	<500
Selenium	10.0	.2	-0.007	<10.0
Silver	1.0	.1	0.02	<1.0
Sodium	500	15.3	-22.2	<500
Thallium	1.0	.27	0.64	<1.0
Tin	5.0	.22	anr	
Vanadium	5.0	.07	-0.03	<5.0
Zinc	2.0	.08	0.62	<2.0

Associated samples MP2631: F6287-2, F6287-5, F6287-9, F6287-11, F6287-12, F6287-13, F6287-14

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

Affected Analyte	Sample	Reported Result mg/kg	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level Sample	Est. Interference	Validation Action
Antimony	05DSB402	0.81	Aluminum	487000	-3.8	31600	-0.25	—
Barium	05DSB402	18.2	Aluminum	487000	0.54	31600	0.04	—
Beryllium	05DSB402	0.19	Aluminum	487000	-0.47	31600	-0.03	—
Chromium	05DSB402	21.5	Aluminum	487000	-2.6	31600	-0.17	—
Copper	05DSB402	10.2	Aluminum	487000	1.9	31600	0.12	—
Lead	05DSB402	14.4	Aluminum	487000	3.1	31600	0.20	—
Manganese	05DSB402	123	Aluminum	487000	-3.4	31600	-0.22	—
Nickel	05DSB402	6	Aluminum	487000	-11	31600	-0.71	—
Potassium	05DSB402	294	Aluminum	487000	640	31600	41.53	—
Selenium	05DSB402	2.5	Aluminum	487000	-11	31600	-0.71	—
Sodium	05DSB402	114	Aluminum	487000	-300	31600	-19.47	—
Thallium	05DSB402	0.31u	Aluminum	487000	-4.3	31600	-0.28	—
Vanadium	05DSB402	44.9	Aluminum	487000	4.9	31600	0.32	—
Zinc	05DSB402	16.3	Aluminum	487000	-2.2	31600	-0.14	—

Affected Analyte	Sample	Reported Result mg/kg	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level Sample	Est. Interference	Validation Action
Antimony	05DSB402	0.81	Iron	194000	-3.8	17400	-0.34	—
Barium	05DSB402	18.2	Iron	194000	0.54	17400	0.05	—
Beryllium	05DSB402	0.19	Iron	194000	-0.47	17400	-0.04	—
Chromium	05DSB402	21.5	Iron	194000	-2.6	17400	-0.23	—
Copper	05DSB402	10.2	Iron	194000	1.9	17400	0.17	—
Lead	05DSB402	14.4	Iron	194000	3.1	17400	0.28	—
Manganese	05DSB402	123	Iron	194000	-3.4	17400	-0.30	—
Nickel	05DSB402	6	Iron	194000	-11	17400	-0.99	—
Potassium	05DSB402	294	Iron	194000	640	17400	57.40	—
Selenium	05DSB402	2.5	Iron	194000	-11	17400	-0.99	—
Sodium	05DSB402	114	Iron	194000	-300	17400	-26.91	—
Thallium	05DSB402	0.31u	Iron	194000	-4.3	17400	-0.39	—
Vanadium	05DSB402	44.9	Iron	194000	4.9	17400	0.44	—
Zinc	05DSB402	16.3	Iron	194000	-2.2	17400	-0.20	—

Comparision of ICP Interference Affects
SDG F6287
Whiting Field

Affected Analyte	Sample	Reported Result mg/kg	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level Sample	Est. Interference	Validation Action
Antimony	05DSB302	0.56 X	Iron	194000	-3.8	12600	-0.25	[illegible]
Barium	05DSB302	20	Iron	194000	0.54	12600	0.04	—
Beryllium	05DSB302	0.12 X	Iron	194000	-0.47	12600	-0.03	[illegible]
Chromium	05DSB302	20.5 X	Iron	194000	-2.6	12600	-0.17	[illegible]
Copper	05DSB302	27.1	Iron	194000	1.9	12600	0.12	—
Lead	05DSB302	23.6	Iron	194000	3.1	12600	0.20	—
Manganese	05DSB302	75.7	Iron	194000	-3.4	12600	-0.22	—
Nickel	05DSB302	5.2	Iron	194000	-11	12600	-0.71	J
Potassium	05DSB302	259 X	Iron	194000	640	12600	41.57	—
Selenium	05DSB302	2.1	Iron	194000	-11	12600	-0.71	J
Sodium	05DSB302	126	Iron	194000	-300	12600	-19.48	—
Thallium	05DSB302	0.3u	Iron	194000	-4.3	12600	-0.28	EJ
Vanadium	05DSB302	32.5	Iron	194000	4.9	12600	0.32	—
Zinc	05DSB302	15.9	Iron	194000	-2.2	12600	-0.14	—

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0420M1.ASC Date Analyzed: 04/20/00 Methods: SW846 6010A
QC Limits: 80 to 120 % Recovery Run ID: MA1828 Units: ug/l

Metal	ICSA True	ICSAB True	ICSA Results	% Rec	ICSAB Results	% Rec
Aluminum	500000	500000	487000	97.4	507000	101.4
Antimony		1000	-3.8		1080	108.0
Arsenic		1000	-1.7		1080	108.0
Barium		500	0.29		599	119.8
Beryllium		500	-0.47		524	104.8
Cadmium		1000	-0.26		1010	101.0
Calcium	500000	500000	465000	93.0	479000	95.8
Chromium		500	-2.6		506	101.2
Cobalt		500	0.57		490	98.0
Copper		500	1.9		562	112.4
Iron	200000	200000	194000	97.0	201000	100.5
Lead		1000	3.3		1000	100.0
Magnesium	500000	500000	539000	107.8	558000	111.6
Manganese		500	-3.4		525	105.0
Molybdenum		1000	-3.8		-4.2	0.0*
Nickel		1000	-11		968	96.8
Potassium			612		238	
Selenium		1000	-11		1020	102.0
Silver		1000	-0.37		1080	108.0
Sodium			-300		-42	
Thallium		1000	-4.3		1000	100.0
Tin		1000	0.77		2.8	0.3*
Vanadium		500	3.4		550	110.0
Zinc		1000	-2.2		947	94.7

(*) Outside of QC limits
(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0419M1.ASC
QC Limits: 80 to 120 % Recovery

Date Analyzed: 04/19/00
Run ID: MA1827

Methods: SW846 6010A
Units: ug/l

Metal	ICSA True	ICSAB True	ICSA Results	% Rec	ICSAB Results	% Rec
Aluminum	500000	500000	498000	99.6	490000	98.0
Antimony		1000	-3.4		1030	103.0
Arsenic		1000	-0.040		1070	107.0
Barium		500	0.54		580	116.0
Beryllium		500	0.040		511	102.2
Cadmium		1000	0.15		994	99.4
Calcium	500000	500000	486000	97.2	476000	95.2
Chromium		500	-2.6		493	98.6
Cobalt		500	0.48		478	95.6
Copper		500	1.6		536	107.2
Iron	200000	200000	201000	100.5	198000	99.0
Lead		1000	-1.5		980	98.0
Magnesium	500000	500000	561000	112.2	550000	110.0
Manganese		500	-3.4		511	102.2
Molybdenum		1000	0.89		-0.010	0.0*
Nickel		1000	-9.7		949	94.9
Potassium			640		310	
Selenium		1000	-5.2		1000	100.0
Silver		1000	-0.41		1030	103.0
Sodium			-260		194	
Thallium		1000	3.6		987	98.7
Tin		1000	1.5		1.7	0.0*
Vanadium		500	4.9		535	107.0
Zinc		1000	0.31		941	94.1

(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2640
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 04/20/00 04/20/00

Metal	F6298-2 Original	DUP	RPD	QC Limits	F6298-2 Original	MS	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.03	0.01	104.6(a)	0-20	0.03	0.35	0.42	74.7	75-125

Associated samples MP2640: F6287-2, F6287-5, F6287-9, F6287-11, F6287-12, F6287-13, F6287-14

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

000869

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N00052-MSA0200-014

QC Batch ID: MP2640
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 04/20/00

Metal	F6298-2 Original	MSD	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.03	0.33	0.36	81.8	75-125

Associated samples MP2640: F6287-2, F6287-5, F6287-9, F6287-11, F6287-12, F6287-13, F6287-14

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#NO052-MSA0200-014

QC Batch ID: MP2639
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 04/20/00 04/20/00

Metal	F6297-1 Original	DUP	RPD	QC Limits	F6297-1 Original	MS	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0	0	NC	0-6.6	0	3.2	3	107.8	78-118

Associated samples MP2639: F6287-1, F6287-4, F6287-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2639
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 04/20/00

Metal	F6297-1 Original	MSD	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0	2.7	3	88.4	78-118

Associated samples MP2639: F6287-1, F6287-4, F6287-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N00052-MSA0200-014

QC Batch ID: MP2633
Matrix Type: AQUEOUS

Methods: SW846 6010A
Units: ug/l

Prep Date: 04/18/00 04/18/00

Metal	F6270-1 Original	DUP	RPD	QC Limits	F6270-1 Original	MS	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	110	117	6.2	0-20	110	26300	29000	90.2	80-120
Antimony	0.0	2.6	200.0(a)	0-20	0.0	953	1000	95.3	80-120
Arsenic	0.0	0.0	NC	0-28	0.0	3830	4000	95.8	72-110
Barium	20.2	20.6	2.0	0-14	20.2	3830	4000	95.4	64-116
Beryllium	1.1	1.1	1.8	0-20	1.1	98.0	100	96.9	80-120
Cadmium	0.0	0	NC	0-16	0.0	96.9	100	96.9	64-120
Calcium	914	911	0.4	0-20	914	25300	25000	97.5	80-120
Chromium	0.83	1.2	36.5 (a)	0-33	0.83	381	400	95.0	66-119
Cobalt	0.0	0.0	NC	0-20	0.0	915	1000	91.5	80-120
Copper	0.0	0.0	NC	0-39	0.0	458	500	91.5	65-124
Iron	589	586	0.4	0-20	589	27400	27000	99.2	80-120
Lead	1.8	0.0	200.0(a)	0-44	1.8	951	1000	95.0	60-127
Magnesium	842	837	0.6	0-20	842	25500	25000	98.7	80-120
Manganese	9.1	9.2	2.0	0-20	9.1	950	1000	94.1	80-120
Molybdenum	anr								
Nickel	0.0	1.1	200.0(a)	0-30	0.0	971	1000	97.1	71-119
Potassium	786	833	5.8	0-20	786	22700	25000	87.8	80-120
Selenium	3.1	3.0	2.0	0-28	3.1	3790	4000	94.7	65-115
Silver	0	0	NC	0-21	0	89.2	100	89.2	63-123
Sodium	1690	1880	10.5	0-20	1690	25000	25000	93.4	80-120
Thallium	0.0	9.8	200.0(a)	0-20	0.0	4010	4000	100.3	80-120
Tin	anr								
Vanadium	0.0	0.0	NC	0-20	0.0	965	1000	96.5	80-120
Zinc	1.2	2.4	62.6 (a)	0-31	1.2	956	1000	95.5	69-120

Associated samples MP2633: F6287-1, F6287-4, F6287-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2633
Matrix Type: AQUEOUS

Methods: SW846 6010A
Units: ug/l

Prep Date: 04/18/00

Metal	F6270-1 Original	MSD	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	110	25500	29000	87.5	80-120
Antimony	0.0	924	1000	92.4	80-120
Arsenic	0.0	3720	4000	93.1	72-110
Barium	20.2	3730	4000	92.7	64-116
Beryllium	1.1	94.8	100	93.7	80-120
Cadmium	0.0	94.5	100	94.5	64-120
Calcium	914	24500	25000	94.2	80-120
Chromium	0.83	368	400	91.7	66-119
Cobalt	0.0	885	1000	88.5	80-120
Copper	0.0	444	500	88.9	65-124
Iron	589	26500	27000	95.9	80-120
Lead	1.8	922	1000	92.1	60-127
Magnesium	842	24700	25000	95.4	80-120
Manganese	9.1	920	1000	91.1	80-120
Molybdenum					
Nickel	0.0	941	1000	94.1	71-119
Potassium	786	22000	25000	85.1	80-120
Selenium	3.1	3700	4000	92.3	65-115
Silver	0	87.2	100	87.2	63-123
Sodium	1690	24300	25000	90.4	80-120
Thallium	0.0	3920	4000	97.9	80-120
Tin					
Vanadium	0.0	936	1000	93.6	80-120
Zinc	1.2	923	1000	92.2	69-120

Associated samples MP2633: F6287-1, F6287-4, F6287-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

000874

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2631
Matrix Type: SOLID

Methods: SW846 6010A
Units: mg/kg

Prep Date: 04/18/00 04/18/00

Metal	F6287-2 Original	DUP	RPD	QC Limits	F6287-2 Original	MS	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	508	461	9.6	0-20	508	3760	3580.95	90.8	80-120
Antimony	0.39	0.70	56.1 (a)	0-20	0.39	112	123.48	90.4	80-120
Arsenic	0.0	0.0	NC	0-28	0.0	452	493.92	91.5	72-110
Barium	2.4	2.3	3.8	0-14	2.4	476	493.92	95.9	64-116
Beryllium	0.16	0.14	9.5	0-20	0.16	11.7	12.35	93.6	80-120
Cadmium	0	0	NC	0-16	0	11.6	12.35	93.9	64-120
Calcium	75.8	72.2	4.8	0-20	75.8	3000	3087.03	94.7	80-120
Chromium	0.89	0.85	4.7	0-33	0.89	47.0	49.39	93.4	66-119
Cobalt	0.1	0	0.0	0-20	0.1	110	123.48	89.3	80-120
Copper	1.7	1.6	4.2	0-39	1.7	59.7	61.74	94.0	65-124
Iron	1010	931	8.2	0-20	1010	4260	3333.99	97.6	80-120
Lead	1.3	1.2	5.6	0-44	1.3	115	123.48	92.1	60-127
Magnesium	44.1	42.2	4.3	0-20	44.1	2970	3087.03	94.8	80-120
Manganese	2.0	1.9	6.2	0-20	2.0	116	123.48	92.6	80-120
Molybdenum	anr								
Nickel	2.6	0.36	152.2(a)	0-30	2.6	117	123.48	93.0	71-119
Potassium	96.9	89.0	8.5	0-20	96.9	2760	3087.03	86.5	80-120
Selenium	0.49	0.63	24.5	0-28	0.49	424	493.92	85.7	65-115
Silver	0	0	NC	0-21	0	10.8	12.35	87.6	63-123
Sodium	127	133	5.0	0-20	127	2940	3087.03	91.1	80-120
Thallium	0.0	0.35	200.0(a)	0-20	0.0	477	493.92	96.5	80-120
Tin	anr								
Vanadium	1.0	0.99	4.5	0-20	1.0	118	123.48	95.1	80-120
Zinc	3.7	4.3	14.9	0-31	3.7	117	123.48	92.0	69-120

Associated samples MP2631: F6287-2, F6287-5, F6287-9, F6287-11, F6287-12, F6287-13, F6287-14

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2631
Matrix Type: SOLID

Methods: SW846 6010A
Units: mg/kg

Prep Date: 04/18/00

Metal	F6287-2 Original	MSD	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	508	4120	3873.28	93.4	80-120
Antimony	0.39	123	133.56	92.1	80-120
Arsenic	0.0	498	534.25	93.2	72-110
Barium	2.4	514	534.25	95.8	64-116
Beryllium	0.16	13.0	13.36	95.8	80-120
Cadmium	0	12.8	13.36	95.8	64-120
Calcium	75.8	3310	3339.03	96.9	80-120
Chromium	0.89	52.4	53.42	96.4	66-119
Cobalt	0.1	123	133.56	92.3	80-120
Copper	1.7	65.3	66.78	95.3	65-124
Iron	1010	4720	3606.15	102.8	80-120
Lead	1.3	128	133.56	94.6	60-127
Magnesium	44.1	3270	3339.03	96.5	80-120
Manganese	2.0	129	133.56	95.2	80-120
Molybdenum					
Nickel	2.6	132	133.56	97.0	71-119
Potassium	96.9	2990	3339.03	86.7	80-120
Selenium	0.49	469	534.25	87.7	65-115
Silver	0	12.0	13.36	89.5	63-123
Sodium	127	3210	3339.03	92.2	80-120
Thallium	0.0	523	534.25	97.9	80-120
Tin					
Vanadium	1.0	130	133.56	96.9	80-120
Zinc	3.7	132	133.56	96.0	69-120

Associated samples MP2631: F6287-2, F6287-5, F6287-9, F6287-11, F6287-12, F6287-13, F6287-14

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2640
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 04/20/00

Metal	BSP Result	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.48	0.5	96.0	80-120

Associated samples MP2640: F6287-2, F6287-5, F6287-9, F6287-11, F6287-12, F6287-13, F6287-14

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2639
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 04/20/00

Metal	BSP Result	Spikelot HGFLWS	% Rec	QC Limits
Mercury	3.1	3	104.7	80-120

Associated samples MP2639: F6287-1, F6287-4, F6287-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

000888

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2633
Matrix Type: AQUEOUS

Methods: SW846 6010A
Units: ug/l

Prep Date: 04/18/00

Metal	BSP Result	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	26300	29000	90.6	80-120
Antimony	931	1000	93.1	80-120
Arsenic	3950	4000	98.8	80-120
Barium	3860	4000	96.4	80-120
Beryllium	101	100	101.5	80-120
Cadmium	99.6	100	99.6	80-120
Calcium	24900	25000	99.7	80-120
Chromium	388	400	97.0	80-120
Cobalt	934	1000	93.4	80-120
Copper	462	500	92.5	80-120
Iron	27300	27000	101.1	80-120
Lead	970	1000	97.0	80-120
Magnesium	25200	25000	100.7	80-120
Manganese	959	1000	95.9	80-120
Molybdenum				
Nickel	994	1000	99.4	80-120
Potassium	21800	25000	87.2	80-120
Selenium	3960	4000	98.9	80-120
Silver	90.0	100	90.0	80-120
Sodium	23200	25000	92.7	80-120
Thallium	4100	4000	102.5	80-120
Tin				
Vanadium	978	1000	97.8	80-120
Zinc	988	1000	98.8	80-120

Associated samples MP2633: F6287-1, F6287-4, F6287-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2631
Matrix Type: SOLID

Methods: SW846 6010A
Units: mg/kg

Prep Date: 04/18/00

Metal	BSP Result	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	2600	2900	89.8	80-120
Antimony	91.7	100	91.7	80-120
Arsenic	371	400	92.7	80-120
Barium	389	400	97.3	80-120
Beryllium	9.6	10	95.9	80-120
Cadmium	9.5	10	94.6	80-120
Calcium	2450	2500	97.9	80-120
Chromium	38.1	40	95.3	80-120
Cobalt	90.6	100	90.6	80-120
Copper	47.8	50	95.7	80-120
Iron	2660	2700	98.5	80-120
Lead	93.2	100	93.2	80-120
Magnesium	2430	2500	97.2	80-120
Manganese	94.3	100	94.3	80-120
Molybdenum				
Nickel	96.0	100	96.0	80-120
Potassium	2170	2500	86.7	80-120
Selenium	348	400	87.1	80-120
Silver	8.8	10	88.0	80-120
Sodium	2390	2500	95.7	80-120
Thallium	391	400	97.7	80-120
Tin				
Vanadium	96.7	100	96.7	80-120
Zinc	94.3	100	94.3	80-120

Associated samples MP2631: F6287-2, F6287-5, F6287-9, F6287-11, F6287-12, F6287-13, F6287-14

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2633
Matrix Type: AQUEOUS

Methods: SW846 6010A
Units: ug/l

Prep Date: 04/18/00

Metal	F6270-1 Original	SDL 1:5	RPD	QC Limits
Aluminum	110	251	128.0(a)	0-10
Antimony	0.00	46.4		0-10
Arsenic	0.00	30.3		0-10
Barium	20.2	29.3	45.2	0-10
Beryllium	1.11	5.83	425.2(a)	0-10
Cadmium	0.00	2.21		0-10
Calcium	914	918	0.4	0-10
Chromium	0.830	9.36	1027.7(a	0-10
Cobalt	0.00	10.2		0-10
Copper	0.00	0.00	NC	0-10
Iron	589	800	35.9 (a)	0-10
Lead	1.77	0.00	100.0(a)	0-10
Magnesium	842	946	12.3 (a)	0-10
Manganese	9.07	11.5	26.8	0-10
Molybdenum	anr			
Nickel	0.00	12.0		0-10
Potassium	786	4450	465.9(a)	0-10
Selenium	3.10	18.1	483.2(a)	0-10
Silver	0.00	13.8		0-10
Sodium	1690	5840	245.4(a)	0-10
Thallium	0.00	96.7		0-10
Tin	anr			
Vanadium	0.00	9.87		0-10
Zinc	1.25	9.90	692.0(a)	0-10

Associated samples MP2633: F6287-1, F6287-4, F6287-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

SERIAL DILUTION RESULTS SUMMARY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2631
Matrix Type: SOLID

Methods: SW846 6010A
Units: ug/l

Prep Date: 04/18/00

Metal	F6287-2 Original	SDL 1:5	RPD	QC Limits
Aluminum	3880	3630	6.4	0-10
Antimony	2.99	30.2	910.7(a)	0-10
Arsenic	0.00	0.00	NC	0-10
Barium	18.3	24.4	33.2 (a)	0-10
Beryllium	1.20	5.83	385.8(a)	0-10
Cadmium	0.00	1.89		0-10
Calcium	579	643	10.9 (a)	0-10
Chromium	6.79	7.85	15.6 (a)	0-10
Cobalt	0.00	5.15		0-10
Copper	13.1	8.89	31.9 (a)	0-10
Iron	7720	7160	7.2	0-10
Lead	9.64	12.2	26.9 (a)	0-10
Magnesium	337	380	12.8 (a)	0-10
Manganese	15.4	16.6	7.3	0-10
Molybdenum	anr			
Nickel	20.1	5.22	74.0 (a)	0-10
Potassium	740	3170	339.9(a)	0-10
Selenium	3.78	21.5	469.3(a)	0-10
Silver	0.00	0.00	NC	0-10
Sodium	968	825	14.8 (a)	0-10
Thallium	0.00	68.4		0-10
Tin	anr			
Vanadium	7.93	9.69	22.2 (a)	0-10
Zinc	28.5	52.8	85.2 (a)	0-10

Associated samples MP2631: F6287-2, F6287-5, F6287-9, F6287-11, F6287-12, F6287-13, F6287-14

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

000873

Metals Digestion Log: Soil

mp2631

Method Of Digestion: CD 3050B Temp: 95 Thermometer ID#: 33

Added:	HNO_3	HCl	H_2O_2
Mfg:	Fisher	Fisher	Fisher
Lot #:	119091	419030	983019

Sample #	Wt	Final Vol	% Solid	Digestion Factor	Date	Comments
F6287-2 -DUP	1.09	100			4/18/00	
F6287-2 -MS	1.06					spiked w/ 2.0 mL acc 190 + 1.0 mL GN1186 + ~~0.50~~ mL acc 18
F6287-2 MSD	0.98					0.50 SOLE
F6287-2	~~0.98~~ 1.00					Same as MS
F6282-1	1.03					
F6287-5	1.09					
F6287-9	1.01					
F6287-11	0.98					
F6287-12	1.01					
F6287-13	0.98					
F6287-14	1.01	✓			✓	
LCSB	100	100			4.18.00	~~Same as MS~~ BP
MSB	↓	↓				Same as MS

Analyst's Signature: [signature] Date: 04/18/00

Review: [signature] Date:

000891

00252

Mercury Digestion Log: Water and Soil MP2640

Method Of Digestion: SW846 7471A

Temp: 95

Analyst: BP

Thermometer #: 37

Time Started: 1500

Time Ended: 1530

Reagents Added:	HNO3	HCL	H2SO4	Pot. Perm.	Pot. Persulfate
Mfg:	FISHER	FISHER	FISHER	FISHER	
Lot#:	119091	419030	318064	GN1249	

Sample #	Wt(g)	Init.Vol.(ml)	Final Vol.(ml)	Date	Comments
F6298-2 Dup	1.03		100	4.20.00	
F6298-2 MS	0.95		↓	↓	3.0 ml ERN142
1 F6298-2 MSD	1.11				Same as MS
2 F6298-2	1.00				
3 F6298-4	1.12				
[illegible]	1.11				
5 F6287-2	0.98				
6 F6287-5	0.96				
7 F6287-9	0.98				
8 F6287-11	1.03				
9 F6287-12	1.08				
10 F6287-13	0.96				
11 F6287-14	0.96		↓	↓	
12					
13					
14					
15					
16					
17					
18					
19					
20					
MB			100	4.20.00	
SB			↓	↓	Same as MS

Analyst's Signature: [signature]

Date: 4.20.00

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0421W1.HGX
Analyst: SJL
Parameters: Hg

Date Analyzed: 04/21/00
Run ID: MA1832

Methods: SW846 7470A

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	MA1832-ICV1	1		
00:00	MA1832-ICB1	1		
00:00	MA1832-CCV1	1		
00:00	MA1832-CCB1	1		
00:00	MA1832-CRI1	1		
00:00	MP2639-MB1	1		
00:00	MP2639-B1	1		
00:00	MP2639-S1	1		
00:00	MP2639-S2	1		
00:00	MP2639-D1	1		
00:00	F6297-1	1		(sample used for QC only; not part of login F6287)
00:00	ZZZZZZ	1		
00:00	MA1832-CCV2	1		
00:00	MA1832-CCB2	1		
00:00	F6287-1	1		
00:00	F6287-4	1		
00:00	F6287-8	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	MA1832-CCV3	1		
00:00	MA1832-CCB3	1		

Refer to raw data for calibration curve and standards.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0421S1.HGX
Analyst: SJL
Parameters: Hg

Date Analyzed: 04/21/00
Run ID: MA1833

Methods: SW846 7471A

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	MA1833-ICV1	1		
00:00	MA1833-ICB1	1		
00:00	MA1833-CCV1	1		
00:00	MA1833-CCB1	1		
00:00	MA1833-CRI1	1		
00:00	MP2640-MB1	1		
00:00	MP2640-B1	1		
00:00	MP2640-S1	1		
00:00	MP2640-S2	1		
00:00	MP2640-D1	1		
00:00	F6298-2	1		(sample used for QC only; not part of login F6287)
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	MA1833-CCV2	1		
00:00	MA1833-CCB2	1		
00:00	F6287-2	1		
00:00	F6287-5	1		
00:00	F6287-9	1		
00:00	F6287-11	1		
00:00	F6287-12	1		
00:00	F6287-13	1		
00:00	F6287-14	1		
00:00	MA1833-CCV3	1		
00:00	MA1833-CCB3	1		

Refer to raw data for calibration curve and standards.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#NO052-MSA0200-014

File ID: HG0421W1.HGX Date Analyzed: 04/21/00 Methods: SW846 7470A
Analyst: SJL Run ID: MA1832
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	MA1832-ICV1	1		
00:00	MA1832-ICB1	1		
00:00	MA1832-CCV1	1		
00:00	MA1832-CCB1	1		
00:00	MA1832-CRI1	1		
00:00	MP2639-MB1	1		
00:00	MP2639-B1	1		
00:00	MP2639-S1	1		
00:00	MP2639-S2	1		
00:00	MP2639-D1	1		
00:00	F6297-1	1		(sample used for QC only; not part of login F6287)
00:00	ZZZZZZ	1		
00:00	MA1832-CCV2	1		
00:00	MA1832-CCB2	1		
00:00	F6287-1	1		
00:00	F6287-4	1		
00:00	F6287-8	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	MA1832-CCV3	1		
00:00	MA1832-CCB3	1		

Refer to raw data for calibration curve and standards.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#NC052-MSA0200-014

File ID: IR0419M1.ASC
Analyst: JK
Date Analyzed: 04/19/00 Methods: SW846 6010A
Run ID: MA1827
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
08:28	MA1827-ICV1	1		
08:37	MA1827-ICB1	1		
08:43	MA1827-CCV1	1		
08:50	MA1827-CCB1	1		
08:59	MA1827-CRI1	1		
09:07	MA1827-CRIA1	1		
09:13	MA1827-ICSA1	1		
09:23	MA1827-ICSAB1	1		
09:29	MA1827-CCV2	1		
09:36	MA1827-CCB2	1		
09:41	MP2632-MB1	1		
09:47	MP2632-B1	1		
09:52	MP2632-D1	1		
09:57	F6268-1	1		(sample used for QC only; not part of login F6287)
10:03	MP2632-S1	1		
10:08	MP2632-S2	1		
10:13	MP2632-SD1	5		
10:19	ZZZZZZ	1		
10:24	ZZZZZZ	1		
10:31	MA1827-CCV3	1		
10:38	MA1827-CCB3	1		
10:43	MP2633-MB1	1		
10:48	MP2633-B1	1		
10:54	MP2633-D1	1		
10:59	F6270-1	1		(sample used for QC only; not part of login F6287)
11:05	MP2633-S1	1		
11:10	MP2633-S2	1		
11:15	MP2633-SD1	5		
11:21	ZZZZZZ	1		
11:28	ZZZZZZ	1		
11:34	F6287-1	1		
11:44	MA1827-CCV4	1		
11:54	MA1827-CCB4	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0419M1.ABC
Analyst: JK
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Date Analyzed: 04/19/00 Methods: SW846 6010A
Run ID: MA1827

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:02	F6287-4	1		
12:08	F6287-8	1		
12:13	MP2631-MB1	1		
12:18	MP2631-B1	1		
12:24	MP2631-D1	1		
12:29	F6287-2	1		
12:34	MP2631-S1	1		
12:40	MP2631-S2	1		
12:46	MP2631-SD1	5		
12:51	ZZZZZZ	1		
12:57	MA1827-CCV5	1		
13:05	MA1827-CCB5	1		
13:12	ZZZZZZ	1		
13:17	ZZZZZZ	1		
13:23	ZZZZZZ	1		
13:28	ZZZZZZ	1		
13:33	ZZZZZZ	1		
13:39	ZZZZZZ	1		
13:44	ZZZZZZ	1		
13:50	MA1827-CCV6	1		
13:55	MA1827-CCB6	1		

Refer to raw data for calibration curve and standards.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0420M1.ASC Date Analyzed: 04/20/00 Methods: SW846 6010A
Analyst: JK Run ID: MA1828
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Tl,Sn,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
08:50	MA1828-ICV1	1		
08:59	MA1828-ICB1	1		
09:04	MA1828-CCV1	1		
09:10	MA1828-CCB1	1		
09:16	MA1828-CRI1	1		
09:22	MA1828-CRIA1	1		
09:34	MA1828-ICSA1	1		
09:40	MA1828-ICSAB1	1		
09:45	MA1828-CCV2	1		
09:53	MA1828-CCB2	1		
09:59	ZZZZZZ	1		
10:05	ZZZZZZ	1		
10:10	F6287-4	1		
10:15	F6287-8	1		
10:21	MP2631-MB1	1		
10:26	MP2631-B1	1		
10:31	MP2631-D1	1		
10:37	F6287-2	1		
10:44	MP2631-S1	1		
10:50	MA1828-CCV3	1		
10:55	MA1828-CCB3	1		
11:01	MP2631-S2	1		
11:06	MP2631-SD1	5		
11:11	F6287-5	1		
11:17	ZZZZZZ	1		
11:23	ZZZZZZ	1		
11:28	F6287-9	1		
11:34	F6287-11	1		
11:39	F6287-12	1		
11:44	F6287-13	1		
11:50	MA1828-CCV4	1		
11:57	MA1828-CCB4	1		
12:05	F6287-14	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0420M1.ASC Date Analyzed: 04/20/00 Methods: SW846 6010A
Analyst: JK Run ID: MA1828
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Tl,Sn,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:10	MP2636-MB1	1		
12:15	MP2636-B1	1		
12:21	MP2636-D1	1		
12:26	F6292-2	1		(sample used for QC only; not part of login F6287)
12:31	MP2636-S1	1		
12:37	MP2636-S2	1		
12:42	MP2636-SD1	5		
12:47	ZZZZZZ	1		
12:53	MA1828-CCV5	1		
12:58	MA1828-CCB5	1		
13:04	ZZZZZZ	1		
13:10	ZZZZZZ	1		
13:15	MA1828-CCV6	1		
13:21	ZZZZZZ	1		
13:27	ZZZZZZ	1		
13:35	ZZZZZZ	1		

Refer to raw data for calibration curve and standards.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0420M1.ASC
Analyst: JK
Parameters: K

Date Analyzed: 04/20/00
Run ID: MA1828

Methods: SW846 6010A

Time	Sample Description	Dilution Factor	PS Recov	Comments
• 08:50	MA1828-ICV1	1		
08:59	MA1828-ICB1	1		
• 09:04	MA1828-CCV1	1		
09:10	MA1828-CCB1	1		
09:16	MA1828-CRI1	1		
09:22	MA1828-CRIA1	1		
09:34	MA1828-ICSA1	1		
09:40	MA1828-ICSAB1	1		
• 09:45	MA1828-CCV2	1		
09:53	MA1828-CCB2	1		
09:59	ZZZZZZ	1		
10:05	ZZZZZZ	1		
10:10	F6287-4	1		
10:15	F6287-8	1		
10:21	MP2631-MB1	1		
10:26	MP2631-B1	1		
10:31	MP2631-D1	1		
10:37	F6287-2	1		
10:44	MP2631-S1	1		
• 10:50	MA1828-CCV3	1		
10:55	MA1828-CCB3	1		
11:01	MP2631-S2	1		
11:06	MP2631-SD1	5		
11:11	F6287-5	1		
11:17	ZZZZZZ	1		
11:23	ZZZZZZ	1		
11:28	F6287-9	1		
11:34	F6287-11	1		
11:39	F6287-12	1		
11:44	F6287-13	1		
• 11:50	MA1828-CCV4	1		
11:57	MA1828-CCB4	1		
12:05	F6287-14	1		

000894

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0420M1.ASC
Analyst: JK
Parameters: K

Date Analyzed: 04/20/00
Run ID: MA1828

Methods: SW846 6010A

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:10	MP2636-MB1	1		
12:15	MP2636-B1	1		
12:21	MP2636-D1	1		
12:26	F6292-2	1		(sample used for QC only; not part of login F6287)
12:31	MP2636-S1	1		
12:37	MP2636-S2	1		
12:42	MP2636-SD1	5		
12:47	ZZZZZZ	1		
12:53	MA1828-CCV5	1		
12:58	MA1828-CCB5	1		
13:04	ZZZZZZ	1		
13:10	ZZZZZZ	1		
13:15	MA1828-CCV6	1		
13:21	ZZZZZZ	1		
13:27	ZZZZZZ	1		
13:35	ZZZZZZ	1		

Refer to raw data for calibration curve and standards.

000695

05DS802 gmm 6/6/00

Method: TRACE6 Sample Name: ~~F6287-11~~ Operator: JK
Run Time: 04/20/00 11:34 Filename: R0420M1
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.:

Elems	Ag3280	Al3082	As1890	Ba4934	Be3130	Ca3179
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0013	58.89	.0184	.2008	.0005	2.755
SDev	.0003	.1341	.0024	.0005	0	.0084
%RSD	22.06	.2277	13.16	.2562	9.265	.3037

Elems	Cd2265	Co2286	Cr2677	Cu3247	Fe2714	K_7664
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0018	.0050	.0808	.1033	62.31	2.142
SDev	.0002	.0003	.0005	.0004	.1368	.0067
%RSD	13.25	5.53	.6179	.3629	.2196	.3151

Elems	Mg2790	Mn2576	Mo2020	Na3302	Ni2316	2203/1
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.522	.1397	.0041	1.800	.0229	1.154
SDev	.0011	.0005	.0002	.0902	.0011	.0033
%RSD	.0716	.3274	4.339	5.008	4.793	.2897

Elems	2203/2	Pb2203	Se1960	Sb2068	1960/1	1960/2
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avge	1.167	1.164	.0131	.0195	-.0101	.0226
SDev	.0049	.0042	.0032	.0024	.0052	.0028
%RSD	.4232	.3594	24.46	12.46	51.96	12.56

Elems	Sn1899	Tl1908	V 2924	Zn2062
Units	ppm	ppm	ppm	ppm
Avge	.0084	L-.1218	.1434	.2423
SDev	.0011	.0026	.0001	.0009
%RSD	13.05	2.151	.0486	.3623

$1.164\ mg/L \left(\frac{1L}{1000mL}\right)\left(\frac{100mL}{0.98g}\right)\left(\frac{1000g}{1kg}\right)\left(\frac{1}{.892}\right) = 133\ mg/Kg$

gmm 6/6/00

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Cyanide, Total	GP1471	0.0050	<0.0050	mg/l	110.0	80-120%
Cyanide, Total	GP1477	0.50	<0.50	mg/kg	106.0	80-120%

Associated Samples:
Batch GP1471: F6287-1, F6287-4, F6287-8
Batch GP1477: F6287-2, F6287-5, F6287-9

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Cyanide, Total	GP1471	F6270-1	mg/l	<0.0050	.100	0.090	90.0	76-118%
Cyanide, Total	GP1477	F6270-8	mg/kg	<0.64	12.8	12.6	98.4	65-127%

Associated Samples:
Batch GP1471: F6287-1, F6287-4, F6287-8
Batch GP1477: F6287-2, F6287-5, F6287-9

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Cyanide, Total	GP1471	F6270-1	mg/l	<0.0050	<0.0050	0.0	0-24%
Cyanide, Total	GP1477	F6270-8	mg/kg	<0.64	<0.64	0.0	0-8.4%
No. 10 Sieve	GN5454	F6270-5	%	99.8	99.7	99.7*	0-20%
No. 120 Sieve	GN5454	F6270-5	%	0.0	0.0	0.0	0-20%
No. 18 Sieve	GN5454	F6270-5	%	96.0	94.8	94.8*	0-20%
No. 230 Sieve	GN5454	F6270-5	%	0.0	0.0	0.0	0-20%
No. 4 Sieve	GN5454	F6270-5	%	100	100	100.0*	0-20%
No. 40 Sieve	GN5454	F6270-5	%	49.7	43.5	43.5*	0-20%
No. 60 Sieve	GN5454	F6270-5	%	7.1	6.8	6.8	0-20%
Solids, Percent	GN5435	F6282-1	%	93.9	94.2	0.3	0-5%

Associated Samples:
Batch GN5435: F6287-11, F6287-12, F6287-13, F6287-14, F6287-2, F6287-5, F6287-9
Batch GN5454: F6287-2, F6287-5, F6287-9
Batch GP1471: F6287-1, F6287-4, F6287-8
Batch GP1477: F6287-2, F6287-5, F6287-9

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F6287
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Cyanide, Total	GP1471	0.0050	<0.0050	mg/l	110.0	80-120%
Cyanide, Total	GP1477	0.50	<0.50	mg/kg	106.0	80-120%

Associated Samples:
Batch GP1471: F6287-1, F6287-4, F6287-8
Batch GP1477: F6287-2, F6287-5, F6287-9

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F6287
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: AL6E12570 - TETRFLTA: NAS Whiting Field PO#N0052-MS

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Total Organic Carbon	GP9541	1.0	[illegible]	mg/l	[illegible]	90-110%

Associated Samples:
Batch GP9541: F6287-1, F6287-4, F6287-8

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F6287
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: ALSE12570 - TETRYLTA: NAS Whiting Field PO#N0053-MS

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Total Organic Carbon	GP9541	F6287-1	mg/l	<1.0	<1.0	[illegible]	0-20%

Associated Samples:
Batch GP9541: F6287-1, F6287-4, F6287-8

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F6287
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: ALSE12570 - TETRFLTA: NAS Whiting Field PO#W0052-MS

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Total Organic Carbon	GP9541	F6287-1	mg/l	<1.0	10	12.0	120	75-125%

Associated Samples:
Batch GP9541: F6287-1, F6287-4, F6287-8

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**MR. T. HANSEN**	**DATE:**	**OCTOBER 13, 2000**
FROM:	**DANEEN RESNICK**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION- VOC/SVOC/TPH/SPLP VOC/SPLP SVOC/SPLP TPH**
CTO 079, NAS WHITING FIELD
SDG F6635

SAMPLES: 6/Solid

29D00101 29D00201 29D00301 29D00401
29D00501 29D00601

1/Aqueous

29TB052600

OVERVIEW

The sample set for Contract Task Order (CTO) 079, Naval Air Station (NAS) Whiting Field Sample Delivery Group (SDG) F6635 consists of six solid environmental samples and one trip blank. The solid samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), and total petroleum hydrocarbons (TPH). In addition, synthetic precipitation leaching procedure (SPLP) extraction was performed for the solid samples. Four of the resulting leachates (from samples 29D00301, 29D00401, 29D00501, and 29D00601) were analyzed for TCL VOCs, TCL SVOCs, and TPH. The leachates of samples 29D00101 and 29D00201 were analyzed for TCL VOCs and TPH. No field duplicates were included in this SDG.

The samples were collected by TetraTech NUS on May 26, 2000, and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) quality assurance/quality control (QA/QC) criteria using SW-846 Methods 1312 (SPLP extraction), 8260B (VOCs), 8270C (SVOCs), and FL PRO (TPH) analytical and reporting protocols. The data contained in this SDG were validated with regard to the following parameters:

- Data completeness
- Holding times
- Surrogate recoveries
- Initial and continuing calibration
- * Laboratory method and field quality control blank results
- Matrix spike/matrix spike duplicate (MS/MSD) results
- * Laboratory control sample (LCS) spike recoveries
- * Internal standard areas and retention times
- Sample result quantitation
- * Detection limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed in the following paragraphs; documentation supporting these findings is presented in Appendix C. Qualified analytical results are presented in Appendix A.

Volatiles

Relative response factors for acetone and methyl ethyl ketone were less than 0.05 for one of the initial calibrations associated with this SDG. In addition, response factors for these two compounds were also less than 0.05 for two of the continuing calibrations associated with this SDG. Positive results and nondetects for acetone and 2-butanone in the affected samples were qualified as estimated, J, and nondetects for these compounds in the affected samples were rejected, UR.

The concentrations of methylene chloride in the leachate of sample 29D00101 and of acetone in the leachate of 29D00601 exceeded the calibration range of the instrument. The laboratory did not dilute and reanalyze the samples. Therefore, the associated results were qualified as estimated, J.

Positive results for acetone and methylene chloride in the leachate samples. Methylene chloride was reported in the associated method blank however, acetone was not reported. Despite the presence methylene chloride in the laboratory method blank at a concentration of 1.2 ug/L, sample concentrations are greater than the action level of 12 ug/L. Therefore, positive results for both acetone and methylene chloride were qualified as estimated, J. These compounds are considered to be laboratory contaminants.

Percent recoveries of the surrogate compound 1,2-dichloroethane-D4 exceeded quality control (QC) limits for four of the soil samples. No positive results were reported for the associated soil samples. Therefore, no action was taken.

The MS analysis of the leachate of sample 29D00201 yielded recoveries of five spiking compounds that exceeded QC limits and a recovery of one spiking compound that was less than QC limits. No actions were taken because the associated LCS recoveries were all acceptable. MSD analysis was not performed for this sample.

Volatile MS/MSD analysis was not performed for any of the solid samples.

Semivolatiles

The semivolatile analyses of the SPLP leachates were performed past the required holding time. No positive results were reported for the SPLP leachates. The nondetects were qualified as estimate, UJ.

Total Petroleum Hydrocarbons

No qualifiers were assigned to this fraction.

Additional Comments

Positive results less than the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

Several items were initially missing from the data package. Raw data and associated forms for the method blanks associated with SPLP VOC data were not provided. SPLP extraction forms were not provided. In addition, instrument performance check forms were not provided for VOC or SVOC initial calibrations. The laboratory was contacted to provide this information.

The chains of custody specified that all six solid samples be analyzed for SVOCs following SPLP extraction. As previously noted, two of the samples were not analyzed for SPLP SVOCs. However, no SVOCs were detected in the solid samples themselves. Therefore, the absence of the SPLP SVOC data is not significant.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Nondetects for acetone and 2butanone were rejected, UR, due to initial and continuing calibration response factors less than 0.05. The semivolatile analyses of the SPLP leachates were performed past the required holding time. Several items were initially missing from the data package.

Other Factors Affecting Data Quality: Positive results less than the RL were qualified as estimated, J, due to uncertainty near the detection limit.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99) and NFESC guidelines, Navy IRCDQM (September 1999). 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

Daneen C. Resnick
Chemist/Data Validator

TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

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

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

CTO079-NAS WHITING FIELD
SPLP DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00101			29D00201			29D00301			29D00401		
SAMPLE DATE:	05/26/00			05/26/00			05/26/00			05/26/00		
LABORATORY ID:	F6635-1A			F6635-2A			F6635-3A			F6635-4A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	2	U		2	U		2	U		2	U	
1,1,2,2-TETRACHLOROETHANE	2	U		2	U		2	U		2	U	
1,1,2-TRICHLOROETHANE	2	U		2	U		2	U		2	U	
1,1-DICHLOROETHANE	2	U		2	U		2	U		2	U	
1,1-DICHLOROETHENE	2	U		2	U		2	U		2	U	
1,2-DICHLOROETHANE	2	U		2	U		2	U		2	U	
1,2-DICHLOROETHENE (TOTAL)	4	U		4	U		4	U		4	U	
1,2-DICHLOROPROPANE	2	U		2	U		2	U		2	U	
2-BUTANONE	10	UR	C	10	UR	C	10	UR	C	10	UR	C
2-HEXANONE	10	U		10	U		10	U		10	U	
4-METHYL-2-PENTANONE	10	U		10	U		10	U		10	U	
ACETONE	14.2	J	CPQ	102	J	CQ	39.3	J	CPQ	50	UR	C
BENZENE	2	U		2	U		2	U		2	U	
BROMODICHLOROMETHANE	2	U		2	U		2	U		2	U	
BROMOFORM	2	U		2	U		2	U		2	U	
BROMOMETHANE	5	U		5	U		5	U		5	U	
CARBON DISULFIDE	10	U		10	U		10	U		10	U	
CARBON TETRACHLORIDE	2	U		2	U		2	U		2	U	
CHLOROBENZENE	2	U		2	U		2	U		2	U	
CHLOROETHANE	2	U		2	U		2	U		2	U	
CHLOROFORM	6.5			6.3			6.1			6.4		
CHLOROMETHANE	5	U		5	U		5	U		5	U	
CIS-1,3-DICHLOROPROPENE	2	U		2	U		2	U		2	U	
DIBROMOCHLOROMETHANE	2	U		2	U		2	U		2	U	
ETHYLBENZENE	2	U		2	U		2	U		2	U	
METHYLENE CHLORIDE	73	J	LQ	33.1	J	Q	24.7	J	Q	22.1	J	Q
STYRENE	2	U		2	U		2	U		2	U	
TETRACHLOROETHENE	2	U		2	U		2	U		2	U	
TOLUENE	2	U		2	U		2	U		2	U	
TRANS-1,3-DICHLOROPROPENE	2	U		2	U		2	U		2	U	
TRICHLOROETHENE	2	U		2	U		2	U		2	U	
VINYL CHLORIDE	5	U		5	U		5	U		5	U	

CTO079-NAS WHITING FIELD
SPLP DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00501			29D00601								
SAMPLE DATE:	05/26/00			05/26/00			/ /			/ /		
LABORATORY ID:	F6635-5A			F6635-6A								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	2	U		2	U							
1,1,2,2-TETRACHLOROETHANE	2	U		2	U							
1,1,2-TRICHLOROETHANE	2	U		2	U							
1,1-DICHLOROETHANE	2	U		2	U							
1,1-DICHLOROETHENE	2	U		2	U							
1,2-DICHLOROETHANE	2	U		2	U							
1,2-DICHLOROETHENE (TOTAL)	4	U		4	U							
1,2-DICHLOROPROPANE	2	U		2	U							
2-BUTANONE	10	U		10	U							
2-HEXANONE	10	U		10	U							
4-METHYL-2-PENTANONE	10	U		10	U							
ACETONE	53.1	J	CQ	393	J	CLQ						
BENZENE	2	U		2	U							
BROMODICHLOROMETHANE	2	U		2	U							
BROMOFORM	2	U		2	U							
BROMOMETHANE	5	U		5	U							
CARBON DISULFIDE	10	U		10	U							
CARBON TETRACHLORIDE	2	U		2	U							
CHLOROBENZENE	2	U		2	U							
CHLOROETHANE	2	U		2	U							
CHLOROFORM	6.7			6.6								
CHLOROMETHANE	5	U		5	U							
CIS-1,3-DICHLOROPROPENE	2	U		2	U							
DIBROMOCHLOROMETHANE	2	U		2	U							
ETHYLBENZENE	2	U		2	U							
METHYLENE CHLORIDE	24.8	J	CQ	36.1	J	CQ						
STYRENE	2	U		2	U							
TETRACHLOROETHENE	2	U		2	U							
TOLUENE	2	U		2	U							
TRANS-1,3-DICHLOROPROPENE	2	U		2	U							
TRICHLOROETHENE	2	U		2	U							
VINYL CHLORIDE	5	U		5	U							

CTO079-NAS WHITING FIELD
SOIL DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00101			29D00201			29D00301			29D00401		
SAMPLE DATE:	05/26/00			05/26/00			05/26/00			05/26/00		
LABORATORY ID:	F6635-1			F6635-2			F6635-3			F6635-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	97.1 %			98.5 %			97.0 %			98.0 %		
UNITS:	UG/KG			UG/KG			UG/KG			UG/KG		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	5.5	U		5.9	U		5.1	U		5.4	U	
1,1,2,2-TETRACHLOROETHANE	5.5	U		5.9	U		5.1	U		5.4	U	
1,1,2-TRICHLOROETHANE	5.5	U		5.9	U		5.1	U		5.4	U	
1,1-DICHLOROETHANE	5.5	U		5.9	U		5.1	U		5.4	U	
1,1-DICHLOROETHENE	5.5	U		5.9	U		5.1	U		5.4	U	
1,2-DIBROMOETHANE	5.5	U		5.9	U		5.1	U		5.4	U	
1,2-DICHLOROETHANE	5.5	U		5.9	U		5.1	U		5.4	U	
1,2-DICHLOROETHENE (TOTAL)	11	U		12	U		10	U		11	U	
1,2-DICHLOROPROPANE	5.5	U		5.9	U		5.1	U		5.4	U	
2-BUTANONE	11	U		12	U		10	U		11	U	
2-HEXANONE	11	U		12	U		10	U		11	U	
4-METHYL-2-PENTANONE	11	U		12	U		10	U		11	U	
ACETONE	55	U		59	U		51	U		33	J	P
BENZENE	5.5	U		5.9	U		5.1	U		5.4	U	
BROMODICHLOROMETHANE	5.5	U		5.9	U		5.1	U		5.4	U	
BROMOFORM	5.5	U		5.9	U		5.1	U		5.4	U	
BROMOMETHANE	5.5	U		5.9	U		5.1	U		5.4	U	
CARBON DISULFIDE	11	U		12	U		10	U		11	U	
CARBON TETRACHLORIDE	5.5	U		5.9	U		5.1	U		5.4	U	
CHLOROBENZENE	5.5	U		5.9	U		5.1	U		5.4	U	
CHLOROETHANE	5.5	U		5.9	U		5.1	U		5.4	U	
CHLOROFORM	5.5	U		5.9	U		5.1	U		5.4	U	
CHLOROMETHANE	5.5	U		5.9	U		5.1	U		5.4	U	
CIS-1,3-DICHLOROPROPENE	5.5	U		5.9	U		5.1	U		5.4	U	
DIBROMOCHLOROMETHANE	5.5	U		5.9	U		5.1	U		5.4	U	
ETHYLBENZENE	5.5	U		5.9	U		5.1	U		5.4	U	
METHYLENE CHLORIDE	11	U		12	U		10	U		11	U	
STYRENE	5.5	U		5.9	U		5.1	U		5.4	U	
TETRACHLOROETHENE	5.5	U		5.9	U		5.1	U		5.4	U	
TOLUENE	5.5	U		5.9	U		5.1	U		5.4	U	
TRANS-1,3-DICHLOROPROPENE	5.5	U		5.9	U		5.1	U		5.4	U	
TRICHLOROETHENE	5.5	U		5.9	U		5.1	U		5.4	U	

CTO079-NAS WHITING FIELD
SOIL DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00101			29D00201			29D00301			29D00401		
SAMPLE DATE:	05/26/00			05/26/00			05/26/00			05/26/00		
LABORATORY ID:	F6635-1			F6635-2			F6635-3			F6635-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	97.1 %			98.5 %			97.0 %			98.0 %		
UNITS:	UG/KG			UG/KG			UG/KG			UG/KG		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
XYLENES, TOTAL	16	U		18	U		15	U		16	U	

CTO079-NAS WHITING FIELD
SOIL DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00501			29D00601								
SAMPLE DATE:	05/26/00			05/26/00			/ /			/ /		
LABORATORY ID:	F6635-5			F6635-6								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	98.6 %			97.5 %			100.0 %			100.0 %		
UNITS:	UG/KG			UG/KG								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	5.8	U		5.4	U							
1,1,2,2-TETRACHLOROETHANE	5.8	U		5.4	U							
1,1,2-TRICHLOROETHANE	5.8	U		5.4	U							
1,1-DICHLOROETHANE	5.8	U		5.4	U							
1,1-DICHLOROETHENE	5.8	U		5.4	U							
1,2-DIBROMOETHANE	5.8	U		5.4	U							
1,2-DICHLOROETHANE	5.8	U		5.4	U							
1,2-DICHLOROETHENE (TOTAL)	12	U		11	U							
1,2-DICHLOROPROPANE	5.8	U		5.4	U							
2-BUTANONE	12	U		11	U							
2-HEXANONE	12	U		11	U							
4-METHYL-2-PENTANONE	12	U		11	U							
ACETONE	58	U		54	U							
BENZENE	5.8	U		5.4	U							
BROMODICHLOROMETHANE	5.8	U		5.4	U							
BROMOFORM	5.8	U		5.4	U							
BROMOMETHANE	5.8	U		5.4	U							
CARBON DISULFIDE	12	U		11	U							
CARBON TETRACHLORIDE	5.8	U		5.4	U							
CHLOROBENZENE	5.8	U		5.4	U							
CHLOROETHANE	5.8	U		5.4	U							
CHLOROFORM	5.8	U		5.4	U							
CHLOROMETHANE	5.8	U		5.4	U							
CIS-1,3-DICHLOROPROPENE	5.8	U		5.4	U							
DIBROMOCHLOROMETHANE	5.8	U		5.4	U							
ETHYLBENZENE	5.8	U		5.4	U							
METHYLENE CHLORIDE	12	U		11	U							
STYRENE	5.8	U		5.4	U							
TETRACHLOROETHENE	5.8	U		5.4	U							
TOLUENE	5.8	U		5.4	U							
TRANS-1,3-DICHLOROPROPENE	5.8	U		5.4	U							
TRICHLOROETHENE	5.8	U		5.4	U							

CTO079-NAS WHITING FIELD
SOIL DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00501			29D00601								
SAMPLE DATE:	05/26/00			05/26/00			/ /			/ /		
LABORATORY ID:	F6635-5			F6635-6								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	98.6 %			97.5 %			100.0 %			100.0 %		
UNITS:	UG/KG			UG/KG								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
XYLENES, TOTAL	17	U		16	U							

CTO079-NAS WHITING FIELD
WATER DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29TB052600											
SAMPLE DATE:	05/26/00			/ /			/ /			/ /		
LABORATORY ID:	F6635-7											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U										
1,1,2,2-TETRACHLOROETHANE	1	U										
1,1,2-TRICHLOROETHANE	1	U										
1,1-DICHLOROETHANE	1	U										
1,1-DICHLOROETHENE	1	U										
1,2-DIBROMOETHANE	1	U										
1,2-DICHLOROETHANE	1	U										
1,2-DICHLOROETHENE (TOTAL)	2	U										
1,2-DICHLOROPROPANE	1	U										
2-BUTANONE	5	UR	C									
2-HEXANONE	5	U										
4-METHYL-2-PENTANONE	5	U										
ACETONE	5	UR	C									
BENZENE	1	U										
BROMODICHLOROMETHANE	1	U										
BROMOFORM	1	U										
BROMOMETHANE	1	U										
CARBON DISULFIDE	5	U										
CARBON TETRACHLORIDE	1	U										
CHLOROBENZENE	1	U										
CHLOROETHANE	1	U										
CHLOROFORM	1	U										
CHLOROMETHANE	1	U										
CIS-1,3-DICHLOROPROPENE	1	U										
DIBROMOCHLOROMETHANE	1	U										
ETHYLBENZENE	1	U										
METHYLENE CHLORIDE	5	U										
STYRENE	1	U										
TETRACHLOROETHENE	1	U										
TOLUENE	1	U										
TRANS-1,3-DICHLOROPROPENE	1	U										
TRICHLOROETHENE	1	U										

CTO079-NAS WHITING FIELD
WATER DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29TB052600		
SAMPLE DATE:	05/26/00	/ /	/ /	/ /
LABORATORY ID:	F6635-7			
QC_TYPE:	NORMAL			
% SOLIDS:	0.0 %	100.0 %	100.0 %	100.0 %
UNITS:	UG/L			
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
XYLENES, TOTAL	3	U										

CTO079-NAS WHITING FIELD
SOIL DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00101			29D00201			29D00301			29D00401		
SAMPLE DATE:	05/26/00			05/26/00			05/26/00			05/26/00		
LABORATORY ID:	F6635-1			F6635-2			F6635-3			F6635-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	97.1 %			98.5 %			97.0 %			98.0 %		
UNITS:	UG/KG			UG/KG			UG/KG			UG/KG		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	340	U		340	U		340	U		340	U	
1,2-DICHLOROBENZENE	340	U		340	U		340	U		340	U	
1,3-DICHLOROBENZENE	340	U		340	U		340	U		340	U	
1,4-DICHLOROBENZENE	340	U		340	U		340	U		340	U	
2,4,5-TRICHLOROPHENOL	340	U		340	U		340	U		340	U	
2,4,6-TRICHLOROPHENOL	340	U		340	U		340	U		340	U	
2,4-DICHLOROPHENOL	340	U		340	U		340	U		340	U	
2,4-DIMETHYLPHENOL	860	U		840	U		860	U		850	U	
2,4-DINITROPHENOL	860	U		840	U		860	U		850	U	
2,4-DINITROTOLUENE	340	U		340	U		340	U		340	U	
2,6-DINITROTOLUENE	340	U		340	U		340	U		340	U	
2-CHLORONAPHTHALENE	340	U		340	U		340	U		340	U	
2-CHLOROPHENOL	340	U		340	U		340	U		340	U	
2-METHYLNAPHTHALENE	340	U		340	U		340	U		340	U	
2-METHYLPHENOL	340	U		340	U		340	U		340	U	
2-NITROANILINE	340	U		340	U		340	U		340	U	
2-NITROPHENOL	340	U		340	U		340	U		340	U	
3&4-METHYLPHENOL	340	U		340	U		340	U		340	U	
3,3'-DICHLOROBENZIDINE	690	U		680	U		690	U		680	U	
3-NITROANILINE	340	U		340	U		340	U		340	U	
4,6-DINITRO-2-METHYLPHENOL	690	U		680	U		690	U		680	U	
4-BROMOPHENYL PHENYL ETHER	340	U		340	U		340	U		340	U	
4-CHLORO-3-METHYLPHENOL	340	U		340	U		340	U		340	U	
4-CHLOROANILINE	340	U		340	U		340	U		340	U	
4-CHLOROPHENYL PHENYL ETHER	340	U		340	U		340	U		340	U	
4-NITROANILINE	340	U		340	U		340	U		340	U	
4-NITROPHENOL	860	U		840	U		860	U		850	U	
ACENAPHTHENE	340	U		340	U		340	U		340	U	
ACENAPHTHYLENE	340	U		340	U		340	U		340	U	
ANTHRACENE	340	U		340	U		340	U		340	U	
BENZO(A)ANTHRACENE	340	U		340	U		340	U		340	U	
BENZO(A)PYRENE	340	U		340	U		340	U		340	U	

CTO079-NAS WHITING FIELD
SOIL DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00101			29D00201			29D00301			29D00401		
SAMPLE DATE:	05/26/00			05/26/00			05/26/00			05/26/00		
LABORATORY ID:	F6635-1			F6635-2			F6635-3			F6635-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	97.1 %			98.5 %			97.0 %			98.0 %		
UNITS:	UG/KG			UG/KG			UG/KG			UG/KG		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
BENZO(G,H,I)PERYLENE	340	U		340	U		340	U		340	U	
BENZO(K)FLUORANTHENE	340	U		340	U		340	U		340	U	
BENZOIC ACID	860	U		840	U		860	U		850	U	
BENZYL ALCOHOL	340	U		340	U		340	U		340	U	
BIS(2-CHLOROETHOXY)METHANE	340	U		340	U		340	U		340	U	
BIS(2-CHLOROETHYL)ETHER	340	U		340	U		340	U		340	U	
BIS(2-CHLOROISOPROPYL)ETHER	340	U		340	U		340	U		340	U	
BIS(2-ETHYLHEXYL)PHTHALATE	340	U		340	U		402			133	J	P
BUTYLBENZYL PHTHALATE	340	U		340	U		385			632		
CARBAZOLE	340	U		340	U		340	U		340	U	
CHRYSENE	340	U		340	U		340	U		340	U	
DI-N-BUTYL PHTHALATE	340	U		340	U		184	J	P	340	U	
DI-N-OCTYL PHTHALATE	340	U		340	U		340	U		340	U	
DIBENZO(A,H)ANTHRACENE	340	U		340	U		340	U		340	U	
DIBENZOFURAN	340	U		340	U		340	U		340	U	
DIETHYL PHTHALATE	340	U		340	U		340	U		340	U	
DIMETHYL PHTHALATE	340	U		340	U		340	U		340	U	
FLUORANTHENE	340	U		340	U		340	U		340	U	
FLUORENE	340	U		340	U		340	U		340	U	
HEXACHLOROBENZENE	340	U		340	U		340	U		340	U	
HEXACHLOROBUTADIENE	340	U		340	U		340	U		340	U	
HEXACHLOROCYCLOPENTADIENE	340	U		340	U		340	U		340	U	
HEXACHLOROETHANE	340	U		340	U		340	U		340	U	
INDENO(1,2,3-CD)PYRENE	340	U		340	U		340	U		340	U	
ISOPHORONE	340	U		340	U		340	U		340	U	
N-NITROSO-DI-N-PROPYLAMINE	340	U		340	U		340	U		340	U	
N-NITROSODIPHENYLAMINE	340	U		340	U		340	U		340	U	
NAPHTHALENE	340	U		340	U		340	U		340	U	
NITROBENZENE	340	U		340	U		340	U		340	U	
PENTACHLOROPHENOL	860	U		840	U		860	U		850	U	
PHENANTHRENE	340	U		340	U		340	U		340	U	
PHENOL	340	U		340	U		340	U		340	U	

CTO079-NAS WHITING FIELD
SOIL DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00501			29D00601								
SAMPLE DATE:	05/26/00			05/26/00			/ /			/ /		
LABORATORY ID:	F6635-5			F6635-6								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	98.6 %			97.5 %			100.0 %			100.0 %		
UNITS:	UG/KG			UG/KG								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	340	U		340	U							
1,2-DICHLOROBENZENE	340	U		340	U							
1,3-DICHLOROBENZENE	340	U		340	U							
1,4-DICHLOROBENZENE	340	U		340	U							
2,4,5-TRICHLOROPHENOL	340	U		340	U							
2,4,6-TRICHLOROPHENOL	340	U		340	U							
2,4-DICHLOROPHENOL	340	U		340	U							
2,4-DIMETHYLPHENOL	840	U		860	U							
2,4-DINITROPHENOL	840	U		860	U							
2,4-DINITROTOLUENE	340	U		340	U							
2,6-DINITROTOLUENE	340	U		340	U							
2-CHLORONAPHTHALENE	340	U		340	U							
2-CHLOROPHENOL	340	U		340	U							
2-METHYLNAPHTHALENE	340	U		340	U							
2-METHYLPHENOL	340	U		340	U							
2-NITROANILINE	340	U		340	U							
2-NITROPHENOL	340	U		340	U							
3&4-METHYLPHENOL	340	U		340	U							
3,3'-DICHLOROBENZIDINE	680	U		680	U							
3-NITROANILINE	340	U		340	U							
4,6-DINITRO-2-METHYLPHENOL	680	U		680	U							
4-BROMOPHENYL PHENYL ETHER	340	U		340	U							
4-CHLORO-3-METHYLPHENOL	340	U		340	U							
4-CHLOROANILINE	340	U		340	U							
4-CHLOROPHENYL PHENYL ETHER	340	U		340	U							
4-NITROANILINE	340	U		340	U							
4-NITROPHENOL	840	U		860	U							
ACENAPHTHENE	340	U		340	U							
ACENAPHTHYLENE	340	U		340	U							
ANTHRACENE	340	U		340	U							
BENZO(A)ANTHRACENE	340	U		340	U							
BENZO(A)PYRENE	340	U		340	U							

CTO079-NAS WHITING FIELD
SOIL DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00501			29D00601								
SAMPLE DATE:	05/26/00			05/26/00			/ /			/ /		
LABORATORY ID:	F6635-5			F6635-6								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	98.6 %			97.5 %			100.0 %			100.0 %		
UNITS:	UG/KG			UG/KG								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
BENZO(G,H,I)PERYLENE	340	U		340	U							
BENZO(K)FLUORANTHENE	340	U		340	U							
BENZOIC ACID	840	U		860	U							
BENZYL ALCOHOL	340	U		340	U							
BIS(2-CHLOROETHOXY)METHANE	340	U		340	U							
BIS(2-CHLOROETHYL)ETHER	340	U		340	U							
BIS(2-CHLOROISOPROPYL)ETHER	340	U		340	U							
BIS(2-ETHYLHEXYL)PHTHALATE	377			340	U							
BUTYLBENZYL PHTHALATE	2020			697								
CARBAZOLE	340	U		340	U							
CHRYSENE	340	U		340	U							
DI-N-BUTYL PHTHALATE	174	J	P	340	U							
DI-N-OCTYL PHTHALATE	340	U		340	U							
DIBENZO(A,H)ANTHRACENE	340	U		340	U							
DIBENZOFURAN	340	U		340	U							
DIETHYL PHTHALATE	340	U		340	U							
DIMETHYL PHTHALATE	340	U		340	U							
FLUORANTHENE	340	U		340	U							
FLUORENE	340	U		340	U							
HEXACHLOROBENZENE	340	U		340	U							
HEXACHLOROBUTADIENE	340	U		340	U							
HEXACHLOROCYCLOPENTADIENE	340	U		340	U							
HEXACHLOROETHANE	340	U		340	U							
INDENO(1,2,3-CD)PYRENE	340	U		340	U							
ISOPHORONE	340	U		340	U							
N-NITROSO-DI-N-PROPYLAMINE	340	U		340	U							
N-NITROSODIPHENYLAMINE	340	U		340	U							
NAPHTHALENE	340	U		340	U							
NITROBENZENE	340	U		340	U							
PENTACHLOROPHENOL	840	U		860	U							
PHENANTHRENE	340	U		340	U							
PHENOL	340	U		340	U							

CTO079-NAS WHITING FIELD
SPLP DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00301			29D00401			29D00501			29D00601		
SAMPLE DATE:	05/26/00			05/26/00			05/26/00			05/26/00		
LABORATORY ID:	F6635-3A			F6635-4A			F6635-5A			F6635-6A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
1,2-DICHLOROBENZENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
1,3-DICHLOROBENZENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
1,4-DICHLOROBENZENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
2,4,5-TRICHLOROPHENOL	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
2,4,6-TRICHLOROPHENOL	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
2,4-DICHLOROPHENOL	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
2,4-DIMETHYLPHENOL	250	UJ	H	250	UJ	H	250	UJ	H	250	UJ	H
2,4-DINITROPHENOL	250	UJ	H	250	UJ	H	250	UJ	H	250	UJ	H
2,4-DINITROTOLUENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
2,6-DINITROTOLUENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
2-CHLORONAPHTHALENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
2-CHLOROPHENOL	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
2-METHYLNAPHTHALENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
2-METHYLPHENOL	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
2-NITROANILINE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
2-NITROPHENOL	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
3&4-METHYLPHENOL	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
3,3'-DICHLOROBENZIDINE	100	UJ	H	100	UJ	H	100	UJ	H	100	UJ	H
3-NITROANILINE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
4,6-DINITRO-2-METHYLPHENOL	100	UJ	H	100	UJ	H	100	UJ	H	100	UJ	H
4-BROMOPHENYL PHENYL ETHER	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
4-CHLORO-3-METHYLPHENOL	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
4-CHLOROANILINE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
4-CHLOROPHENYL PHENYL ETHER	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
4-NITROANILINE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
4-NITROPHENOL	250	UJ	H	250	UJ	H	250	UJ	H	250	UJ	H
ACENAPHTHENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
ACENAPHTHYLENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
ANTHRACENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
BENZO(A)ANTHRACENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
BENZO(A)PYRENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H

CTO079-NAS WHITING FIELD
SPLP DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00301			29D00401			29D00501			29D00601		
SAMPLE DATE:	05/26/00			05/26/00			05/26/00			05/26/00		
LABORATORY ID:	F6635-3A			F6635-4A			F6635-5A			F6635-6A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
BENZO(G,H,I)PERYLENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
BENZO(K)FLUORANTHENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
BENZOIC ACID	250	UJ	H	250	UJ	H	250	UJ	H	250	UJ	H
BENZYL ALCOHOL	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
BIS(2-CHLOROETHOXY)METHANE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
BIS(2-CHLOROETHYL)ETHER	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
BIS(2-CHLOROISOPROPYL)ETHER	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
BIS(2-ETHYLHEXYL)PHTHALATE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
BUTYLBENZYL PHTHALATE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
CARBAZOLE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
CHRYSENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
DI-N-BUTYL PHTHALATE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
DI-N-OCTYL PHTHALATE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
DIBENZO(A,H)ANTHRACENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
DIBENZOFURAN	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
DIETHYL PHTHALATE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
DIMETHYL PHTHALATE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
FLUORANTHENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
FLUORENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
HEXACHLOROBENZENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
HEXACHLOROBUTADIENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
HEXACHLOROCYCLOPENTADIENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
HEXACHLOROETHANE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
INDENO(1,2,3-CD)PYRENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
ISOPHORONE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
N-NITROSO-DI-N-PROPYLAMINE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
N-NITROSODIPHENYLAMINE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
NAPHTHALENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
NITROBENZENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
PENTACHLOROPHENOL	250	UJ	H	250	UJ	H	250	UJ	H	250	UJ	H
PHENANTHRENE	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H
PHENOL	50	UJ	H	50	UJ	H	50	UJ	H	50	UJ	H

CTO079-NAS WHITING FIELD
SOIL DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00101			29D00201			29D00301			29D00401		
SAMPLE DATE:	05/26/00			05/26/00			05/26/00			05/26/00		
LABORATORY ID:	F6635-1			F6635-2			F6635-3			F6635-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	97.1 %			98.5 %			97.0 %			98.0 %		
UNITS:	MG/KG			MG/KG			MG/KG			MG/KG		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PETROLEUM HYDROCARBONS												
TPH (C8-C40)	49			257			27			60.7		

CTO079-NAS WHITING FIELD
SOIL DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00501			29D00601								
SAMPLE DATE:	05/26/00			05/26/00			/ /			/ /		
LABORATORY ID:	F6635-5			F6635-6								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	98.6 %			97.5 %			100.0 %			100.0 %		
UNITS:	MG/KG			MG/KG								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PETROLEUM HYDROCARBONS												
TPH (C8-C40)	151			31.4								

CTO079-NAS WHITING FIELD
SPLP DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00101			29D00201			29D00301			29D00401		
SAMPLE DATE:	05/26/00			05/26/00			05/26/00			05/26/00		
LABORATORY ID:	F6635-1A			F6635-2A			F6635-3A			F6635-4A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PETROLEUM HYDROCARBONS												
TPH (C8-C40)	2500	U		2500	U		2500	U		2500	U	

CTO079-NAS WHITING FIELD
SPLP DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00501			29D00601								
SAMPLE DATE:	05/26/00			05/26/00			/ /			/ /		
LABORATORY ID:	F6635-5A			F6635-6A								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PETROLEUM HYDROCARBONS												
TPH (C8-C40)	2500	U		2500	U							

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID:	29D00101		
Lab Sample ID:	F6635-1	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	97.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H007792.D	1	06/03/00	RAW	n/a	n/a	VH90
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	55	ug/kg	
71-43-2	Benzene	ND	5.5	ug/kg	
75-27-4	Bromodichloromethane	ND	5.5	ug/kg	
75-25-2	Bromoform	ND	5.5	ug/kg	
108-90-7	Chlorobenzene	ND	5.5	ug/kg	
75-00-3	Chloroethane	ND	5.5	ug/kg	
67-66-3	Chloroform	ND	5.5	ug/kg	
75-15-0	Carbon disulfide	ND	11	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.5	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.5	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.5	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.5	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.5	ug/kg	
124-48-1	Dibromochloromethane	ND	5.5	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.5	ug/kg	
540-59-0	1,2-Dichloroethene (total)	ND	11	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.5	ug/kg	
100-41-4	Ethylbenzene	ND	5.5	ug/kg	
591-78-6	2-Hexanone	ND	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	11	ug/kg	
74-83-9	Methyl bromide	ND	5.5	ug/kg	
74-87-3	Methyl chloride	ND	5.5	ug/kg	
75-09-2	Methylene chloride	ND	11	ug/kg	
78-93-3	Methyl ethyl ketone	ND	11	ug/kg	
100-42-5	Styrene	ND	5.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.5	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.5	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.5	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.5	ug/kg	
108-88-3	Toluene	ND	5.5	ug/kg	
79-01-6	Trichloroethylene	ND	5.5	ug/kg	
75-01-4	Vinyl chloride	ND	5.5	ug/kg	
1330-20-7	Xylene (total)	ND	16	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00101		
Lab Sample ID:	F6635-1	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	97.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		71-122%
2037-26-5	Toluene-D8	99%		73-128%
460-00-4	4-Bromofluorobenzene	110%		53-158%
17060-07-0	1,2-Dichloroethane-D4	123%		71-122%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00201		
Lab Sample ID:	F6635-2	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	98.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H007793.D	1	06/03/00	RAW	n/a	n/a	VH90
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	59	ug/kg	
71-43-2	Benzene	ND	5.9	ug/kg	
75-27-4	Bromodichloromethane	ND	5.9	ug/kg	
75-25-2	Bromoform	ND	5.9	ug/kg	
108-90-7	Chlorobenzene	ND	5.9	ug/kg	
75-00-3	Chloroethane	ND	5.9	ug/kg	
67-66-3	Chloroform	ND	5.9	ug/kg	
75-15-0	Carbon disulfide	ND	12	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.9	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.9	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.9	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.9	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.9	ug/kg	
124-48-1	Dibromochloromethane	ND	5.9	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.9	ug/kg	
540-59-0	1,2-Dichloroethene (total)	ND	12	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.9	ug/kg	
100-41-4	Ethylbenzene	ND	5.9	ug/kg	
591-78-6	2-Hexanone	ND	12	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	12	ug/kg	
74-83-9	Methyl bromide	ND	5.9	ug/kg	
74-87-3	Methyl chloride	ND	5.9	ug/kg	
75-09-2	Methylene chloride	ND	12	ug/kg	
78-93-3	Methyl ethyl ketone	ND	12	ug/kg	
100-42-5	Styrene	ND	5.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.9	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.9	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.9	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.9	ug/kg	
108-88-3	Toluene	ND	5.9	ug/kg	
79-01-6	Trichloroethylene	ND	5.9	ug/kg	
75-01-4	Vinyl chloride	ND	5.9	ug/kg	
1330-20-7	Xylene (total)	ND	18	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00201		
Lab Sample ID:	F6635-2	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	98.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		71-122%
2037-26-5	Toluene-D8	103%		73-128%
460-00-4	4-Bromofluorobenzene	111%		53-158%
17060-07-0	1,2-Dichloroethane-D4	123%		71-122%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00301		
Lab Sample ID:	F6635-3	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	97.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H007794.D	1	06/03/00	RAW	n/a	n/a	VH90
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	51	ug/kg	
71-43-2	Benzene	ND	5.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.1	ug/kg	
75-25-2	Bromoform	ND	5.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.1	ug/kg	
75-00-3	Chloroethane	ND	5.1	ug/kg	
67-66-3	Chloroform	ND	5.1	ug/kg	
75-15-0	Carbon disulfide	ND	10	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.1	ug/kg	
124-48-1	Dibromochloromethane	ND	5.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.1	ug/kg	
540-59-0	1,2-Dichloroethene (total)	ND	10	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.1	ug/kg	
591-78-6	2-Hexanone	ND	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	10	ug/kg	
74-83-9	Methyl bromide	ND	5.1	ug/kg	
74-87-3	Methyl chloride	ND	5.1	ug/kg	
75-09-2	Methylene chloride	ND	10	ug/kg	
78-93-3	Methyl ethyl ketone	ND	10	ug/kg	
100-42-5	Styrene	ND	5.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.1	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.1	ug/kg	
108-88-3	Toluene	ND	5.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.1	ug/kg	
75-01-4	Vinyl chloride	ND	5.1	ug/kg	
1330-20-7	Xylene (total)	ND	15	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00301		
Lab Sample ID:	F6635-3	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	97.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		71-122%
2037-26-5	Toluene-D8	101%		73-128%
460-00-4	4-Bromofluorobenzene	111%		53-158%
17060-07-0	1,2-Dichloroethane-D4	123%		71-122%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00401		
Lab Sample ID:	F6635-4	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	98.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H007795.D	1	06/03/00	RAW	n/a	n/a	VH90
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	33.0	54	ug/kg	J
71-43-2	Benzene	ND	5.4	ug/kg	
75-27-4	Bromodichloromethane	ND	5.4	ug/kg	
75-25-2	Bromoform	ND	5.4	ug/kg	
108-90-7	Chlorobenzene	ND	5.4	ug/kg	
75-00-3	Chloroethane	ND	5.4	ug/kg	
67-66-3	Chloroform	ND	5.4	ug/kg	
75-15-0	Carbon disulfide	ND	11	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.4	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.4	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.4	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.4	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.4	ug/kg	
540-59-0	1,2-Dichloroethene (total)	ND	11	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.4	ug/kg	
100-41-4	Ethylbenzene	ND	5.4	ug/kg	
591-78-6	2-Hexanone	ND	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	11	ug/kg	
74-83-9	Methyl bromide	ND	5.4	ug/kg	
74-87-3	Methyl chloride	ND	5.4	ug/kg	
75-09-2	Methylene chloride	ND	11	ug/kg	
78-93-3	Methyl ethyl ketone	ND	11	ug/kg	
100-42-5	Styrene	ND	5.4	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.4	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.4	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.4	ug/kg	
108-88-3	Toluene	ND	5.4	ug/kg	
79-01-6	Trichloroethylene	ND	5.4	ug/kg	
75-01-4	Vinyl chloride	ND	5.4	ug/kg	
1330-20-7	Xylene (total)	ND	16	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00401		
Lab Sample ID:	F6635-4	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	98.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		71-122%
2037-26-5	Toluene-D8	107%		73-128%
460-00-4	4-Bromofluorobenzene	114%		53-158%
17060-07-0	1,2-Dichloroethane-D4	121%		71-122%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00501		
Lab Sample ID:	F6635-5	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	98.6
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H007796.D	1	06/03/00	RAW	n/a	n/a	VH90
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	58	ug/kg	
71-43-2	Benzene	ND	5.8	ug/kg	
75-27-4	Bromodichloromethane	ND	5.8	ug/kg	
75-25-2	Bromoform	ND	5.8	ug/kg	
108-90-7	Chlorobenzene	ND	5.8	ug/kg	
75-00-3	Chloroethane	ND	5.8	ug/kg	
67-66-3	Chloroform	ND	5.8	ug/kg	
75-15-0	Carbon disulfide	ND	12	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.8	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.8	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.8	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.8	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.8	ug/kg	
124-48-1	Dibromochloromethane	ND	5.8	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.8	ug/kg	
540-59-0	1,2-Dichloroethene (total)	ND	12	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.8	ug/kg	
100-41-4	Ethylbenzene	ND	5.8	ug/kg	
591-78-6	2-Hexanone	ND	12	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	12	ug/kg	
74-83-9	Methyl bromide	ND	5.8	ug/kg	
74-87-3	Methyl chloride	ND	5.8	ug/kg	
75-09-2	Methylene chloride	ND	12	ug/kg	
78-93-3	Methyl ethyl ketone	ND	12	ug/kg	
100-42-5	Styrene	ND	5.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.8	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.8	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.8	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.8	ug/kg	
108-88-3	Toluene	ND	5.8	ug/kg	
79-01-6	Trichloroethylene	ND	5.8	ug/kg	
75-01-4	Vinyl chloride	ND	5.8	ug/kg	
1330-20-7	Xylene (total)	ND	17	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00501		
Lab Sample ID:	F6635-5	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	98.6
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		71-122%
2037-26-5	Toluene-D8	102%		73-128%
460-00-4	4-Bromofluorobenzene	117%		53-158%
17060-07-0	1,2-Dichloroethane-D4	122%		71-122%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00601		
Lab Sample ID:	F6635-6	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	97.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H007797.D	1	06/03/00	RAW	n/a	n/a	VH90
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	54	ug/kg	
71-43-2	Benzene	ND	5.4	ug/kg	
75-27-4	Bromodichloromethane	ND	5.4	ug/kg	
75-25-2	Bromoform	ND	5.4	ug/kg	
108-90-7	Chlorobenzene	ND	5.4	ug/kg	
75-00-3	Chloroethane	ND	5.4	ug/kg	
67-66-3	Chloroform	ND	5.4	ug/kg	
75-15-0	Carbon disulfide	ND	11	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.4	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.4	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.4	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.4	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.4	ug/kg	
540-59-0	1,2-Dichloroethene (total)	ND	11	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.4	ug/kg	
100-41-4	Ethylbenzene	ND	5.4	ug/kg	
591-78-6	2-Hexanone	ND	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	11	ug/kg	
74-83-9	Methyl bromide	ND	5.4	ug/kg	
74-87-3	Methyl chloride	ND	5.4	ug/kg	
75-09-2	Methylene chloride	ND	11	ug/kg	
78-93-3	Methyl ethyl ketone	ND	11	ug/kg	
100-42-5	Styrene	ND	5.4	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.4	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.4	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.4	ug/kg	
108-88-3	Toluene	ND	5.4	ug/kg	
79-01-6	Trichloroethylene	ND	5.4	ug/kg	
75-01-4	Vinyl chloride	ND	5.4	ug/kg	
1330-20-7	Xylene (total)	ND	16	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00601		
Lab Sample ID:	F6635-6	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	97.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		71-122%
2037-26-5	Toluene-D8	107%		73-128%
460-00-4	4-Bromofluorobenzene	113%		53-158%
17060-07-0	1,2-Dichloroethane-D4	129%		71-122%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29TB052600		
Lab Sample ID:	F6635-7	**Date Sampled:**	05/26/00
Matrix:	AQ - Trip Blank Water	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	G0013281.D	1	06/06/00	JG	n/a	n/a	VG369
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	ug/l	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29TB052600		
Lab Sample ID:	F6635-7	**Date Sampled:**	05/26/00
Matrix:	AQ - Trip Blank Water	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-120%
17060-07-0	1,2-Dichloroethane-D4	112%		69-128%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	106%		80-120%

(a) Sample vial(s) contained significant headspace; reported results are considered minimum values.

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00101		
Lab Sample ID:	F6635-1A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	97.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0013348.D	1	06/09/00	JG	06/08/00	MS590	VG374
Run #2							

VOA TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
67-64-1	Acetone [a]	0.0142			0.050	mg/l	J
71-43-2	Benzene	ND	D018		0.0020	mg/l	
75-27-4	Bromodichloromethane	ND			0.0020	mg/l	
75-25-2	Bromoform	ND			0.0020	mg/l	
108-90-7	Chlorobenzene	ND	D021		0.0020	mg/l	
75-00-3	Chloroethane	ND			0.0020	mg/l	
67-66-3	Chloroform [b]	0.0065	D022		0.0020	mg/l	
75-15-0	Carbon disulfide	ND			0.010	mg/l	
56-23-5	Carbon tetrachloride	ND	D019		0.0020	mg/l	
75-34-3	1,1-Dichloroethane	ND			0.0020	mg/l	
75-35-4	1,1-Dichloroethylene	ND	D029		0.0020	mg/l	
107-06-2	1,2-Dichloroethane	ND	D028		0.0020	mg/l	
78-87-5	1,2-Dichloropropane	ND			0.0020	mg/l	
124-48-1	Dibromochloromethane	ND			0.0020	mg/l	
10061-01-5	cis-1,3-Dichloropropene	ND			0.0020	mg/l	
540-59-0	1,2-Dichloroethene (total)	ND			0.0040	mg/l	
10061-02-6	trans-1,3-Dichloropropene	ND			0.0020	mg/l	
100-41-4	Ethylbenzene	ND			0.0020	mg/l	
591-78-6	2-Hexanone	ND			0.010	mg/l	
108-10-1	4-Methyl-2-pentanone	ND			0.010	mg/l	
74-83-9	Methyl bromide	ND			0.0050	mg/l	
74-87-3	Methyl chloride	ND			0.0050	mg/l	
75-09-2	Methylene chloride [b]	0.0730			0.0050	mg/l	E
78-93-3	Methyl ethyl ketone	ND	D035		0.010	mg/l	
100-42-5	Styrene	ND			0.0020	mg/l	
71-55-6	1,1,1-Trichloroethane	ND			0.0020	mg/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND			0.0020	mg/l	
79-00-5	1,1,2-Trichloroethane	ND			0.0020	mg/l	
127-18-4	Tetrachloroethylene	ND	D039		0.0020	mg/l	
108-88-3	Toluene	ND			0.0020	mg/l	
79-01-6	Trichloroethylene	ND	D040		0.0020	mg/l	
75-01-4	Vinyl chloride	ND	D043		0.0050	mg/l	
1330-20-7	Xylene (total)	ND			0.0060	mg/l	

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00101		
Lab Sample ID:	F6635-1A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	97.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-120%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	104%		80-120%
17060-07-0	1,2-Dichloroethane-D4	111%		69-128%

(a) Suspected laboratory contaminant.
(b) Analyte was detected in the associated method blank. Suspected laboratory contaminant.

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00201		
Lab Sample ID:	F6635-2A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	98.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0013349.D	1	06/09/00	JG	06/08/00	MS590	VG374
Run #2							

VOA TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
67-64-1	Acetone [a]	0.102			0.050	mg/l	
71-43-2	Benzene	ND	D018		0.0020	mg/l	
75-27-4	Bromodichloromethane	ND			0.0020	mg/l	
75-25-2	Bromoform	ND			0.0020	mg/l	
108-90-7	Chlorobenzene	ND	D021		0.0020	mg/l	
75-00-3	Chloroethane	ND			0.0020	mg/l	
67-66-3	Chloroform [b]	0.0063	D022		0.0020	mg/l	
75-15-0	Carbon disulfide	ND			0.010	mg/l	
56-23-5	Carbon tetrachloride	ND	D019		0.0020	mg/l	
75-34-3	1,1-Dichloroethane	ND			0.0020	mg/l	
75-35-4	1,1-Dichloroethylene	ND	D029		0.0020	mg/l	
107-06-2	1,2-Dichloroethane	ND	D028		0.0020	mg/l	
78-87-5	1,2-Dichloropropane	ND			0.0020	mg/l	
124-48-1	Dibromochloromethane	ND			0.0020	mg/l	
10061-01-5	cis-1,3-Dichloropropene	ND			0.0020	mg/l	
540-59-0	1,2-Dichloroethene (total)	ND			0.0040	mg/l	
10061-02-6	trans-1,3-Dichloropropene	ND			0.0020	mg/l	
100-41-4	Ethylbenzene	ND			0.0020	mg/l	
591-78-6	2-Hexanone	ND			0.010	mg/l	
108-10-1	4-Methyl-2-pentanone	ND			0.010	mg/l	
74-83-9	Methyl bromide	ND			0.0050	mg/l	
74-87-3	Methyl chloride	ND			0.0050	mg/l	
75-09-2	Methylene chloride [b]	0.0331			0.0050	mg/l	
78-93-3	Methyl ethyl ketone	ND	D035		0.010	mg/l	
100-42-5	Styrene	ND			0.0020	mg/l	
71-55-6	1,1,1-Trichloroethane	ND			0.0020	mg/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND			0.0020	mg/l	
79-00-5	1,1,2-Trichloroethane	ND			0.0020	mg/l	
127-18-4	Tetrachloroethylene	ND	D039		0.0020	mg/l	
108-88-3	Toluene	ND			0.0020	mg/l	
79-01-6	Trichloroethylene	ND	D040		0.0020	mg/l	
75-01-4	Vinyl chloride	ND	D043		0.0050	mg/l	
1330-20-7	Xylene (total)	ND			0.0060	mg/l	

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00201		
Lab Sample ID:	F6635-2A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	98.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		80-120%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	108%		69-128%

(a) Suspected laboratory contaminant.
(b) Analyte was detected in the associated method blank. Suspected laboratory contaminant.

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00301		
Lab Sample ID:	F6635-3A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	97.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0013350.D	1	06/09/00	JG	06/08/00	MS590	VG374
Run #2							

VOA TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
67-64-1	Acetone [a]	0.0393			0.050	mg/l	J
71-43-2	Benzene	ND	D018		0.0020	mg/l	
75-27-4	Bromodichloromethane	ND			0.0020	mg/l	
75-25-2	Bromoform	ND			0.0020	mg/l	
108-90-7	Chlorobenzene	ND	D021		0.0020	mg/l	
75-00-3	Chloroethane	ND			0.0020	mg/l	
67-66-3	Chloroform [b]	0.0061	D022		0.0020	mg/l	
75-15-0	Carbon disulfide	ND			0.010	mg/l	
56-23-5	Carbon tetrachloride	ND	D019		0.0020	mg/l	
75-34-3	1,1-Dichloroethane	ND			0.0020	mg/l	
75-35-4	1,1-Dichloroethylene	ND	D029		0.0020	mg/l	
107-06-2	1,2-Dichloroethane	ND	D028		0.0020	mg/l	
78-87-5	1,2-Dichloropropane	ND			0.0020	mg/l	
124-48-1	Dibromochloromethane	ND			0.0020	mg/l	
10061-01-5	cis-1,3-Dichloropropene	ND			0.0020	mg/l	
540-59-0	1,2-Dichloroethene (total)	ND			0.0040	mg/l	
10061-02-6	trans-1,3-Dichloropropene	ND			0.0020	mg/l	
100-41-4	Ethylbenzene	ND			0.0020	mg/l	
591-78-6	2-Hexanone	ND			0.010	mg/l	
108-10-1	4-Methyl-2-pentanone	ND			0.010	mg/l	
74-83-9	Methyl bromide	ND			0.0050	mg/l	
74-87-3	Methyl chloride	ND			0.0050	mg/l	
75-09-2	Methylene chloride [b]	0.0247			0.0050	mg/l	
78-93-3	Methyl ethyl ketone	ND	D035		0.010	mg/l	
100-42-5	Styrene	ND			0.0020	mg/l	
71-55-6	1,1,1-Trichloroethane	ND			0.0020	mg/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND			0.0020	mg/l	
79-00-5	1,1,2-Trichloroethane	ND			0.0020	mg/l	
127-18-4	Tetrachloroethylene	ND	D039		0.0020	mg/l	
108-88-3	Toluene	ND			0.0020	mg/l	
79-01-6	Trichloroethylene	ND	D040		0.0020	mg/l	
75-01-4	Vinyl chloride	ND	D043		0.0050	mg/l	
1330-20-7	Xylene (total)	ND			0.0060	mg/l	

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00301		
Lab Sample ID:	F6635-3A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	97.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	109%		69-128%

(a) Suspected laboratory contaminant.
(b) Analyte was detected in the associated method blank. Suspected laboratory contaminant.

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00401		
Lab Sample ID:	F6635-4A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	98.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0013351.D	1	06/09/00	JG	06/08/00	MS590	VG374
Run #2							

VOA TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
67-64-1	Acetone	ND			0.050	mg/l	
71-43-2	Benzene	ND	D018		0.0020	mg/l	
75-27-4	Bromodichloromethane	ND			0.0020	mg/l	
75-25-2	Bromoform	ND			0.0020	mg/l	
108-90-7	Chlorobenzene	ND	D021		0.0020	mg/l	
75-00-3	Chloroethane	ND			0.0020	mg/l	
67-66-3	Chloroform [a]	0.0064	D022		0.0020	mg/l	
75-15-0	Carbon disulfide	ND			0.010	mg/l	
56-23-5	Carbon tetrachloride	ND	D019		0.0020	mg/l	
75-34-3	1,1-Dichloroethane	ND			0.0020	mg/l	
75-35-4	1,1-Dichloroethylene	ND	D029		0.0020	mg/l	
107-06-2	1,2-Dichloroethane	ND	D028		0.0020	mg/l	
78-87-5	1,2-Dichloropropane	ND			0.0020	mg/l	
124-48-1	Dibromochloromethane	ND			0.0020	mg/l	
10061-01-5	cis-1,3-Dichloropropene	ND			0.0020	mg/l	
540-59-0	1,2-Dichloroethene (total)	ND			0.0040	mg/l	
10061-02-6	trans-1,3-Dichloropropene	ND			0.0020	mg/l	
100-41-4	Ethylbenzene	ND			0.0020	mg/l	
591-78-6	2-Hexanone	ND			0.010	mg/l	
108-10-1	4-Methyl-2-pentanone	ND			0.010	mg/l	
74-83-9	Methyl bromide	ND			0.0050	mg/l	
74-87-3	Methyl chloride	ND			0.0050	mg/l	
75-09-2	Methylene chloride [a]	0.0221			0.0050	mg/l	
78-93-3	Methyl ethyl ketone	ND	D035		0.010	mg/l	
100-42-5	Styrene	ND			0.0020	mg/l	
71-55-6	1,1,1-Trichloroethane	ND			0.0020	mg/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND			0.0020	mg/l	
79-00-5	1,1,2-Trichloroethane	ND			0.0020	mg/l	
127-18-4	Tetrachloroethylene	ND	D039		0.0020	mg/l	
108-88-3	Toluene	ND			0.0020	mg/l	
79-01-6	Trichloroethylene	ND	D040		0.0020	mg/l	
75-01-4	Vinyl chloride	ND	D043		0.0050	mg/l	
1330-20-7	Xylene (total)	ND			0.0060	mg/l	

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00401		
Lab Sample ID:	F6635-4A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	98.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		80-120%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	110%		69-128%

(a) Analyte was detected in the associated method blank. Suspected laboratory contaminant.

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00501		
Lab Sample ID:	F6635-5A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	98.6
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0013352.D	1	06/09/00	JG	06/08/00	MS590	VG374
Run #2							

VOA TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
67-64-1	Acetone [a]	0.0531			0.050	mg/l	
71-43-2	Benzene	ND	D018		0.0020	mg/l	
75-27-4	Bromodichloromethane	ND			0.0020	mg/l	
75-25-2	Bromoform	ND			0.0020	mg/l	
108-90-7	Chlorobenzene	ND	D021		0.0020	mg/l	
75-00-3	Chloroethane	ND			0.0020	mg/l	
67-66-3	Chloroform [b]	0.0067	D022		0.0020	mg/l	
75-15-0	Carbon disulfide	ND			0.010	mg/l	
56-23-5	Carbon tetrachloride	ND	D019		0.0020	mg/l	
75-34-3	1,1-Dichloroethane	ND			0.0020	mg/l	
75-35-4	1,1-Dichloroethylene	ND	D029		0.0020	mg/l	
107-06-2	1,2-Dichloroethane	ND	D028		0.0020	mg/l	
78-87-5	1,2-Dichloropropane	ND			0.0020	mg/l	
124-48-1	Dibromochloromethane	ND			0.0020	mg/l	
10061-01-5	cis-1,3-Dichloropropene	ND			0.0020	mg/l	
540-59-0	1,2-Dichloroethene (total)	ND			0.0040	mg/l	
10061-02-6	trans-1,3-Dichloropropene	ND			0.0020	mg/l	
100-41-4	Ethylbenzene	ND			0.0020	mg/l	
591-78-6	2-Hexanone	ND			0.010	mg/l	
108-10-1	4-Methyl-2-pentanone	ND			0.010	mg/l	
74-83-9	Methyl bromide	ND			0.0050	mg/l	
74-87-3	Methyl chloride	ND			0.0050	mg/l	
75-09-2	Methylene chloride [b]	0.0248			0.0050	mg/l	
78-93-3	Methyl ethyl ketone	ND	D035		0.010	mg/l	
100-42-5	Styrene	ND			0.0020	mg/l	
71-55-6	1,1,1-Trichloroethane	ND			0.0020	mg/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND			0.0020	mg/l	
79-00-5	1,1,2-Trichloroethane	ND			0.0020	mg/l	
127-18-4	Tetrachloroethylene	ND	D039		0.0020	mg/l	
108-88-3	Toluene	ND			0.0020	mg/l	
79-01-6	Trichloroethylene	ND	D040		0.0020	mg/l	
75-01-4	Vinyl chloride	ND	D043		0.0050	mg/l	
1330-20-7	Xylene (total)	ND			0.0060	mg/l	

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00501		
Lab Sample ID:	F6635-5A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	98.6
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		80-120%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	104%		80-120%
17060-07-0	1,2-Dichloroethane-D4	115%		69-128%

(a) Suspected laboratory contaminant.
(b) Analyte was detected in the associated method blank. Suspected laboratory contaminant.

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00601		
Lab Sample ID:	F6635-6A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	97.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0013353.D	1	06/09/00	JG	06/08/00	MS590	VG374
Run #2							

VOA TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
67-64-1	Acetone [a]	0.393			0.050	mg/l	E
71-43-2	Benzene	ND	D018		0.0020	mg/l	
75-27-4	Bromodichloromethane	ND			0.0020	mg/l	
75-25-2	Bromoform	ND			0.0020	mg/l	
108-90-7	Chlorobenzene	ND	D021		0.0020	mg/l	
75-00-3	Chloroethane	ND			0.0020	mg/l	
67-66-3	Chloroform [b]	0.0066	D022		0.0020	mg/l	
75-15-0	Carbon disulfide	ND			0.010	mg/l	
56-23-5	Carbon tetrachloride	ND	D019		0.0020	mg/l	
75-34-3	1,1-Dichloroethane	ND			0.0020	mg/l	
75-35-4	1,1-Dichloroethylene	ND	D029		0.0020	mg/l	
107-06-2	1,2-Dichloroethane	ND	D028		0.0020	mg/l	
78-87-5	1,2-Dichloropropane	ND			0.0020	mg/l	
124-48-1	Dibromochloromethane	ND			0.0020	mg/l	
10061-01-5	cis-1,3-Dichloropropene	ND			0.0020	mg/l	
540-59-0	1,2-Dichloroethene (total)	ND			0.0040	mg/l	
10061-02-6	trans-1,3-Dichloropropene	ND			0.0020	mg/l	
100-41-4	Ethylbenzene	ND			0.0020	mg/l	
591-78-6	2-Hexanone	ND			0.010	mg/l	
108-10-1	4-Methyl-2-pentanone	ND			0.010	mg/l	
74-83-9	Methyl bromide	ND			0.0050	mg/l	
74-87-3	Methyl chloride	ND			0.0050	mg/l	
75-09-2	Methylene chloride [b]	0.0361			0.0050	mg/l	
78-93-3	Methyl ethyl ketone	ND	D035		0.010	mg/l	
100-42-5	Styrene	ND			0.0020	mg/l	
71-55-6	1,1,1-Trichloroethane	ND			0.0020	mg/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND			0.0020	mg/l	
79-00-5	1,1,2-Trichloroethane	ND			0.0020	mg/l	
127-18-4	Tetrachloroethylene	ND	D039		0.0020	mg/l	
108-88-3	Toluene	ND			0.0020	mg/l	
79-01-6	Trichloroethylene	ND	D040		0.0020	mg/l	
75-01-4	Vinyl chloride	ND	D043		0.0050	mg/l	
1330-20-7	Xylene (total)	ND			0.0060	mg/l	

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00601		
Lab Sample ID:	F6635-6A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8260B	**Percent Solids:**	97.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%
17060-07-0	1,2-Dichloroethane-D4	113%		69-128%

(a) Suspected laboratory contaminant.
(b) Analyte was detected in the associated method blank. Suspected laboratory contaminant.

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00101		
Lab Sample ID:	F6635-1	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 3550B/8270C	**Percent Solids:**	97.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W001937.D	1	06/03/00	ME	06/03/00	OP1636	SW122
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic acid	ND	860	ug/kg	
95-57-8	2-Chlorophenol	ND	340	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	340	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	340	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	860	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	860	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	690	ug/kg	
95-48-7	2-Methylphenol	ND	340	ug/kg	
	3&4-Methylphenol	ND	340	ug/kg	
88-75-5	2-Nitrophenol	ND	340	ug/kg	
100-02-7	4-Nitrophenol	ND	860	ug/kg	
87-86-5	Pentachlorophenol	ND	860	ug/kg	
108-95-2	Phenol	ND	340	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	340	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	340	ug/kg	
83-32-9	Acenaphthene	ND	340	ug/kg	
208-96-8	Acenaphthylene	ND	340	ug/kg	
120-12-7	Anthracene	ND	340	ug/kg	
56-55-3	Benzo(a)anthracene	ND	340	ug/kg	
50-32-8	Benzo(a)pyrene	ND	340	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	340	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	340	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	340	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	340	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	340	ug/kg	
100-51-6	Benzyl Alcohol	ND	340	ug/kg	
91-58-7	2-Chloronaphthalene	ND	340	ug/kg	
106-47-8	4-Chloroaniline	ND	340	ug/kg	
86-74-8	Carbazole	ND	340	ug/kg	
218-01-9	Chrysene	ND	340	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	340	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	340	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	340	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	340	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	340	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	340	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00101		
Lab Sample ID:	F6635-1	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 3550B/8270C	**Percent Solids:**	97.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	340	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	340	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	340	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	690	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	340	ug/kg	
132-64-9	Dibenzofuran	ND	340	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	340	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	340	ug/kg	
84-66-2	Diethyl phthalate	ND	340	ug/kg	
131-11-3	Dimethyl phthalate	ND	340	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	340	ug/kg	
206-44-0	Fluoranthene	ND	340	ug/kg	
86-73-7	Fluorene	ND	340	ug/kg	
118-74-1	Hexachlorobenzene	ND	340	ug/kg	
87-68-3	Hexachlorobutadiene	ND	340	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	340	ug/kg	
67-72-1	Hexachloroethane	ND	340	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	340	ug/kg	
78-59-1	Isophorone	ND	340	ug/kg	
91-57-6	2-Methylnaphthalene	ND	340	ug/kg	
88-74-4	2-Nitroaniline	ND	340	ug/kg	
99-09-2	3-Nitroaniline	ND	340	ug/kg	
100-01-6	4-Nitroaniline	ND	340	ug/kg	
91-20-3	Naphthalene	ND	340	ug/kg	
98-95-3	Nitrobenzene	ND	340	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	340	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	340	ug/kg	
85-01-8	Phenanthrene	ND	340	ug/kg	
129-00-0	Pyrene	ND	340	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	340	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	81%		36-129%
4165-62-2	Phenol-d5	84%		38-135%
118-79-6	2,4,6-Tribromophenol	105%		37-144%
4165-60-0	Nitrobenzene-d5	91%		36-135%
321-60-8	2-Fluorobiphenyl	95%		44-135%
1718-51-0	Terphenyl-d14	106%		42-149%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00201		
Lab Sample ID:	F6635-2	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 3550B/8270C	**Percent Solids:**	98.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W001940.D	1	06/03/00	ME	06/03/00	OP1636	SW122
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic acid	ND	840	ug/kg	
95-57-8	2-Chlorophenol	ND	340	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	340	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	340	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	840	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	840	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	680	ug/kg	
95-48-7	2-Methylphenol	ND	340	ug/kg	
	3&4-Methylphenol	ND	340	ug/kg	
88-75-5	2-Nitrophenol	ND	340	ug/kg	
100-02-7	4-Nitrophenol	ND	840	ug/kg	
87-86-5	Pentachlorophenol	ND	840	ug/kg	
108-95-2	Phenol	ND	340	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	340	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	340	ug/kg	
83-32-9	Acenaphthene	ND	340	ug/kg	
208-96-8	Acenaphthylene	ND	340	ug/kg	
120-12-7	Anthracene	ND	340	ug/kg	
56-55-3	Benzo(a)anthracene	ND	340	ug/kg	
50-32-8	Benzo(a)pyrene	ND	340	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	340	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	340	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	340	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	340	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	340	ug/kg	
100-51-6	Benzyl Alcohol	ND	340	ug/kg	
91-58-7	2-Chloronaphthalene	ND	340	ug/kg	
106-47-8	4-Chloroaniline	ND	340	ug/kg	
86-74-8	Carbazole	ND	340	ug/kg	
218-01-9	Chrysene	ND	340	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	340	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	340	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	340	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	340	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	340	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	340	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00201		
Lab Sample ID:	F6635-2	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 3550B/8270C	**Percent Solids:**	98.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	340	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	340	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	340	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	680	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	340	ug/kg	
132-64-9	Dibenzofuran	ND	340	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	340	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	340	ug/kg	
84-66-2	Diethyl phthalate	ND	340	ug/kg	
131-11-3	Dimethyl phthalate	ND	340	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	340	ug/kg	
206-44-0	Fluoranthene	ND	340	ug/kg	
86-73-7	Fluorene	ND	340	ug/kg	
118-74-1	Hexachlorobenzene	ND	340	ug/kg	
87-68-3	Hexachlorobutadiene	ND	340	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	340	ug/kg	
67-72-1	Hexachloroethane	ND	340	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	340	ug/kg	
78-59-1	Isophorone	ND	340	ug/kg	
91-57-6	2-Methylnaphthalene	ND	340	ug/kg	
88-74-4	2-Nitroaniline	ND	340	ug/kg	
99-09-2	3-Nitroaniline	ND	340	ug/kg	
100-01-6	4-Nitroaniline	ND	340	ug/kg	
91-20-3	Naphthalene	ND	340	ug/kg	
98-95-3	Nitrobenzene	ND	340	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	340	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	340	ug/kg	
85-01-8	Phenanthrene	ND	340	ug/kg	
129-00-0	Pyrene	ND	340	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	340	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	78%		36-129%
4165-62-2	Phenol-d5	82%		38-135%
118-79-6	2,4,6-Tribromophenol	105%		37-144%
4165-60-0	Nitrobenzene-d5	87%		36-135%
321-60-8	2-Fluorobiphenyl	94%		44-135%
1718-51-0	Terphenyl-d14	110%		42-149%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00301		
Lab Sample ID:	F6635-3	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 3550B/8270C	**Percent Solids:**	97.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W001941.D	1	06/03/00	ME	06/03/00	OP1636	SW122
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic acid	ND	860	ug/kg	
95-57-8	2-Chlorophenol	ND	340	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	340	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	340	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	860	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	860	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	690	ug/kg	
95-48-7	2-Methylphenol	ND	340	ug/kg	
	3&4-Methylphenol	ND	340	ug/kg	
88-75-5	2-Nitrophenol	ND	340	ug/kg	
100-02-7	4-Nitrophenol	ND	860	ug/kg	
87-86-5	Pentachlorophenol	ND	860	ug/kg	
108-95-2	Phenol	ND	340	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	340	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	340	ug/kg	
83-32-9	Acenaphthene	ND	340	ug/kg	
208-96-8	Acenaphthylene	ND	340	ug/kg	
120-12-7	Anthracene	ND	340	ug/kg	
56-55-3	Benzo(a)anthracene	ND	340	ug/kg	
50-32-8	Benzo(a)pyrene	ND	340	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	340	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	340	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	340	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	340	ug/kg	
85-68-7	Butyl benzyl phthalate	385	340	ug/kg	
100-51-6	Benzyl Alcohol	ND	340	ug/kg	
91-58-7	2-Chloronaphthalene	ND	340	ug/kg	
106-47-8	4-Chloroaniline	ND	340	ug/kg	
86-74-8	Carbazole	ND	340	ug/kg	
218-01-9	Chrysene	ND	340	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	340	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	340	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	340	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	340	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	340	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	340	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00301		
Lab Sample ID:	F6635-3	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 3550B/8270C	**Percent Solids:**	97.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	340	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	340	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	340	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	690	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	340	ug/kg	
132-64-9	Dibenzofuran	ND	340	ug/kg	
84-74-2	Di-n-butyl phthalate	184	340	ug/kg	J
117-84-0	Di-n-octyl phthalate	ND	340	ug/kg	
84-66-2	Diethyl phthalate	ND	340	ug/kg	
131-11-3	Dimethyl phthalate	ND	340	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	402	340	ug/kg	
206-44-0	Fluoranthene	ND	340	ug/kg	
86-73-7	Fluorene	ND	340	ug/kg	
118-74-1	Hexachlorobenzene	ND	340	ug/kg	
87-68-3	Hexachlorobutadiene	ND	340	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	340	ug/kg	
67-72-1	Hexachloroethane	ND	340	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	340	ug/kg	
78-59-1	Isophorone	ND	340	ug/kg	
91-57-6	2-Methylnaphthalene	ND	340	ug/kg	
88-74-4	2-Nitroaniline	ND	340	ug/kg	
99-09-2	3-Nitroaniline	ND	340	ug/kg	
100-01-6	4-Nitroaniline	ND	340	ug/kg	
91-20-3	Naphthalene	ND	340	ug/kg	
98-95-3	Nitrobenzene	ND	340	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	340	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	340	ug/kg	
85-01-8	Phenanthrene	ND	340	ug/kg	
129-00-0	Pyrene	ND	340	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	340	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	59%		36-129%
4165-62-2	Phenol-d5	64%		38-135%
118-79-6	2,4,6-Tribromophenol	96%		37-144%
4165-60-0	Nitrobenzene-d5	66%		36-135%
321-60-8	2-Fluorobiphenyl	77%		44-135%
1718-51-0	Terphenyl-d14	97%		42-149%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00401		
Lab Sample ID:	F6635-4	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 3550B/8270C	**Percent Solids:**	98.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W001942.D	1	06/03/00	ME	06/03/00	OP1636	SW122
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic acid	ND	850	ug/kg	
95-57-8	2-Chlorophenol	ND	340	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	340	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	340	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	850	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	850	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	680	ug/kg	
95-48-7	2-Methylphenol	ND	340	ug/kg	
	3&4-Methylphenol	ND	340	ug/kg	
88-75-5	2-Nitrophenol	ND	340	ug/kg	
100-02-7	4-Nitrophenol	ND	850	ug/kg	
87-86-5	Pentachlorophenol	ND	850	ug/kg	
108-95-2	Phenol	ND	340	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	340	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	340	ug/kg	
83-32-9	Acenaphthene	ND	340	ug/kg	
208-96-8	Acenaphthylene	ND	340	ug/kg	
120-12-7	Anthracene	ND	340	ug/kg	
56-55-3	Benzo(a)anthracene	ND	340	ug/kg	
50-32-8	Benzo(a)pyrene	ND	340	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	340	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	340	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	340	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	340	ug/kg	
85-68-7	Butyl benzyl phthalate	632	340	ug/kg	
100-51-6	Benzyl Alcohol	ND	340	ug/kg	
91-58-7	2-Chloronaphthalene	ND	340	ug/kg	
106-47-8	4-Chloroaniline	ND	340	ug/kg	
86-74-8	Carbazole	ND	340	ug/kg	
218-01-9	Chrysene	ND	340	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	340	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	340	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	340	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	340	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	340	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	340	ug/kg	

ND = Not detected
RL = Reporting 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

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Report of Analysis

Client Sample ID:	29D00401		
Lab Sample ID:	F6635-4	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 3550B/8270C	**Percent Solids:**	98.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	340	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	340	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	340	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	680	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	340	ug/kg	
132-64-9	Dibenzofuran	ND	340	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	340	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	340	ug/kg	
84-66-2	Diethyl phthalate	ND	340	ug/kg	
131-11-3	Dimethyl phthalate	ND	340	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	133	340	ug/kg	J
206-44-0	Fluoranthene	ND	340	ug/kg	
86-73-7	Fluorene	ND	340	ug/kg	
118-74-1	Hexachlorobenzene	ND	340	ug/kg	
87-68-3	Hexachlorobutadiene	ND	340	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	340	ug/kg	
67-72-1	Hexachloroethane	ND	340	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	340	ug/kg	
78-59-1	Isophorone	ND	340	ug/kg	
91-57-6	2-Methylnaphthalene	ND	340	ug/kg	
88-74-4	2-Nitroaniline	ND	340	ug/kg	
99-09-2	3-Nitroaniline	ND	340	ug/kg	
100-01-6	4-Nitroaniline	ND	340	ug/kg	
91-20-3	Naphthalene	ND	340	ug/kg	
98-95-3	Nitrobenzene	ND	340	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	340	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	340	ug/kg	
85-01-8	Phenanthrene	ND	340	ug/kg	
129-00-0	Pyrene	ND	340	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	340	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	74%		36-129%
4165-62-2	Phenol-d5	84%		38-135%
118-79-6	2,4,6-Tribromophenol	114%		37-144%
4165-60-0	Nitrobenzene-d5	84%		36-135%
321-60-8	2-Fluorobiphenyl	99%		44-135%
1718-51-0	Terphenyl-d14	120%		42-149%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00501		
Lab Sample ID:	F6635-5	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 3550B/8270C	**Percent Solids:**	98.6
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W001943.D	1	06/03/00	ME	06/03/00	OP1636	SW122
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic acid	ND	840	ug/kg	
95-57-8	2-Chlorophenol	ND	340	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	340	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	340	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	840	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	840	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	680	ug/kg	
95-48-7	2-Methylphenol	ND	340	ug/kg	
	3&4-Methylphenol	ND	340	ug/kg	
88-75-5	2-Nitrophenol	ND	340	ug/kg	
100-02-7	4-Nitrophenol	ND	840	ug/kg	
87-86-5	Pentachlorophenol	ND	840	ug/kg	
108-95-2	Phenol	ND	340	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	340	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	340	ug/kg	
83-32-9	Acenaphthene	ND	340	ug/kg	
208-96-8	Acenaphthylene	ND	340	ug/kg	
120-12-7	Anthracene	ND	340	ug/kg	
56-55-3	Benzo(a)anthracene	ND	340	ug/kg	
50-32-8	Benzo(a)pyrene	ND	340	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	340	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	340	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	340	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	340	ug/kg	
85-68-7	Butyl benzyl phthalate	2020	340	ug/kg	
100-51-6	Benzyl Alcohol	ND	340	ug/kg	
91-58-7	2-Chloronaphthalene	ND	340	ug/kg	
106-47-8	4-Chloroaniline	ND	340	ug/kg	
86-74-8	Carbazole	ND	340	ug/kg	
218-01-9	Chrysene	ND	340	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	340	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	340	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	340	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	340	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	340	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	340	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00501		
Lab Sample ID:	F6635-5	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 3550B/8270C	**Percent Solids:**	98.6
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	340	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	340	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	340	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	680	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	340	ug/kg	
132-64-9	Dibenzofuran	ND	340	ug/kg	
84-74-2	Di-n-butyl phthalate	174	340	ug/kg	J
117-84-0	Di-n-octyl phthalate	ND	340	ug/kg	
84-66-2	Diethyl phthalate	ND	340	ug/kg	
131-11-3	Dimethyl phthalate	ND	340	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	377	340	ug/kg	
206-44-0	Fluoranthene	ND	340	ug/kg	
86-73-7	Fluorene	ND	340	ug/kg	
118-74-1	Hexachlorobenzene	ND	340	ug/kg	
87-68-3	Hexachlorobutadiene	ND	340	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	340	ug/kg	
67-72-1	Hexachloroethane	ND	340	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	340	ug/kg	
78-59-1	Isophorone	ND	340	ug/kg	
91-57-6	2-Methylnaphthalene	ND	340	ug/kg	
88-74-4	2-Nitroaniline	ND	340	ug/kg	
99-09-2	3-Nitroaniline	ND	340	ug/kg	
100-01-6	4-Nitroaniline	ND	340	ug/kg	
91-20-3	Naphthalene	ND	340	ug/kg	
98-95-3	Nitrobenzene	ND	340	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	340	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	340	ug/kg	
85-01-8	Phenanthrene	ND	340	ug/kg	
129-00-0	Pyrene	ND	340	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	340	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	73%		36-129%
4165-62-2	Phenol-d5	81%		38-135%
118-79-6	2,4,6-Tribromophenol	104%		37-144%
4165-60-0	Nitrobenzene-d5	84%		36-135%
321-60-8	2-Fluorobiphenyl	94%		44-135%
1718-51-0	Terphenyl-d14	108%		42-149%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00601		
Lab Sample ID:	F6635-6	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 3550B/8270C	**Percent Solids:**	97.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W001944.D	1	06/03/00	ME	06/03/00	OP1636	SW122
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic acid	ND	860	ug/kg	
95-57-8	2-Chlorophenol	ND	340	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	340	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	340	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	860	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	860	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	680	ug/kg	
95-48-7	2-Methylphenol	ND	340	ug/kg	
	3&4-Methylphenol	ND	340	ug/kg	
88-75-5	2-Nitrophenol	ND	340	ug/kg	
100-02-7	4-Nitrophenol	ND	860	ug/kg	
87-86-5	Pentachlorophenol	ND	860	ug/kg	
108-95-2	Phenol	ND	340	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	340	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	340	ug/kg	
83-32-9	Acenaphthene	ND	340	ug/kg	
208-96-8	Acenaphthylene	ND	340	ug/kg	
120-12-7	Anthracene	ND	340	ug/kg	
56-55-3	Benzo(a)anthracene	ND	340	ug/kg	
50-32-8	Benzo(a)pyrene	ND	340	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	340	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	340	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	340	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	340	ug/kg	
85-68-7	Butyl benzyl phthalate	697	340	ug/kg	
100-51-6	Benzyl Alcohol	ND	340	ug/kg	
91-58-7	2-Chloronaphthalene	ND	340	ug/kg	
106-47-8	4-Chloroaniline	ND	340	ug/kg	
86-74-8	Carbazole	ND	340	ug/kg	
218-01-9	Chrysene	ND	340	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	340	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	340	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	340	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	340	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	340	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	340	ug/kg	

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00601		
Lab Sample ID:	F6635-6	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 3550B/8270C	**Percent Solids:**	97.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	340	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	340	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	340	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	680	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	340	ug/kg	
132-64-9	Dibenzofuran	ND	340	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	340	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	340	ug/kg	
84-66-2	Diethyl phthalate	ND	340	ug/kg	
131-11-3	Dimethyl phthalate	ND	340	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	340	ug/kg	
206-44-0	Fluoranthene	ND	340	ug/kg	
86-73-7	Fluorene	ND	340	ug/kg	
118-74-1	Hexachlorobenzene	ND	340	ug/kg	
87-68-3	Hexachlorobutadiene	ND	340	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	340	ug/kg	
67-72-1	Hexachloroethane	ND	340	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	340	ug/kg	
78-59-1	Isophorone	ND	340	ug/kg	
91-57-6	2-Methylnaphthalene	ND	340	ug/kg	
88-74-4	2-Nitroaniline	ND	340	ug/kg	
99-09-2	3-Nitroaniline	ND	340	ug/kg	
100-01-6	4-Nitroaniline	ND	340	ug/kg	
91-20-3	Naphthalene	ND	340	ug/kg	
98-95-3	Nitrobenzene	ND	340	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	340	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	340	ug/kg	
85-01-8	Phenanthrene	ND	340	ug/kg	
129-00-0	Pyrene	ND	340	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	340	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	67%		36-129%
4165-62-2	Phenol-d5	73%		38-135%
118-79-6	2,4,6-Tribromophenol	97%		37-144%
4165-60-0	Nitrobenzene-d5	75%		36-135%
321-60-8	2-Fluorobiphenyl	86%		44-135%
1718-51-0	Terphenyl-d14	106%		42-149%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00301		
Lab Sample ID:	F6635-3A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8270C	**Percent Solids:**	97.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	W002216.D	1	06/20/00	ME	06/17/00	OP1696	SW136
Run #2							

ABN TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
65-85-0	Benzoic Acid	ND			0.25	mg/l	
95-57-8	2-Chlorophenol	ND			0.050	mg/l	
59-50-7	4-Chloro-3-methyl phenol	ND			0.050	mg/l	
120-83-2	2,4-Dichlorophenol	ND			0.050	mg/l	
105-67-9	2,4-Dimethylphenol	ND			0.25	mg/l	
51-28-5	2,4-Dinitrophenol	ND			0.25	mg/l	
534-52-1	4,6-Dinitro-o-cresol	ND			0.10	mg/l	
95-48-7	2-Methylphenol	ND	D023		0.050	mg/l	
	3&4-Methylphenol	ND	D024		0.050	mg/l	
88-75-5	2-Nitrophenol	ND			0.050	mg/l	
100-02-7	4-Nitrophenol	ND			0.25	mg/l	
87-86-5	Pentachlorophenol	ND	D037		0.25	mg/l	
108-95-2	Phenol	ND			0.050	mg/l	
95-95-4	2,4,5-Trichlorophenol	ND	D041		0.050	mg/l	
88-06-2	2,4,6-Trichlorophenol	ND	D042		0.050	mg/l	
83-32-9	Acenaphthene	ND			0.050	mg/l	
208-96-8	Acenaphthylene	ND			0.050	mg/l	
120-12-7	Anthracene	ND			0.050	mg/l	
56-55-3	Benzo(a)anthracene	ND			0.050	mg/l	
50-32-8	Benzo(a)pyrene	ND			0.050	mg/l	
205-99-2	Benzo(b)fluoranthene	ND			0.050	mg/l	
191-24-2	Benzo(g,h,i)perylene	ND			0.050	mg/l	
207-08-9	Benzo(k)fluoranthene	ND			0.050	mg/l	
101-55-3	4-Bromophenyl phenyl ether	ND			0.050	mg/l	
85-68-7	Butyl benzyl phthalate	ND			0.050	mg/l	
100-51-6	Benzyl Alcohol	ND			0.050	mg/l	
91-58-7	2-Chloronaphthalene	ND			0.050	mg/l	
106-47-8	4-Chloroaniline	ND			0.050	mg/l	
86-74-8	Carbazole	ND			0.050	mg/l	
218-01-9	Chrysene	ND			0.050	mg/l	
111-91-1	bis(2-Chloroethoxy)methane	ND			0.050	mg/l	
111-44-4	bis(2-Chloroethyl)ether	ND			0.050	mg/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND			0.050	mg/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND			0.050	mg/l	
95-50-1	1,2-Dichlorobenzene	ND			0.050	mg/l	
541-73-1	1,3-Dichlorobenzene	ND			0.050	mg/l	

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00301		
Lab Sample ID:	F6635-3A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8270C	**Percent Solids:**	97.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	D027		0.050	mg/l	
121-14-2	2,4-Dinitrotoluene	ND	D030		0.050	mg/l	
606-20-2	2,6-Dinitrotoluene	ND			0.050	mg/l	
91-94-1	3,3'-Dichlorobenzidine	ND			0.10	mg/l	
53-70-3	Dibenzo(a,h)anthracene	ND			0.050	mg/l	
132-64-9	Dibenzofuran	ND			0.050	mg/l	
84-74-2	Di-n-butyl phthalate	ND			0.050	mg/l	
117-84-0	Di-n-octyl phthalate	ND			0.050	mg/l	
84-66-2	Diethyl phthalate	ND			0.050	mg/l	
131-11-3	Dimethyl phthalate	ND			0.050	mg/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND			0.050	mg/l	
206-44-0	Fluoranthene	ND			0.050	mg/l	
86-73-7	Fluorene	ND			0.050	mg/l	
118-74-1	Hexachlorobenzene	ND	D032		0.050	mg/l	
87-68-3	Hexachlorobutadiene	ND	D033		0.050	mg/l	
77-47-4	Hexachlorocyclopentadiene	ND			0.050	mg/l	
67-72-1	Hexachloroethane	ND	D034		0.050	mg/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND			0.050	mg/l	
78-59-1	Isophorone	ND			0.050	mg/l	
91-57-6	2-Methylnaphthalene	ND			0.050	mg/l	
88-74-4	2-Nitroaniline	ND			0.050	mg/l	
99-09-2	3-Nitroaniline	ND			0.050	mg/l	
100-01-6	4-Nitroaniline	ND			0.050	mg/l	
91-20-3	Naphthalene	ND			0.050	mg/l	
98-95-3	Nitrobenzene	ND	D036		0.050	mg/l	
621-64-7	N-Nitroso-di-n-propylamine	ND			0.050	mg/l	
86-30-6	N-Nitrosodiphenylamine	ND			0.050	mg/l	
85-01-8	Phenanthrene	ND			0.050	mg/l	
129-00-0	Pyrene	ND			0.050	mg/l	
120-82-1	1,2,4-Trichlorobenzene	ND			0.050	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	53%		21-100%
4165-62-2	Phenol-d5	34%		10-94%
118-79-6	2,4,6-Tribromophenol	83%		10-123%
4165-60-0	Nitrobenzene-d5	80%		35-114%
321-60-8	2-Fluorobiphenyl	79%		43-116%
1718-51-0	Terphenyl-d14	97%		33-141%

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00301		
Lab Sample ID:	F6635-3A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8270C	**Percent Solids:**	97.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q

(a) Sample extracted beyond hold time; reported results are considered minimum values.

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00401		
Lab Sample ID:	F6635-4A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8270C	**Percent Solids:**	98.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	W002217.D	1	06/20/00	ME	06/17/00	OP1696	SW136
Run #2							

ABN TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
65-85-0	Benzoic Acid	ND			0.25	mg/l	
95-57-8	2-Chlorophenol	ND			0.050	mg/l	
59-50-7	4-Chloro-3-methyl phenol	ND			0.050	mg/l	
120-83-2	2,4-Dichlorophenol	ND			0.050	mg/l	
105-67-9	2,4-Dimethylphenol	ND			0.25	mg/l	
51-28-5	2,4-Dinitrophenol	ND			0.25	mg/l	
534-52-1	4,6-Dinitro-o-cresol	ND			0.10	mg/l	
95-48-7	2-Methylphenol	ND	D023		0.050	mg/l	
	3&4-Methylphenol	ND	D024		0.050	mg/l	
88-75-5	2-Nitrophenol	ND			0.050	mg/l	
100-02-7	4-Nitrophenol	ND			0.25	mg/l	
87-86-5	Pentachlorophenol	ND	D037		0.25	mg/l	
108-95-2	Phenol	ND			0.050	mg/l	
95-95-4	2,4,5-Trichlorophenol	ND	D041		0.050	mg/l	
88-06-2	2,4,6-Trichlorophenol	ND	D042		0.050	mg/l	
83-32-9	Acenaphthene	ND			0.050	mg/l	
208-96-8	Acenaphthylene	ND			0.050	mg/l	
120-12-7	Anthracene	ND			0.050	mg/l	
56-55-3	Benzo(a)anthracene	ND			0.050	mg/l	
50-32-8	Benzo(a)pyrene	ND			0.050	mg/l	
205-99-2	Benzo(b)fluoranthene	ND			0.050	mg/l	
191-24-2	Benzo(g,h,i)perylene	ND			0.050	mg/l	
207-08-9	Benzo(k)fluoranthene	ND			0.050	mg/l	
101-55-3	4-Bromophenyl phenyl ether	ND			0.050	mg/l	
85-68-7	Butyl benzyl phthalate	ND			0.050	mg/l	
100-51-6	Benzyl Alcohol	ND			0.050	mg/l	
91-58-7	2-Chloronaphthalene	ND			0.050	mg/l	
106-47-8	4-Chloroaniline	ND			0.050	mg/l	
86-74-8	Carbazole	ND			0.050	mg/l	
218-01-9	Chrysene	ND			0.050	mg/l	
111-91-1	bis(2-Chloroethoxy)methane	ND			0.050	mg/l	
111-44-4	bis(2-Chloroethyl)ether	ND			0.050	mg/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND			0.050	mg/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND			0.050	mg/l	
95-50-1	1,2-Dichlorobenzene	ND			0.050	mg/l	
541-73-1	1,3-Dichlorobenzene	ND			0.050	mg/l	

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ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00401		
Lab Sample ID:	F6635-4A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8270C	**Percent Solids:**	98.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	D027		0.050	mg/l	
121-14-2	2,4-Dinitrotoluene	ND	D030		0.050	mg/l	
606-20-2	2,6-Dinitrotoluene	ND			0.050	mg/l	
91-94-1	3,3'-Dichlorobenzidine	ND			0.10	mg/l	
53-70-3	Dibenzo(a,h)anthracene	ND			0.050	mg/l	
132-64-9	Dibenzofuran	ND			0.050	mg/l	
84-74-2	Di-n-butyl phthalate	ND			0.050	mg/l	
117-84-0	Di-n-octyl phthalate	ND			0.050	mg/l	
84-66-2	Diethyl phthalate	ND			0.050	mg/l	
131-11-3	Dimethyl phthalate	ND			0.050	mg/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND			0.050	mg/l	
206-44-0	Fluoranthene	ND			0.050	mg/l	
86-73-7	Fluorene	ND			0.050	mg/l	
118-74-1	Hexachlorobenzene	ND	D032		0.050	mg/l	
87-68-3	Hexachlorobutadiene	ND	D033		0.050	mg/l	
77-47-4	Hexachlorocyclopentadiene	ND			0.050	mg/l	
67-72-1	Hexachloroethane	ND	D034		0.050	mg/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND			0.050	mg/l	
78-59-1	Isophorone	ND			0.050	mg/l	
91-57-6	2-Methylnaphthalene	ND			0.050	mg/l	
88-74-4	2-Nitroaniline	ND			0.050	mg/l	
99-09-2	3-Nitroaniline	ND			0.050	mg/l	
100-01-6	4-Nitroaniline	ND			0.050	mg/l	
91-20-3	Naphthalene	ND			0.050	mg/l	
98-95-3	Nitrobenzene	ND	D036		0.050	mg/l	
621-64-7	N-Nitroso-di-n-propylamine	ND			0.050	mg/l	
86-30-6	N-Nitrosodiphenylamine	ND			0.050	mg/l	
85-01-8	Phenanthrene	ND			0.050	mg/l	
129-00-0	Pyrene	ND			0.050	mg/l	
120-82-1	1,2,4-Trichlorobenzene	ND			0.050	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	54%		21-100%
4165-62-2	Phenol-d5	36%		10-94%
118-79-6	2,4,6-Tribromophenol	83%		10-123%
4165-60-0	Nitrobenzene-d5	86%		35-114%
321-60-8	2-Fluorobiphenyl	84%		43-116%
1718-51-0	Terphenyl-d14	98%		33-141%

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00401		
Lab Sample ID:	F6635-4A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8270C	**Percent Solids:**	98.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q

(a) Sample extracted beyond hold time; reported results are considered minimum values.

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00501		
Lab Sample ID:	F6635-5A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8270C	**Percent Solids:**	98.6
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	W002218.D	1	06/20/00	ME	06/17/00	OP1696	SW136
Run #2							

ABN TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
65-85-0	Benzoic Acid	ND			0.25	mg/l	
95-57-8	2-Chlorophenol	ND			0.050	mg/l	
59-50-7	4-Chloro-3-methyl phenol	ND			0.050	mg/l	
120-83-2	2,4-Dichlorophenol	ND			0.050	mg/l	
105-67-9	2,4-Dimethylphenol	ND			0.25	mg/l	
51-28-5	2,4-Dinitrophenol	ND			0.25	mg/l	
534-52-1	4,6-Dinitro-o-cresol	ND			0.10	mg/l	
95-48-7	2-Methylphenol	ND	D023		0.050	mg/l	
	3&4-Methylphenol	ND	D024		0.050	mg/l	
88-75-5	2-Nitrophenol	ND			0.050	mg/l	
100-02-7	4-Nitrophenol	ND			0.25	mg/l	
87-86-5	Pentachlorophenol	ND	D037		0.25	mg/l	
108-95-2	Phenol	ND			0.050	mg/l	
95-95-4	2,4,5-Trichlorophenol	ND	D041		0.050	mg/l	
88-06-2	2,4,6-Trichlorophenol	ND	D042		0.050	mg/l	
83-32-9	Acenaphthene	ND			0.050	mg/l	
208-96-8	Acenaphthylene	ND			0.050	mg/l	
120-12-7	Anthracene	ND			0.050	mg/l	
56-55-3	Benzo(a)anthracene	ND			0.050	mg/l	
50-32-8	Benzo(a)pyrene	ND			0.050	mg/l	
205-99-2	Benzo(b)fluoranthene	ND			0.050	mg/l	
191-24-2	Benzo(g,h,i)perylene	ND			0.050	mg/l	
207-08-9	Benzo(k)fluoranthene	ND			0.050	mg/l	
101-55-3	4-Bromophenyl phenyl ether	ND			0.050	mg/l	
85-68-7	Butyl benzyl phthalate	ND			0.050	mg/l	
100-51-6	Benzyl Alcohol	ND			0.050	mg/l	
91-58-7	2-Chloronaphthalene	ND			0.050	mg/l	
106-47-8	4-Chloroaniline	ND			0.050	mg/l	
86-74-8	Carbazole	ND			0.050	mg/l	
218-01-9	Chrysene	ND			0.050	mg/l	
111-91-1	bis(2-Chloroethoxy)methane	ND			0.050	mg/l	
111-44-4	bis(2-Chloroethyl)ether	ND			0.050	mg/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND			0.050	mg/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND			0.050	mg/l	
95-50-1	1,2-Dichlorobenzene	ND			0.050	mg/l	
541-73-1	1,3-Dichlorobenzene	ND			0.050	mg/l	

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ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00501		
Lab Sample ID:	F6635-5A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8270C	**Percent Solids:**	98.6
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	D027		0.050	mg/l	
121-14-2	2,4-Dinitrotoluene	ND	D030		0.050	mg/l	
606-20-2	2,6-Dinitrotoluene	ND			0.050	mg/l	
91-94-1	3,3'-Dichlorobenzidine	ND			0.10	mg/l	
53-70-3	Dibenzo(a,h)anthracene	ND			0.050	mg/l	
132-64-9	Dibenzofuran	ND			0.050	mg/l	
84-74-2	Di-n-butyl phthalate	ND			0.050	mg/l	
117-84-0	Di-n-octyl phthalate	ND			0.050	mg/l	
84-66-2	Diethyl phthalate	ND			0.050	mg/l	
131-11-3	Dimethyl phthalate	ND			0.050	mg/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND			0.050	mg/l	
206-44-0	Fluoranthene	ND			0.050	mg/l	
86-73-7	Fluorene	ND			0.050	mg/l	
118-74-1	Hexachlorobenzene	ND	D032		0.050	mg/l	
87-68-3	Hexachlorobutadiene	ND	D033		0.050	mg/l	
77-47-4	Hexachlorocyclopentadiene	ND			0.050	mg/l	
67-72-1	Hexachloroethane	ND	D034		0.050	mg/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND			0.050	mg/l	
78-59-1	Isophorone	ND			0.050	mg/l	
91-57-6	2-Methylnaphthalene	ND			0.050	mg/l	
88-74-4	2-Nitroaniline	ND			0.050	mg/l	
99-09-2	3-Nitroaniline	ND			0.050	mg/l	
100-01-6	4-Nitroaniline	ND			0.050	mg/l	
91-20-3	Naphthalene	ND			0.050	mg/l	
98-95-3	Nitrobenzene	ND	D036		0.050	mg/l	
621-64-7	N-Nitroso-di-n-propylamine	ND			0.050	mg/l	
86-30-6	N-Nitrosodiphenylamine	ND			0.050	mg/l	
85-01-8	Phenanthrene	ND			0.050	mg/l	
129-00-0	Pyrene	ND			0.050	mg/l	
120-82-1	1,2,4-Trichlorobenzene	ND			0.050	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	59%		21-100%
4165-62-2	Phenol-d5	41%		10-94%
118-79-6	2,4,6-Tribromophenol	87%		10-123%
4165-60-0	Nitrobenzene-d5	86%		35-114%
321-60-8	2-Fluorobiphenyl	84%		43-116%
1718-51-0	Terphenyl-d14	102%		33-141%

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00501		
Lab Sample ID:	F6635-5A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8270C	**Percent Solids:**	98.6
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q

(a) Sample extracted beyond hold time; reported results are considered minimum values.

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00601		
Lab Sample ID:	F6635-6A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8270C	**Percent Solids:**	97.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	W002219.D	1	06/20/00	ME	06/17/00	OP1696	SW136
Run #2							

ABN TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
65-85-0	Benzoic Acid	ND			0.25	mg/l	
95-57-8	2-Chlorophenol	ND			0.050	mg/l	
59-50-7	4-Chloro-3-methyl phenol	ND			0.050	mg/l	
120-83-2	2,4-Dichlorophenol	ND			0.050	mg/l	
105-67-9	2,4-Dimethylphenol	ND			0.25	mg/l	
51-28-5	2,4-Dinitrophenol	ND			0.25	mg/l	
534-52-1	4,6-Dinitro-o-cresol	ND			0.10	mg/l	
95-48-7	2-Methylphenol	ND	D023		0.050	mg/l	
	3&4-Methylphenol	ND	D024		0.050	mg/l	
88-75-5	2-Nitrophenol	ND			0.050	mg/l	
100-02-7	4-Nitrophenol	ND			0.25	mg/l	
87-86-5	Pentachlorophenol	ND	D037		0.25	mg/l	
108-95-2	Phenol	ND			0.050	mg/l	
95-95-4	2,4,5-Trichlorophenol	ND	D041		0.050	mg/l	
88-06-2	2,4,6-Trichlorophenol	ND	D042		0.050	mg/l	
83-32-9	Acenaphthene	ND			0.050	mg/l	
208-96-8	Acenaphthylene	ND			0.050	mg/l	
120-12-7	Anthracene	ND			0.050	mg/l	
56-55-3	Benzo(a)anthracene	ND			0.050	mg/l	
50-32-8	Benzo(a)pyrene	ND			0.050	mg/l	
205-99-2	Benzo(b)fluoranthene	ND			0.050	mg/l	
191-24-2	Benzo(g,h,i)perylene	ND			0.050	mg/l	
207-08-9	Benzo(k)fluoranthene	ND			0.050	mg/l	
101-55-3	4-Bromophenyl phenyl ether	ND			0.050	mg/l	
85-68-7	Butyl benzyl phthalate	ND			0.050	mg/l	
100-51-6	Benzyl Alcohol	ND			0.050	mg/l	
91-58-7	2-Chloronaphthalene	ND			0.050	mg/l	
106-47-8	4-Chloroaniline	ND			0.050	mg/l	
86-74-8	Carbazole	ND			0.050	mg/l	
218-01-9	Chrysene	ND			0.050	mg/l	
111-91-1	bis(2-Chloroethoxy)methane	ND			0.050	mg/l	
111-44-4	bis(2-Chloroethyl)ether	ND			0.050	mg/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND			0.050	mg/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND			0.050	mg/l	
95-50-1	1,2-Dichlorobenzene	ND			0.050	mg/l	
541-73-1	1,3-Dichlorobenzene	ND			0.050	mg/l	

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00601		
Lab Sample ID:	F6635-6A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8270C	**Percent Solids:**	97.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	D027		0.050	mg/l	
121-14-2	2,4-Dinitrotoluene	ND	D030		0.050	mg/l	
606-20-2	2,6-Dinitrotoluene	ND			0.050	mg/l	
91-94-1	3,3'-Dichlorobenzidine	ND			0.10	mg/l	
53-70-3	Dibenzo(a,h)anthracene	ND			0.050	mg/l	
132-64-9	Dibenzofuran	ND			0.050	mg/l	
84-74-2	Di-n-butyl phthalate	ND			0.050	mg/l	
117-84-0	Di-n-octyl phthalate	ND			0.050	mg/l	
84-66-2	Diethyl phthalate	ND			0.050	mg/l	
131-11-3	Dimethyl phthalate	ND			0.050	mg/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND			0.050	mg/l	
206-44-0	Fluoranthene	ND			0.050	mg/l	
86-73-7	Fluorene	ND			0.050	mg/l	
118-74-1	Hexachlorobenzene	ND	D032		0.050	mg/l	
87-68-3	Hexachlorobutadiene	ND	D033		0.050	mg/l	
77-47-4	Hexachlorocyclopentadiene	ND			0.050	mg/l	
67-72-1	Hexachloroethane	ND	D034		0.050	mg/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND			0.050	mg/l	
78-59-1	Isophorone	ND			0.050	mg/l	
91-57-6	2-Methylnaphthalene	ND			0.050	mg/l	
88-74-4	2-Nitroaniline	ND			0.050	mg/l	
99-09-2	3-Nitroaniline	ND			0.050	mg/l	
100-01-6	4-Nitroaniline	ND			0.050	mg/l	
91-20-3	Naphthalene	ND			0.050	mg/l	
98-95-3	Nitrobenzene	ND	D036		0.050	mg/l	
621-64-7	N-Nitroso-di-n-propylamine	ND			0.050	mg/l	
86-30-6	N-Nitrosodiphenylamine	ND			0.050	mg/l	
85-01-8	Phenanthrene	ND			0.050	mg/l	
129-00-0	Pyrene	ND			0.050	mg/l	
120-82-1	1,2,4-Trichlorobenzene	ND			0.050	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	56%		21-100%
4165-62-2	Phenol-d5	36%		10-94%
118-79-6	2,4,6-Tribromophenol	85%		10-123%
4165-60-0	Nitrobenzene-d5	90%		35-114%
321-60-8	2-Fluorobiphenyl	87%		43-116%
1718-51-0	Terphenyl-d14	109%		33-141%

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MCL = Maximum Contamination Level (not available)
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	29D00601		
Lab Sample ID:	F6635-6A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	SW846 8270C	**Percent Solids:**	97.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

ABN TCL List

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q

(a) Sample extracted beyond hold time; reported results are considered minimum values.

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00101		
Lab Sample ID:	F6635-1	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	FLORIDA-PRO	**Percent Solids:**	97.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP08524.D	1	06/06/00	CCJ	06/03/00	OP1637	GOP388
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	49.0	8.6	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	92%		40-140%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00201		
Lab Sample ID:	F6635-2	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	FLORIDA-PRO	**Percent Solids:**	98.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP08547.D	10	06/06/00	CCJ	06/03/00	OP1637	GOP388
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	257	84	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	95%		40-140%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00301		
Lab Sample ID:	F6635-3	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	FLORIDA-PRO	**Percent Solids:**	97.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP08548.D	2	06/06/00	CCJ	06/03/00	OP1637	GOP388
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	27.0	17	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	93%		40-140%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00401		
Lab Sample ID:	F6635-4	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	FLORIDA-PRO	**Percent Solids:**	98.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP08528.D	4	06/06/00	CCJ	06/03/00	OP1637	GOP388
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	60.7	34	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	102%		40-140%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00501		
Lab Sample ID:	F6635-5	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	FLORIDA-PRO	**Percent Solids:**	98.6
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP08529.D	10	06/06/00	CCJ	06/03/00	OP1637	GOP388
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	151	84	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	92%		40-140%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00601		
Lab Sample ID:	F6635-6	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	FLORIDA-PRO	**Percent Solids:**	97.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP08549.D	2	06/06/00	CCJ	06/03/00	OP1637	GOP388
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	31.4	17	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	95%		40-140%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	29D00101		
Lab Sample ID:	F6635-1A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	FLORIDA-PRO	**Percent Solids:**	97.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP08619.D	1	06/12/00	CCJ	06/09/00	OP1665	GOP390
Run #2							

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
	TPH (C8-C40)	ND			2.5	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	107%		40-140%

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00201		
Lab Sample ID:	F6635-2A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	FLORIDA-PRO	**Percent Solids:**	98.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP08621.D	1	06/12/00	CCJ	06/09/00	OP1665	GOP390
Run #2							

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
	TPH (C8-C40)	ND			2.5	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	105%		40-140%

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00301		
Lab Sample ID:	F6635-3A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	FLORIDA-PRO	**Percent Solids:**	97.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP08622.D	1	06/12/00	CCJ	06/09/00	OP1665	GOP390
Run #2							

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
	TPH (C8-C40)	ND			2.5	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	122%		40-140%

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00401		
Lab Sample ID:	F6635-4A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	FLORIDA-PRO	**Percent Solids:**	98.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP08623.D	1	06/12/00	CCJ	06/09/00	OP1665	GOP390
Run #2							

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
	TPH (C8-C40)	ND			2.5	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	111%		40-140%

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00501		
Lab Sample ID:	F6635-5A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	FLORIDA-PRO	**Percent Solids:**	98.6
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP08624.D	1	06/12/00	CCJ	06/09/00	OP1665	GOP390
Run #2							

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
	TPH (C8-C40)	ND			2.5	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	111%		40-140%

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

Report of Analysis

Client Sample ID:	29D00601		
Lab Sample ID:	F6635-6A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
Method:	FLORIDA-PRO	**Percent Solids:**	97.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP08625.D	1	06/12/00	CCJ	06/09/00	OP1665	GOP390
Run #2							

CAS No.	Compound	Result	HW#	MCL	RL	Units	Q
	TPH (C8-C40)	ND			2.5	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	109%		40-140%

ND = Not detected
MCL = Maximum Contamination Level (not available)
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

APPENDIX C

SUPPORT DOCUMENTATION

HOLDING TIME
07/28/00

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/KG	29D00101	F6635-1	NORMAL	F6635	HG	05/26/00	06/05/00	06/06/00	10	1	11
MG/KG	29D00201	F6635-2	NORMAL	F6635	HG	05/26/00	06/05/00	06/06/00	10	1	11
MG/KG	29D00301	F6635-3	NORMAL	F6635	HG	05/26/00	06/05/00	06/06/00	10	1	11
MG/KG	29D00401	F6635-4	NORMAL	F6635	HG	05/26/00	06/05/00	06/06/00	10	1	11
MG/KG	29D00501	F6635-5	NORMAL	F6635	HG	05/26/00	06/05/00	06/06/00	10	1	11
MG/KG	29D00601	F6635-6	NORMAL	F6635	HG	05/26/00	06/05/00	06/06/00	10	1	11
MG/KG	29D00101	F6635-1	NORMAL	F6635	M	05/26/00	06/05/00	06/07/00	10	2	12
MG/KG	29D00201	F6635-2	NORMAL	F6635	M	05/26/00	06/05/00	06/07/00	10	2	12
MG/KG	29D00301	F6635-3	NORMAL	F6635	M	05/26/00	06/05/00	06/07/00	10	2	12
MG/KG	29D00401	F6635-4	NORMAL	F6635	M	05/26/00	06/05/00	06/07/00	10	2	12
MG/KG	29D00501	F6635-5	NORMAL	F6635	M	05/26/00	06/05/00	06/07/00	10	2	12
MG/KG	29D00601	F6635-6	NORMAL	F6635	M	05/26/00	06/05/00	06/07/00	10	2	12
UG/KG	29D00101	F6635-1	NORMAL	F6635	OS	05/26/00	06/03/00	06/03/00	8	0	8
UG/KG	29D00201	F6635-2	NORMAL	F6635	OS	05/26/00	06/03/00	06/03/00	8	0	8
UG/KG	29D00301	F6635-3	NORMAL	F6635	OS	05/26/00	06/03/00	06/03/00	8	0	8
UG/KG	29D00401	F6635-4	NORMAL	F6635	OS	05/26/00	06/03/00	06/03/00	8	0	8
UG/KG	29D00501	F6635-5	NORMAL	F6635	OS	05/26/00	06/03/00	06/03/00	8	0	8
UG/KG	29D00601	F6635-6	NORMAL	F6635	OS	05/26/00	06/03/00	06/03/00	8	0	8
UG/KG	29D00101	F6635-1	NORMAL	F6635	OV	05/26/00	/ /	06/03/00	0	0	8
UG/KG	29D00201	F6635-2	NORMAL	F6635	OV	05/26/00	/ /	06/03/00	0	0	8
UG/KG	29D00301	F6635-3	NORMAL	F6635	OV	05/26/00	/ /	06/03/00	0	0	8
UG/KG	29D00401	F6635-4	NORMAL	F6635	OV	05/26/00	/ /	06/03/00	0	0	8
UG/KG	29D00501	F6635-5	NORMAL	F6635	OV	05/26/00	/ /	06/03/00	0	0	8
UG/KG	29D00601	F6635-6	NORMAL	F6635	OV	05/26/00	/ /	06/03/00	0	0	8
UG/L	29TB052600	F6635-7	NORMAL	F6635	OV	05/26/00	/ /	06/06/00	0	0	11

									TO EXTR_DATE	TO ANAL_DATE	TO ANAL_DATE
UG/L	29D00101	F6635-1A	NORMAL	F6635	SPLPM	05/26/00	06/21/00	06/23/00	26	2	28
UG/L	29D00201	F6635-2A	NORMAL	F6635	SPLPM	05/26/00	06/21/00	06/23/00	26	2	28
UG/L	29D00301	F6635-3A	NORMAL	F6635	SPLPM	05/26/00	06/21/00	06/23/00	26	2	28
UG/L	29D00401	F6635-4A	NORMAL	F6635	SPLPM	05/26/00	06/21/00	06/23/00	26	2	28
UG/L	29D00501	F6635-5A	NORMAL	F6635	SPLPM	05/26/00	06/21/00	06/23/00	26	2	28
UG/L	29D00601	F6635-6A	NORMAL	F6635	SPLPM	05/26/00	06/21/00	06/23/00	26	2	28
UG/L	29D00301	F6635-3A	NORMAL	F6635	SPLPS	05/26/00	06/17/00	06/20/00	22	3	25
UG/L	29D00401	F6635-4A	NORMAL	F6635	SPLPS	05/26/00	06/17/00	06/20/00	22	3	25
UG/L	29D00501	F6635-5A	NORMAL	F6635	SPLPS	05/26/00	06/17/00	06/20/00	22	3	25
UG/L	29D00601	F6635-6A	NORMAL	F6635	SPLPS	05/26/00	06/17/00	06/20/00	22	3	25
UG/L	29D00101	F6635-1A	NORMAL	F6635	SPLPT	05/26/00	06/09/00	06/12/00	14	3	17
UG/L	29D00201	F6635-2A	NORMAL	F6635	SPLPT	05/26/00	06/09/00	06/12/00	14	3	17
UG/L	29D00301	F6635-3A	NORMAL	F6635	SPLPT	05/26/00	06/09/00	06/12/00	14	3	17
UG/L	29D00401	F6635-4A	NORMAL	F6635	SPLPT	05/26/00	06/09/00	06/12/00	14	3	17
UG/L	29D00501	F6635-5A	NORMAL	F6635	SPLPT	05/26/00	06/09/00	06/12/00	14	3	17
UG/L	29D00601	F6635-6A	NORMAL	F6635	SPLPT	05/26/00	06/09/00	06/12/00	14	3	17
UG/L	29D00101	F6635-1A	NORMAL	F6635	SPLPV	05/26/00	06/08/00	06/09/00	13	1	14
UG/L	29D00201	F6635-2A	NORMAL	F6635	SPLPV	05/26/00	06/08/00	06/09/00	13	1	14
UG/L	29D00301	F6635-3A	NORMAL	F6635	SPLPV	05/26/00	06/08/00	06/09/00	13	1	14
UG/L	29D00401	F6635-4A	NORMAL	F6635	SPLPV	05/26/00	06/08/00	06/09/00	13	1	14
UG/L	29D00501	F6635-5A	NORMAL	F6635	SPLPV	05/26/00	06/08/00	06/09/00	13	1	14
UG/L	29D00601	F6635-6A	NORMAL	F6635	SPLPV	05/26/00	06/08/00	06/09/00	13	1	14
MG/KG	29D00101	F6635-1	NORMAL	F6635	TPH	05/26/00	06/03/00	06/06/00	8	3	11
MG/KG	29D00201	F6635-2	NORMAL	F6635	TPH	05/26/00	06/03/00	06/06/00	8	3	11
MG/KG	29D00301	F6635-3	NORMAL	F6635	TPH	05/26/00	06/03/00	06/06/00	8	3	11
MG/KG	29D00401	F6635-4	NORMAL	F6635	TPH	05/26/00	06/03/00	06/06/00	8	3	11
MG/KG	29D00501	F6635-5	NORMAL	F6635	TPH	05/26/00	06/03/00	06/06/00	8	3	11

Units	Reference	Lab Id	QC Type	Sog	Soil	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/KG	29D00601	F6635-6	NORMAL	F6635	TPH	05/26/00	06/03/00	06/06/00	8	3	11

Method Blank Summary

Laboratory DRAFT - Not for Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VH90-MB	H007786.D	1	06/03/00	RAW	n/a	n/a	VH90

The QC reported here applies to the following samples: **Method: SW846 8260B**

F6522-6, F6522-7, F6522-8, F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6, F6650-1, F6650-2, F6650-3

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/kg	
107-02-8	Acrolein	ND	10	ug/kg	
107-13-1	Acrylonitrile	ND	10	ug/kg	
71-43-2	Benzene	ND	5.0	ug/kg	
108-86-1	Bromobenzene	ND	5.0	ug/kg	
74-97-5	Bromochloromethane	ND	5.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.0	ug/kg	
75-25-2	Bromoform	ND	5.0	ug/kg	
104-51-8	n-Butylbenzene	ND	5.0	ug/kg	
135-98-8	sec-Butylbenzene	ND	5.0	ug/kg	
98-06-6	tert-Butylbenzene	ND	5.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.0	ug/kg	
75-00-3	Chloroethane	ND	5.0	ug/kg	
67-66-3	Chloroform	ND	5.0	ug/kg	
544-10-5	1-Chlorohexane	ND	5.0	ug/kg	
95-49-8	o-Chlorotoluene	ND	5.0	ug/kg	
106-43-4	p-Chlorotoluene	ND	5.0	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	10	ug/kg	
75-15-0	Carbon disulfide	ND	10	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.0	ug/kg	
563-58-6	1,1-Dichloropropene	ND	5.0	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/kg	
106-93-4	1,2-Dibromoethane	ND	5.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.0	ug/kg	
142-28-9	1,3-Dichloropropane	ND	5.0	ug/kg	
108-20-3	Di-Isopropyl ether	ND	5.0	ug/kg	
123-91-1	1,4-Dioxane	ND	250	ug/kg	
594-20-7	2,2-Dichloropropane	ND	5.0	ug/kg	
124-48-1	Dibromochloromethane	ND	5.0	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.0	ug/kg	
541-73-1	m-Dichlorobenzene	ND	5.0	ug/kg	

Method Blank Summary

Laboratory DRAFT - Not for Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VH90-MB	H007786.D	1	06/03/00	RAW	n/a	n/a	VH90

The QC reported here applies to the following samples: **Method: SW846 8260B**

F6522-6, F6522-7, F6522-8, F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6, F6650-1, F6650-2, F6650-3

CAS No.	Compound	Result	RL	Units	Q
95-50-1	o-Dichlorobenzene	ND	5.0	ug/kg	
106-46-7	p-Dichlorobenzene	ND	5.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.0	ug/kg	
540-59-0	1,2-Dichloroethene (total)	ND	10	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.0	ug/kg	
76-13-1	Freon 113	ND	5.0	ug/kg	
591-78-6	2-Hexanone	ND	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	5.0	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	ug/kg	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	10	ug/kg	
74-83-9	Methyl bromide	ND	5.0	ug/kg	
74-87-3	Methyl chloride	ND	5.0	ug/kg	
74-95-3	Methylene bromide	ND	5.0	ug/kg	
75-09-2	Methylene chloride	1.2	10	ug/kg	J
78-93-3	Methyl ethyl ketone	ND	10	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	5.0	ug/kg	
91-20-3	Naphthalene	ND	5.0	ug/kg	
79-46-9	2-Nitropropane	ND	10	ug/kg	
103-65-1	n-Propylbenzene	ND	5.0	ug/kg	
100-42-5	Styrene	ND	5.0	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.0	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	5.0	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.0	ug/kg	
108-88-3	Toluene	ND	5.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.0	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.0	ug/kg	
75-01-4	Vinyl chloride	ND	5.0	ug/kg	

Method Blank Summary

Laboratory DRAFT - Not for Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VH90-MB	H007786.D	1	06/03/00	RAW	n/a	n/a	VH90

The QC reported here applies to the following samples: **Method: SW846 8260B**

F6522-6, F6522-7, F6522-8, F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6, F6650-1, F6650-2, F6650-3

CAS No.	Compound	Result	RL	Units	Q
108-05-4	Vinyl Acetate	ND	10	ug/kg	
1330-20-7	Xylene (total)	ND	15	ug/kg	
	m,p-Xylene	ND	10	ug/kg	
95-47-6	o-Xylene	ND	5.0	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	99%	71-122%
2037-26-5	Toluene-D8	104%	73-128%
460-00-4	4-Bromofluorobenzene	109%	53-158%
17060-07-0	1,2-Dichloroethane-D4	110%	71-122%

Volatile Surrogate Recovery Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Method: SW846 8260B **Matrix:** LEACHATE

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
F6635-7	G0013281.D	108.0	112.0	101.0	106.0
F6635-1A	G0013348.D	108.0	111.0	97.0	104.0
F6635-2A	G0013349.D	104.0	108.0	97.0	103.0
F6635-3A	G0013350.D	102.0	109.0	100.0	103.0
F6635-4A	G0013351.D	106.0	110.0	98.0	100.0
F6635-5A	G0013352.D	110.0	115.0	98.0	104.0
F6635-6A	G0013353.D	107.0	113.0	101.0	99.0
F6630-28MS	G0013250.D	109.0	117.0	106.0	100.0
F6630-28MSD	G0013251.D	112.0	122.0	100.0	104.0
F6635-2AMS	G0013356.D	112.0	123.0	103.0	104.0
F6635-2MS [a]	G0013356.D	112.0	123.0	103.0	104.0
VG369-BS3	G0013273.D	112.0	122.0	103.0	104.0
VG369-MB3	G0013274.D	117.0	123.0	103.0	102.0
VG374-BS	G0013347.D	112.0	121.0	102.0	106.0
VG369-MB1	G0013226.D	118.0	120.0	102.0	102.0
VG369-MB2	G0013256.D	115.0	114.0	99.0	108.0

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	80-120%
S2 = 1,2-Dichloroethane-D4	69-128%
S3 = Toluene-D8	80-120%
S4 = 4-Bromofluorobenzene	80-120%

(a) SAMPLE NOT YET APPROVED BY LAB. DO NOT REPORT.

Volatile Surrogate Recovery Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Method: SW846 8260B **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
F6635-1	H007792.D	101.0	99.0	110.0	123.0*
F6635-2	H007793.D	101.0	103.0	111.0	123.0*
F6635-3	H007794.D	99.0	101.0	111.0	123.0*
F6635-4	H007795.D	103.0	107.0	114.0	121.0
F6635-5	H007796.D	106.0	102.0	117.0	122.0
F6635-6	H007797.D	105.0	107.0	113.0	129.0*
F6635-1MS	H007816.D	91.0	98.0	105.0	93.0
F6635-1MSD	H007817.D	91.0	100.0	106.0	92.0
VH90-BS	H007785.D	100.0	101.0	101.0	106.0
VH90-MB	H007786.D	99.0	104.0	109.0	110.0
VH90-MB2	H007804.D	88.0	102.0	107.0	86.0

- no positive hits in sample
∴ no impact
JCK 10/9/00

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	71-122%
S2 = Toluene-D8	73-128%
S3 = 4-Bromofluorobenzene	53-158%
S4 = 1,2-Dichloroethane-D4	71-122%

Matrix Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

	Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
(a)	F6635-2MS	G0013356.D	1	06/09/00	JG	n/a	n/a	VG374

The QC reported here applies to the following samples: **Method:** SW846 8260B

F6635-1A, F6635-2A, F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Compound	ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
67-64-1	Acetone			125	314	251	37-160
71-43-2	Benzene			25	25.3		61-141
75-27-4	Bromodichloromethane				25.5		72-125
75-25-2	Bromoform				20.6		62-126
108-90-7	Chlorobenzene				23.4		75-125
75-00-3	Chloroethane				29.6		58-134
67-66-3	Chloroform				36.6	146	73-125
75-15-0	Carbon disulfide			125	112		70-146
56-23-5	Carbon tetrachloride			25	27.9		62-126
75-34-3	1,1-Dichloroethane				29.3		75-125
75-35-4	1,1-Dichloroethylene				25.1		73-125
107-06-2	1,2-Dichloroethane				27.1		66-130
78-87-5	1,2-Dichloropropane				28.4		75-125
124-48-1	Dibromochloromethane				24.3		75-125
10061-01-5	cis-1,3-Dichloropropene				24.2		58-136
540-59-0	1,2-Dichloroethene (total)			50	58.0		57-137
10061-02-6	trans-1,3-Dichloropropene			25	24.1		49-139
100-41-4	Ethylbenzene			25	24.6		67-128
591-78-6	2-Hexanone			125	143		60-135
108-10-1	4-Methyl-2-pentanone			125	132		64-131
74-83-9	Methyl bromide			25	28.0		32-149
74-87-3	Methyl chloride				25.2		59-143
75-09-2	Methylene chloride				58.6	234	73-125
78-93-3	Methyl ethyl ketone			125	172	138	54-133
100-42-5	Styrene			25	24.5		74-127
71-55-6	1,1,1-Trichloroethane				28.6		72-125
79-34-5	1,1,2,2-Tetrachloroethane				14.0	56	68-125
79-00-5	1,1,2-Trichloroethane				25.8		75-125
127-18-4	Tetrachloroethylene				26.9		75-125
108-88-3	Toluene				26.0		72-125
79-01-6	Trichloroethylene				35.4	142	72-125
75-01-4	Vinyl chloride				29.6		63-138
1330-20-7	Xylene (total)			75	73.8		69-127

(assumed same spiking levels as blank spike)

LCS was OK
∴ No quantification based on MS

Matrix Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

	Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
(a)	F6635-2MS	G0013356.D	1	06/09/00	JG	n/a	n/a	VG374

The QC reported here applies to the following samples: **Method:** SW846 8260B

F6635-1A, F6635-2A, F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Surrogate Recoveries	MS	Limits
1868-53-7	Dibromofluoromethane	112%	80-120%
2037-26-5	Toluene-D8	103%	80-120%
460-00-4	4-Bromofluorobenzene	104%	80-120%
17060-07-0	1,2-Dichloroethane-D4	123%	69-128%

(a) SAMPLE NOT YET APPROVED BY LAB. DO NOT REPORT.

Blank Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG369-BS3	G0013273.D	1	06/06/00	JG	n/a	n/a	VG369

The QC reported here applies to the following samples: **Method:** SW846 8260B

F6635-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	135	108	37-160
71-43-2	Benzene	25	25.8	103	61-141
75-27-4	Bromodichloromethane	25	26.8	107	72-125
75-25-2	Bromoform	25	20.9	84	62-126
108-90-7	Chlorobenzene	25	23.8	95	75-125
75-00-3	Chloroethane	25	30.4	122	58-134
67-66-3	Chloroform	25	30.0	120	73-125
75-15-0	Carbon disulfide	125	132	106	70-146
56-23-5	Carbon tetrachloride	25	28.7	115	62-126
75-34-3	1,1-Dichloroethane	25	30.3	121	75-125
75-35-4	1,1-Dichloroethylene	25	27.9	112	73-125
107-06-2	1,2-Dichloroethane	25	28.3	113	66-130
78-87-5	1,2-Dichloropropane	25	27.8	111	75-125
124-48-1	Dibromochloromethane	25	24.4	98	75-125
10061-01-5	cis-1,3-Dichloropropene	25	24.3	97	58-136
540-59-0	1,2-Dichloroethene (total)	50	59.0	118	57-137
10061-02-6	trans-1,3-Dichloropropene	25	24.6	98	49-139
100-41-4	Ethylbenzene	25	24.2	97	67-128
591-78-6	2-Hexanone	125	132	106	60-135
108-10-1	4-Methyl-2-pentanone	125	131	105	64-131
74-83-9	Methyl bromide	25	25.4	102	32-149
74-87-3	Methyl chloride	25	25.5	102	59-143
75-09-2	Methylene chloride	25	27.8	111	73-125
78-93-3	Methyl ethyl ketone	125	149	119	54-133
100-42-5	Styrene	25	23.8	95	74-127
71-55-6	1,1,1-Trichloroethane	25	29.5	118	72-125
79-34-5	1,1,2,2-Tetrachloroethane	25	24.0	96	68-125
79-00-5	1,1,2-Trichloroethane	25	24.8	99	75-125
127-18-4	Tetrachloroethylene	25	25.8	103	75-125
108-88-3	Toluene	25	25.6	102	72-125
79-01-6	Trichloroethylene	25	26.2	105	72-125
75-01-4	Vinyl chloride	25	30.5	122	63-138
1330-20-7	Xylene (total)	75	73.4	98	69-127

all ok

Blank Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG369-BS3	G0013273.D	1	06/06/00	JG	n/a	n/a	VG369

The QC reported here applies to the following samples: **Method:** SW846 8260B

F6635-7

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	112%	80-120%
17060-07-0	1,2-Dichloroethane-D4	122%	69-128%
2037-26-5	Toluene-D8	103%	80-120%
460-00-4	4-Bromofluorobenzene	104%	80-120%

Blank Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG374-BS	G0013347.D	1	06/09/00	JG	n/a	n/a	VG374

The QC reported here applies to the following samples: **Method:** SW846 8260B

F6635-1A, F6635-2A, F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	130	104	37-160
71-43-2	Benzene	25	25.8	103	61-141
75-27-4	Bromodichloromethane	25	25.7	103	72-125
75-25-2	Bromoform	25	20.7	83	62-126
108-90-7	Chlorobenzene	25	24.0	96	75-125
75-00-3	Chloroethane	25	30.2	121	58-134
67-66-3	Chloroform	25	29.6	118	73-125
75-15-0	Carbon disulfide	125	117	94	70-146
56-23-5	Carbon tetrachloride	25	27.7	111	62-126
75-34-3	1,1-Dichloroethane	25	29.3	117	75-125
75-35-4	1,1-Dichloroethylene	25	25.9	104	73-125
107-06-2	1,2-Dichloroethane	25	26.8	107	66-130
78-87-5	1,2-Dichloropropane	25	28.3	113	75-125
124-48-1	Dibromochloromethane	25	23.3	93	75-125
10061-01-5	cis-1,3-Dichloropropene	25	24.4	98	58-136
540-59-0	1,2-Dichloroethene (total)	50	58.1	116	57-137
10061-02-6	trans-1,3-Dichloropropene	25	23.5	94	49-139
100-41-4	Ethylbenzene	25	24.7	99	67-128
591-78-6	2-Hexanone	125	124	99	60-135
108-10-1	4-Methyl-2-pentanone	125	128	102	64-131
74-83-9	Methyl bromide	25	26.0	104	32-149
74-87-3	Methyl chloride	25	25.6	102	59-143
75-09-2	Methylene chloride	25	27.0	108	73-125
78-93-3	Methyl ethyl ketone	125	156	125	54-133
100-42-5	Styrene	25	24.3	97	74-127
71-55-6	1,1,1-Trichloroethane	25	28.5	114	72-125
79-34-5	1,1,2,2-Tetrachloroethane	25	24.9	100	68-125
79-00-5	1,1,2-Trichloroethane	25	24.6	98	75-125
127-18-4	Tetrachloroethylene	25	25.6	102	75-125
108-88-3	Toluene	25	24.9	100	72-125
79-01-6	Trichloroethylene	25	26.5	106	72-125
75-01-4	Vinyl chloride	25	29.8	119	63-138
1330-20-7	Xylene (total)	75	74.9	100	69-127

Blank Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG374-BS	G0013347.D	1	06/09/00	JG	n/a	n/a	VG374

The QC reported here applies to the following samples: **Method:** SW846 8260B

F6635-1A, F6635-2A, F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	112%	80-120%
2037-26-5	Toluene-D8	102%	80-120%
460-00-4	4-Bromofluorobenzene	106%	80-120%
17060-07-0	1,2-Dichloroethane-D4	121%	69-128%

Blank Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VH90-BS	H007785.D	1	06/03/00	RAW	n/a	n/a	VH90

The QC reported here applies to the following samples: **Method:** SW846 8260B

F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
67-64-1	Acetone	250	245	98	17-172
71-43-2	Benzene	50	48.5	97	40-125
75-27-4	Bromodichloromethane	50	49.5	99	37-130
75-25-2	Bromoform	50	53.0	106	27-125
108-90-7	Chlorobenzene	50	48.0	96	34-129
75-00-3	Chloroethane	50	49.9	100	33-145
67-66-3	Chloroform	50	48.5	97	40-127
75-15-0	Carbon disulfide	250	221	88	33-139
56-23-5	Carbon tetrachloride	50	52.7	105	30-131
75-34-3	1,1-Dichloroethane	50	42.9	86	44-134
75-35-4	1,1-Dichloroethylene	50	44.3	89	36-130
107-06-2	1,2-Dichloroethane	50	50.1	100	39-129
78-87-5	1,2-Dichloropropane	50	49.5	99	42-130
124-48-1	Dibromochloromethane	50	52.8	106	32-135
10061-01-5	cis-1,3-Dichloropropene	50	50.0	100	35-125
540-59-0	1,2-Dichloroethene (total)	100	93.0	93	39-125
10061-02-6	trans-1,3-Dichloropropene	50	52.2	104	36-129
100-41-4	Ethylbenzene	50	50.4	101	18-139
591-78-6	2-Hexanone	250	279	112	37-147
108-10-1	4-Methyl-2-pentanone	250	252	101	38-135
74-83-9	Methyl bromide	50	51.9	104	34-143
74-87-3	Methyl chloride	50	41.8	84	33-146
75-09-2	Methylene chloride	50	39.4	79	39-142
78-93-3	Methyl ethyl ketone	250	276	110	35-143
100-42-5	Styrene	50	53.3	107	21-131
71-55-6	1,1,1-Trichloroethane	50	49.2	98	37-126
79-34-5	1,1,2,2-Tetrachloroethane	50	49.0	98	35-132
79-00-5	1,1,2-Trichloroethane	50	48.3	97	46-130
127-18-4	Tetrachloroethylene	50	50.0	100	27-135
108-88-3	Toluene	50	49.3	99	24-138
79-01-6	Trichloroethylene	50	48.5	97	40-125
75-01-4	Vinyl chloride	50	48.2	96	42-131
1330-20-7	Xylene (total)	150	156	104	32-137

Blank Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VH90-BS	H007785.D	1	06/03/00	RAW	n/a	n/a	VH90

The QC reported here applies to the following samples: **Method:** SW846 8260B

F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	71-122%
2037-26-5	Toluene-D8	101%	73-128%
460-00-4	4-Bromofluorobenzene	101%	53-158%
17060-07-0	1,2-Dichloroethane-D4	106%	71-122%

Method Blank Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG369-MB3	G0013274.D	1	06/06/00	JG	n/a	n/a	VG369

The QC reported here applies to the following samples: **Method:** SW846 8260B

F6635-7

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	ug/l	
75-25-2	Bromoform	ND	2.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-00-3	Chloroethane	ND	5.0	ug/l	
67-66-3	Chloroform	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
591-78-6	2-Hexanone	ND	10	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	ug/l	
74-83-9	Methyl bromide	ND	5.0	ug/l	
74-87-3	Methyl chloride	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	ug/l	
100-42-5	Styrene	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

Method Blank Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG369-MB3	G0013274.D	1	06/06/00	JG	n/a	n/a	VG369

The QC reported here applies to the following samples: **Method:** SW846 8260B

F6635-7

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	117%	80-120%
17060-07-0	1,2-Dichloroethane-D4	123%	69-128%
2037-26-5	Toluene-D8	103%	80-120%
460-00-4	4-Bromofluorobenzene	102%	80-120%

Method Blank Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VH90-MB	H007786.D	1	06/03/00	RAW	n/a	n/a	VH90

The QC reported here applies to the following samples: **Method:** SW846 8260B

F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/kg	
71-43-2	Benzene	ND	5.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.0	ug/kg	
75-25-2	Bromoform	ND	5.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.0	ug/kg	
75-00-3	Chloroethane	ND	5.0	ug/kg	
67-66-3	Chloroform	ND	5.0	ug/kg	
75-15-0	Carbon disulfide	ND	10	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.0	ug/kg	
124-48-1	Dibromochloromethane	ND	5.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.0	ug/kg	
540-59-0	1,2-Dichloroethene (total)	ND	10	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.0	ug/kg	
591-78-6	2-Hexanone	ND	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	10	ug/kg	
74-83-9	Methyl bromide	ND	5.0	ug/kg	
74-87-3	Methyl chloride	ND	5.0	ug/kg	
75-09-2	Methylene chloride	ND	10	ug/kg	
78-93-3	Methyl ethyl ketone	ND	10	ug/kg	
100-42-5	Styrene	ND	5.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.0	ug/kg	
108-88-3	Toluene	ND	5.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.0	ug/kg	
75-01-4	Vinyl chloride	ND	5.0	ug/kg	
1330-20-7	Xylene (total)	ND	15	ug/kg	

Method Blank Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VH90-MB	H007786.D	1	06/03/00	RAW	n/a	n/a	VH90

The QC reported here applies to the following samples: **Method:** SW846 8260B

F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	99%	71-122%
2037-26-5	Toluene-D8	104%	73-128%
460-00-4	4-Bromofluorobenzene	109%	53-158%
17060-07-0	1,2-Dichloroethane-D4	110%	71-122%

Response Factor Report MSVOA3

29001 3 3 1 5 6

Raw

Method : C:\HPCHEM\1\METHODS\8260S.M (RTE Integrator)
Title : SWA 5035/8260B
Last Update : Thu Jun 01 11:35:34 2000
Response via : Initial Calibration

Calibration Files

1	=H007727.D	2	=H007728.D	3	=H007729.D
4	=H007730.D	5	=H007731.D	6	=H007732.D

		Compound	1	2	3	4	5	6	Avg	%RSD
1)	I	Fluorobenzene	----------	----------	----------	ISTD	----------	----------	----------	
2)		Dichlorodifluoromet	0.356	0.353	0.398	0.409	0.411	0.374	0.383	6.75
3)	P	Chloromethane		0.477	0.560	0.570	0.583	0.536	0.545	7.68
4)	C	Vinyl Chloride	0.406	0.430	0.486	0.493	0.494	0.461	0.462	7.93
5)		Bromomethane		0.163	0.220	0.215	0.239	0.204	0.208	13.63
6)		Chloroethane	0.229	0.242	0.286	0.281	0.283	0.259	0.263	9.00
7)		Trichlorofluorometh	0.549	0.549	0.603	0.587	0.597	0.545	0.572	4.71
8)		Acrolein	0.045	0.035	0.050	0.042	0.047	0.038	0.043	not rec 13.38
9)	C	1,1-Dichloroethene	0.570	0.581	0.633	0.631	0.635	0.587	0.606	4.94
10)		Freon 113	0.317	0.344	0.348	0.358	0.361	0.326	0.342	5.06
11)		Acetone	0.197	0.197	0.223	0.182	0.175	0.158	0.189	11.86
12)		Carbon Disulfide	0.933	1.002	1.105	1.110	1.130	1.056	1.056	7.21
13)		Methylene Chloride		0.649	0.670	0.614	0.592	0.570	0.619	6.57
14)		trans-1,2-Dichloroe	0.535	0.587	0.639	0.652	0.675	0.611	0.616	8.16
15)		Acrylonitrile	0.114	0.115	0.142	0.129	0.140	0.129	0.128	9.44
16)		Methyl Tert Butyl E		0.703	0.850	0.865	0.925	0.886	0.846	9.98
17)	P	1,1-Dichloroethane	0.594	0.641	0.718	0.702	0.719	0.671	0.674	7.33
18)		Vinyl acetate		0.724	0.834	0.928	1.003	0.944	0.887	12.32
19)		Di-isopropyl ether		1.198	1.339	1.391	1.460	1.371	1.352	7.15
20)		2,2-Dichloropropane		0.255	0.307	0.348	0.324	0.317	0.310	11.10
21)		cis-1,2-Dichloroeth	0.276	0.293	0.348	0.346	0.316	0.294	0.312	9.56
22)		2-Butanone		0.146	0.181	0.176	0.173	0.167	0.169	7.97
23)		Bromochloromethane	0.148	0.156	0.171	0.147	0.153	0.153	0.155	5.52
24)	C	Chloroform	0.650	0.614	0.712	0.611	0.609	0.583	0.630	7.26
25)		1,1,1-Trichloroetha	0.500	0.530	0.515	0.513	0.511	0.480	0.508	3.31
26)	S	Dibromofluoromethan	0.259	0.263	0.272	0.263	0.277	0.261	0.266	2.63
27)		1,1-Dichloropropene	0.384	0.447	0.411	0.429	0.460	0.420	0.425	6.34
28)		Carbon Tetrachlorid	0.335	0.380	0.372	0.403	0.407	0.375	0.379	6.85
29)	S	1,2-Dichloroethane-	0.419	0.407	0.409	0.385	0.396	0.365	0.397	4.94
30)		Benzene	1.130	1.234	1.190	1.211	1.211	1.150	1.188	3.36
31)		1,2-Dichloroethane	0.607	0.595	0.581	0.536	0.543	0.504	0.561	7.12
32)		Trichloroethene	0.331	0.346	0.338	0.350	0.357	0.325	0.341	3.51
33)	C	1,2-Dichloropropane	0.316	0.323	0.322	0.328	0.340	0.321	0.325	2.53
34)		Dibromomethane	0.183	0.192	0.188	0.192	0.196	0.180	0.188	3.13
35)		1,4-Dioxane		0.002	0.003	0.003	0.004	0.003	0.003	not rec 15.02
36)		Bromodichloromethan	0.427	0.406	0.423	0.440	0.456	0.439	0.432	3.96
37)		2-Nitropropane	0.052	0.075	0.069	0.082	0.098	0.099	0.079	22.47
38)		2-Chloroethyl vinyl		0.112	0.111	0.119	0.139	0.139	0.124	11.25
39)		4-Methyl-2-pentanon	0.343	0.383	0.381	0.382	0.414	0.397	0.383	6.16
40)		cis-1,3-Dichloropro		0.360	0.373	0.406	0.443	0.439	0.404	9.30
41)	I	Chlorobenzene-d5	----------	----------	----------	ISTD	----------	----------	----------	
42)	S	Toluene-d8	1.287	1.545	1.319	1.279	1.298	1.316	1.341	7.57

#) = Out of Range

Response Factor Report MSVOA3

Method : C:\HPCHEM\1\METHODS\8260S.M (RTE Integrator)
Title : SWA 5035/8260B
Last Update : Thu Jun 01 11:35:34 2000
Response via : Initial Calibration

Calibration Files
1 =H007727.D 2 =H007728.D 3 =H007729.D
4 =H007730.D 5 =H007731.D 6 =H007732.D

		Compound	1	2	3	4	5	6	Avg	%RSD
43)	C	Toluene	1.591	1.974	1.631	1.592	1.630	1.648	1.678	8.77
44)		trans-1,3-Dichlorop		0.465	0.386	0.426	0.475	0.514	0.453	10.76
45)		1,1,2-Trichloroetha	0.267	0.384	0.307	0.300	0.304	0.315	0.313	12.33
46)		Tetrachloroethene	0.479	0.570	0.449	0.438	0.440	0.443	0.470	10.95
47)		2-hexanone	0.295	0.396	0.360	0.341	0.373	0.381	0.358	10.03
48)		1,3-Dichloropropane	0.527	0.674	0.554	0.547	0.549	0.583	0.572	9.25
49)		Dibromochloromethan	0.285	0.396	0.341	0.356	0.378	0.405	0.360	12.16
50)		1,2-Dibromoethane	0.295	0.341	0.310	0.297	0.295	0.301	0.307	5.87
51)		1-Chlorohexane	0.422	0.482	0.467	0.485	0.497	0.501	0.476	6.10
52)	P	Chlorobenzene	1.052	1.048	1.055	1.024	1.040	1.029	1.041	1.22
53)		1,1,1,2-Tetrachloro	0.324	0.362	0.369	0.374	0.387	0.391	0.368	6.59
54)	C	Ethylbenzene	1.745	1.930	1.868	1.867	1.878	1.858	1.858	3.28
55)		m,p-Xylene	1.455	1.666	1.527	1.534	1.539	1.514	1.539	4.51
56)		o-Xylene	1.465	1.613	1.569	1.605	1.596	1.586	1.572	3.49
57)		Styrene	0.912	1.015	1.081	1.089	1.119	1.133	1.058	7.80
58)	P	Bromoform	0.198	0.230	0.226	0.247	0.272	0.292	0.244	13.80
59)	I	1,4-Dichlorobenzene-d	----------	----------	----------	ISTD	----------	----------	----------	
60)		Isopropylbenzene	3.363	3.065	3.028	3.076	3.096	2.950	3.096	4.54
61)	S	4-Bromofluorobenzen	1.203	1.026	1.064	1.016	1.023	1.011	1.057	6.97
62)		Bromobenzene	0.896	0.817	0.829	0.789	0.793	0.776	0.817	5.32
63)	P	1,1,2,2-Tetrachloro	0.929	0.858	0.870	0.833	0.864	0.842	0.866	3.94
64)		1,2,3-Trichloroprop	0.262	0.262	0.254	0.246	0.251	0.233	0.251	4.26
65)		n-Propylbenzene	4.182	3.974	3.862	3.860	3.805	3.628	3.885	4.74
66)		2-Chlorotoluene	2.752	2.583	2.576	2.527	2.453	2.347	2.540	5.37
67)		4-Chlorotoluene	2.847	2.704	2.596	2.593	2.533	2.406	2.613	5.75
68)		1,3,5-Trimethylbenz	2.896	2.825	2.798	2.826	2.744	2.608	2.783	3.55
69)		sec-Butylbenzene	3.502	3.317	3.174	3.324	3.293	3.119	3.288	4.08
70)		1,3-Dichlorobenzene	1.611	1.711	1.584	1.560	1.572	1.482	1.587	4.72
71)		4-Isopropyltoluene	2.312	2.667	2.513	2.650	2.657	2.538	2.556	5.34
72)		1,4-Dichlorobenzene	1.651	1.670	1.589	1.550	1.574	1.491	1.587	4.15
73)		tert-Butylbenzene	1.856	1.805	1.845	1.826	1.819	1.730	1.814	2.47
74)		n-Butylbenzene	2.339	2.796	2.446	2.660	2.696	2.574	2.585	6.53
75)		1,2-Dichlorobenzene	1.407	1.463	1.441	1.472	1.472	1.430	1.447	1.82
76)		1,2,4-Trimethylbenz	2.995	2.874	2.733	2.836	2.780	2.626	2.807	4.49
77)		1,2-Dibromo-3-Chlor	0.140	0.155	0.164	0.164	0.178	0.164	0.161	7.66
78)		1,2,4-Trichlorobenz	1.013	1.131	1.009	1.038	1.064	1.014	1.045	4.52
79)		Hexachlorobutadiene	0.740	0.858	0.718	0.758	0.755	0.686	0.752	7.72
80)		Naphthalene	1.861	2.137	2.014	2.197	2.219	2.123	2.092	6.39
81)		1,2,3-Trichlorobenz	1.034	1.111	1.009	1.040	1.033	0.965	1.032	4.59

215

(#) = Out of Range

Instrument Performance Check (BFB)

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: VH90-BFB
Lab File ID: H007783.D
Instrument ID: GCMSH
Injection Date: 06/03/00
Injection Time: 09:03

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	21149	26.7		Pass
75	30.0 - 60.0% of mass 95	45949	58.1		Pass
95	Base peak, 100% relative abundance	79088	100.0		Pass
96	5.0 - 9.0% of mass 95	5697	7.2		Pass
173	Less than 2.0% of mass 174	389	0.49	(0.68) [a]	Pass
174	50.0 - 100.0% of mass 95	56835	71.9		Pass
175	5.0 - 9.0% of mass 174	4663	5.9	(8.2) [a]	Pass
176	95.0 - 101.0% of mass 174	56067	70.9	(98.6) [a]	Pass
177	5.0 - 9.0% of mass 176	3748	4.7	(6.7) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VH90-CC88	H007784.D	06/03/00	09:20	00:17	Continuing cal 40
VH90-BS	H007785.D	06/03/00	10:01	00:58	Blank Spike
VH89-BS3	H007785.D	06/03/00	10:01	00:58	Blank Spike
VH90-MB	H007786.D	06/03/00	10:42	01:39	Method Blank
VH89-MB3	H007786.D	06/03/00	10:42	01:39	Method Blank
ZZZZZZ	H007787.D	06/03/00	11:23	02:20	(unrelated sample)
ZZZZZZ	H007789.D	06/03/00	12:45	03:42	(unrelated sample)
ZZZZZZ	H007790.D	06/03/00	13:26	04:23	(unrelated sample)
ZZZZZZ	H007791.D	06/03/00	14:07	05:04	(unrelated sample)
F6635-1	H007792.D	06/03/00	15:03	06:00	29D00101
F6635-2	H007793.D	06/03/00	15:44	06:41	29D00201
F6635-3	H007794.D	06/03/00	16:25	07:22	29D00301
F6635-4	H007795.D	06/03/00	17:06	08:03	29D00401
F6635-5	H007796.D	06/03/00	17:47	08:44	29D00501
F6635-6	H007797.D	06/03/00	18:28	09:25	29D00601
ZZZZZZ	H007798.D	06/03/00	19:09	10:06	(unrelated sample)
ZZZZZZ	H007799.D	06/03/00	19:50	10:47	(unrelated sample)
ZZZZZZ	H007800.D	06/03/00	20:31	11:28	(unrelated sample)

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\060300\H007784.D Vial: 1
Acq On : 3 Jun 2000 9:20 am Operator: RickW
Sample : CC88-40 Inst : MSVOA3
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\HPCHEM\1\METHODS\8260S.M (RTE Integrator)
Title : SWA 5035/8260B
Last Update : Thu Jun 01 11:35:34 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorobenzene	1.000	1.000	0.0	77	0.01
2		Dichlorodifluoromethane	0.383	0.359	6.3	68	0.03
3	P	Chloromethane	0.545	0.472	13.4	64	0.02
4	C	Vinyl Chloride	0.462	0.436	5.6	68	0.02
5		Bromomethane	0.208	0.174	16.3	62	0.03
6		Chloroethane	0.263	0.262	0.4	72	0.03
7		Trichlorofluoromethane	0.572	0.535	6.5	70	0.02
8		Acrolein	0.043	0.045 not TCL	-4.7	83	0.02
9	C	1,1-Dichloroethene	0.606	0.575	5.1	70	0.03
0		Freon 113	0.342	0.323	5.6	70	0.02
1		Acetone	0.189	0.221	-16.9	94	0.02
2		Carbon Disulfide	1.056	0.998	5.5	69	0.02
3		Methylene Chloride	0.619	0.544	12.1	68	0.02
4		trans-1,2-Dichloroethene	0.616	0.622	-1.0	74	0.03
5		Acrylonitrile	0.128	0.126	1.6	75	0.02
6		Methyl Tert Butyl Ether	0.846	0.816	3.5	73	0.03
7	P	1,1-Dichloroethane	0.674	0.656	2.7	72	0.02
8		Vinyl acetate	0.887	0.898	-1.2	75	0.03
9		Di-isopropyl ether	1.352	1.303	3.6	72	0.03
0		2,2-Dichloropropane	0.310	0.344	-11.0	76	0.02
1		cis-1,2-Dichloroethene	0.312	0.312	0.0	70	0.02
2		2-Butanone	0.169	0.181	-7.1	79	0.01
3		Bromochloromethane	0.155	0.152	1.9	79	0.02
4	C	Chloroform	0.630	0.662	-5.1	84	0.02
5		1,1,1-Trichloroethane	0.508	0.552	-8.7	83	0.02
6	S	Dibromofluoromethane	0.266	0.273	-2.6	80	0.02
7		1,1-Dichloropropene	0.425	0.464	-9.2	83	0.01
8		Carbon Tetrachloride	0.379	0.428	-12.9	82	0.02
9	S	1,2-Dichloroethane-d4	0.397	0.451	-13.6	90	0.02
0		Benzene	1.188	1.200	-1.0	76	0.02
1		1,2-Dichloroethane	0.561	0.627	-11.8	90	0.02
2		Trichloroethene	0.341	0.367	-7.6	81	0.02
3	C	1,2-Dichloropropane	0.325	0.336	-3.4	79	0.03
4		Dibromomethane	0.188	0.195	-3.7	78	0.02
5		1,4-Dioxane	0.003	0.003 not TCL	0.0	80	0.02
6		Bromodichloromethane	0.432	0.485	-12.3	85	0.02
7		2-Nitropropane	0.079	0.094	-19.0	88	0.02
8		2-Chloroethyl vinyl ether	0.124	0.135	-8.9	88	0.02
9		4-Methyl-2-pentanone	0.383	0.434	-13.3	88	0.01
0		cis-1,3-Dichloropropene	0.404	0.455	-12.6	87	0.02
1	I	Chlorobenzene-d5	1.000	1.000	0.0	78	0.02
2	S	Toluene-d8	1.341	1.279	4.6	78	0.02
3	C	Toluene	1.678	1.674	0.2	82	0.02
4		trans-1,3-Dichloropropene	0.453	0.499	-10.2	91	0.02

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5		1,1,2-Trichloroethane	0.313	0.314	-0.3	81	0.01
6		Tetrachloroethene	0.470	0.472	-0.4	84	0.03
7		2-hexanone	0.358	0.396	-10.6	90	0.02
8		1,3-Dichloropropane	0.572	0.589	-3.0	84	0.02
9		Dibromochloromethane	0.360	0.385	-6.9	84	0.02
0		1,2-Dibromoethane	0.307	0.305	0.7	80	0.02
1		1-Chlorohexane	0.476	0.517	-8.6	83	0.02
2	P	Chlorobenzene	1.041	1.072	-3.0	81	0.02
3		1,1,1,2-Tetrachloroethane	0.368	0.414	-12.5	86	0.02
4	C	Ethylbenzene	1.858	1.995	-7.4	83	0.02
5		m,p-Xylene	1.539	1.676	-8.9	85	0.02
6		o-Xylene	1.572	1.693	-7.7	82	0.02
7		Styrene	1.058	1.120	-5.9	80	0.02
8	P	Bromoform	0.244	0.268	-9.8	84	0.01
9	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	77	0.02
0		Isopropylbenzene	3.096	3.253	-5.1	81	0.02
1	S	4-Bromofluorobenzene	1.057	1.082	-2.4	82	0.01
2		Bromobenzene	0.817	0.824	-0.9	80	0.01
3	P	1,1,2,2-Tetrachloroethane	0.866	0.938	-8.3	86	0.02
4		1,2,3-Trichloropropane	0.251	0.279	-11.2	87	0.01
5		n-Propylbenzene	3.885	4.091	-5.3	81	0.02
6		2-Chlorotoluene	2.540	2.637	-3.8	80	0.01
7		4-Chlorotoluene	2.613	2.793	-6.9	82	0.02
8		1,3,5-Trimethylbenzene	2.783	2.931	-5.3	79	0.01
9		sec-Butylbenzene	3.288	3.383	-2.9	78	0.02
0		1,3-Dichlorobenzene	1.587	1.640	-3.3	81	0.02
1		4-Isopropyltoluene	2.556	2.670	-4.5	77	0.02
2		1,4-Dichlorobenzene	1.587	1.634	-3.0	81	0.02
3		tert-Butylbenzene	1.814	1.986	-9.5	83	0.01
4		n-Butylbenzene	2.585	2.777	-7.4	80	0.02
5		1,2-Dichlorobenzene	1.447	1.509	-4.3	79	0.02
6		1,2,4-Trimethylbenzene	2.807	2.973	-5.9	80	0.02
7		1,2-Dibromo-3-Chloropropane	0.161	0.201	-24.8#	94	0.01
8		1,2,4-Trichlorobenzene	1.045	1.094	-4.7	81	0.01
9		Hexachlorobutadiene	0.752	0.764	-1.6	77	0.01
0		Naphthalene	2.092	2.196	-5.0	77	0.01
1		1,2,3-Trichlorobenzene	1.032	1.049	-1.6	77	0.01

(#) = Out of Range SPCC's out = 0 CCC's out = 0

H007730.D 8260S.M Mon Jun 05 09:36:33 2000 RPT1

Response Factor Report MSVOA1

ethod : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
itle : SW-846 Method 8260B & EPA 624 (low level)
ast Update : Tue May 30 10:45:38 2000
esponse via : Initial Calibration

RSD >10% Quant by curve JRL

Trip Blank & all SPLIT samples J.W.

alibration Files
=G0013046.D 2 =G0013047.D 3 =G0013048.D
=G0013049.D 5 =G0013050.D 6 =G0013051.D

	Compound	1	2	3	4	5	6	Avg	%RSD
					ISTD				
I	Fluorobenzene								
	Dichlorodifluoromet		0.281	0.365	0.370	0.366	0.360	0.348	10.84
P	Chloromethane		0.191	0.260	0.272	0.264	0.262	0.250	13.25
C	Vinyl Chloride		0.210	0.271	0.284	0.274	0.273	0.262	11.22
	Bromomethane	0.167	0.156	0.209	0.217	0.210	0.214	0.195	13.60
	Chloroethane		0.132	0.173	0.173	0.163	0.165	0.161	10.59
	Trichlorofluorometh		0.399	0.475	0.485	0.471	0.479	0.462	7.70
	Acrolein		0.007	0.009	0.008	0.009	0.009	0.008 not TCL	9.35
C	1,1-Dichloroethene		0.282	0.351	0.344	0.345	0.342	0.333	8.54
	Freon 113		0.330	0.366	0.329	0.316	0.317	0.332	6.12
	Acetone		0.022	0.021	0.020	0.019	0.019	0.020 not TCL	6.33
	Carbon Disulfide		0.539	0.672	0.670	0.657	0.658	0.639	8.82
	Methylene Chloride	0.258	0.260	0.290	0.291	0.290	0.290	0.280	5.70
	trans-1,2-Dichloroe	0.237	0.277	0.302	0.286	0.293	0.299	0.283	8.46
	Acrylonitrile	0.021	0.025	0.027	0.027	0.026	0.027	0.025 not TCL	9.26
	Methyl Tert Butyl E	0.413	0.463	0.433	0.390	0.386	0.388	0.412	7.54
P	1,1-Dichloroethane	0.297	0.346	0.357	0.337	0.345	0.344	0.337	6.24
	Vinyl acetate	0.343	0.366	0.361	0.336	0.336	0.340	0.347	3.75
	Di-isopropyl ether	0.808	0.837	0.885	0.791	0.841	0.849	0.835	3.94
	2,2-Dichloropropane	0.335	0.318	0.323	0.296	0.291	0.282	0.307	6.75
	cis-1,2-Dichloroeth	0.171	0.179	0.180	0.172	0.177	0.177	0.176	2.05
	2-Butanone	0.051	0.050	0.036	0.035	0.034	0.034	0.040	19.96
	Bromochloromethane		0.095	0.093	0.096	0.100	0.099	0.097	2.99
C	Chloroform	0.330	0.355	0.368	0.358	0.355	0.345	0.352	3.69
	1,1,1-Trichloroetha	0.297	0.330	0.349	0.331	0.349	0.345	0.333	5.99
S	Dibromofluoromethan	0.149	0.159	0.150	0.136	0.141	0.140	0.146	5.82
	1,1-Dichloropropene	0.308	0.317	0.368	0.361	0.364	0.354	0.345	7.50
	Carbon Tetrachlorid	0.267	0.278	0.303	0.306	0.317	0.310	0.297	6.64
S	1,2-Dichloroethane-	0.090	0.097	0.090	0.089	0.090	0.094	0.092	3.77
	Benzene	0.752	0.727	0.808	0.820	0.823	0.821	0.792	5.26
	1,2-Dichloroethane	0.214	0.213	0.210	0.200	0.198	0.197	0.205	3.82
	Trichloroethene	0.278	0.271	0.317	0.319	0.311	0.304	0.300	6.85
) C	1,2-Dichloropropane	0.285	0.304	0.317	0.318	0.310	0.315	0.308	4.04
)	Dibromomethane		0.148	0.159	0.157	0.150	0.156	0.154	3.05
)	1,4-Dioxane	0.001	0.001	0.001	0.001	0.001	0.001	0.001 not TCL	22.06
)	Bromodichloromethan	0.337	0.389	0.414	0.408	0.400	0.407	0.393	7.26
)	2-Nitropropane		0.038	0.038	0.041	0.037	0.037	0.038 not TCL	4.55
)	2-Chloroethyl vinyl		0.015	0.017	0.018	0.017	0.018	0.017	7.66
)	4-Methyl-2-pentanon	0.183	0.184	0.180	0.180	0.169	0.174	0.178	3.31
)	cis-1,3-Dichloropro	0.356	0.398	0.426	0.444	0.423	0.435	0.413	7.82
					ISTD				
) I	Chlorobenzene-d5								
) S	Toluene-d8	0.715	0.687	0.694	0.681	0.681	0.708	0.694	2.03

= Out of Range

Response Factor Report MSVOA1

Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : SW-846 Method 8260B & EPA 624 (low level)
Last Update : Tue May 30 10:45:38 2000
Response via : Initial Calibration

Calibration Files
1 =G0013046.D 2 =G0013047.D 3 =G0013048.D
4 =G0013049.D 5 =G0013050.D 6 =G0013051.D

		Compound	1	2	3	4	5	6	Avg	%RSD
3)	C	Toluene	1.288	1.148	1.337	1.325	1.333	1.378	1.301	6.20
)		trans-1,3-Dichlorop	0.383	0.412	0.451	0.462	0.444	0.475	0.438	7.82
)		1,1,2-Trichloroetha	0.256	0.267	0.284	0.281	0.274	0.275	0.273	3.72
)		Tetrachloroethene	0.351	0.349	0.416	0.424	0.411	0.423	0.396	9.05
)		2-hexanone	0.178	0.171	0.171	0.170	0.156	0.164	0.168	4.43
)		1,3-Dichloropropane	0.540	0.527	0.539	0.548	0.523	0.541	0.536	1.72
)		Dibromochloromethan	0.312	0.355	0.379	0.400	0.405	0.406	0.376	9.88
)		1,2-Dibromoethane	0.297	0.333	0.349	0.353	0.357	0.363	0.342	7.11
)		1-Chlorohexane	0.581	0.498	0.586	0.607	0.599	0.578	0.575	6.84
2)	P	Chlorobenzene	0.923	0.855	0.944	0.934	0.958	0.949	0.927	4.02
3)		1,1,1,2-Tetrachloro		0.347	0.409	0.406	0.400	0.405	0.393	6.68
4)	C	Ethylbenzene	1.635	1.473	1.652	1.659	1.643	1.600	1.610	4.36
5)		m,p-Xylene	1.294	1.198	1.310	1.371	1.327	1.325	1.304	4.46
6)		o-Xylene	1.335	1.218	1.371	1.400	1.407	1.378	1.351	5.19
7)		Styrene	0.892	0.836	0.972	0.999	1.041	1.021	0.960	8.32
8)	P	Bromoform		0.210	0.236	0.255	0.257	0.263	0.244	8.74
9)	I	1,4-Dichlorobenzene-d	----------	----------	----------	ISTD	----------	----------	----------	
0)		Isopropylbenzene	2.994	2.758	2.964	3.153	3.221	3.083	3.029	5.40
1)	S	4-Bromofluorobenzen	0.653	0.645	0.650	0.628	0.655	0.644	0.646	1.51
2)		Bromobenzene	0.636	0.642	0.659	0.683	0.708	0.675	0.667	4.05
3)	P	1,1,2,2-Tetrachloro	0.828	0.804	0.825	0.820	0.842	0.818	0.823	1.52
4)		1,2,3-Trichloroprop	0.194	0.191	0.184	0.188	0.186	0.186	0.188	2.00
5)		n-Propylbenzene	3.569	3.441	3.711	3.791	3.865	3.693	3.678	4.16
6)		2-Chlorotoluene	2.279	2.068	2.290	2.281	2.392	2.296	2.268	4.70
7)		4-Chlorotoluene	2.638	2.342	2.527	2.590	2.601	2.539	2.540	4.14
8)		1,3,5-Trimethylbenz	2.399	2.245	2.384	2.475	2.496	2.500	2.417	4.03
9)		sec-Butylbenzene	3.663	3.027	3.257	3.451	3.529	3.347	3.379	6.60
0)		1,3-Dichlorobenzene	1.402	1.275	1.324	1.338	1.347	1.351	1.339	3.07
1)		4-Isopropyltoluene	2.671	2.295	2.527	2.525	2.576	2.521	2.519	4.92
2)		1,4-Dichlorobenzene	1.352	1.245	1.348	1.387	1.365	1.393	1.348	3.99
3)		tert-Butylbenzene	1.977	1.805	1.872	1.877	1.964	1.869	1.894	3.44
4)		n-Butylbenzene	2.758	2.351	2.630	2.788	2.764	2.727	2.669	6.21
5)		1,2-Dichlorobenzene	1.327	1.175	1.247	1.220	1.241	1.211	1.237	4.13
6)		1,2,4-Trimethylbenz	2.440	2.300	2.458	2.577	2.617	2.537	2.488	4.60
7)		1,2-Dibromo-3-Chlor	0.144	0.127	0.141	0.144	0.149	0.161	0.144	7.57
8)		1,2,4-Trichlorobenz	0.869	0.714	0.768	0.840	0.826	0.845	0.810	7.16
9)		Hexachlorobutadiene	0.350	0.278	0.310	0.305	0.303	0.299	0.307	7.61
0)		Naphthalene	1.605	1.235	1.347	1.409	1.442	1.476	1.419	8.77
1)		1,2,3-Trichlorobenz	0.779	0.620	0.670	0.729	0.759	0.744	0.717	8.42

Instrument Performance Check (BFB)

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: VG368-BFB
Lab File ID: G0013272.D
Instrument ID: GCMSG
Injection Date: 06/06/00
Injection Time: 01:38

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	34203	22.7		Pass
75	30.0 - 60.0% of mass 95	89563	59.5		Pass
95	Base peak, 100% relative abundance	150507	100.0		Pass
96	5.0 - 9.0% of mass 95	10732	7.1		Pass
173	Less than 2.0% of mass 174	192	0.13	(0.21) [a]	Pass
174	50.0 - 100.0% of mass 95	89557	59.5		Pass
175	5.0 - 9.0% of mass 174	6351	4.2	(7.1) [a]	Pass
176	95.0 - 101.0% of mass 174	88480	58.8	(98.8) [a]	Pass
177	5.0 - 9.0% of mass 176	5729	3.8	(6.5) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VG368-CC364	G0013272.D	06/06/00	01:38	00:00	Continuing cal 20
VG367-BS4	G0013273.D	06/06/00	02:18	00:40	Blank Spike
VG369-BS3	G0013273.D	06/06/00	02:18	00:40	Blank Spike
VG372-BS1	G0013273.D	06/06/00	02:18	00:40	Blank Spike
VG367-MB4	G0013274.D	06/06/00	02:57	01:19	Method Blank
VG369-MB3	G0013274.D	06/06/00	02:57	01:19	Method Blank
VG372-MB1	G0013274.D	06/06/00	02:57	01:19	Method Blank
ZZZZZZ	G0013275.D	06/06/00	03:37	01:59	(unrelated sample)
ZZZZZZ	G0013276.D	06/06/00	04:17	02:39	(unrelated sample)
ZZZZZZ	G0013277.D	06/06/00	04:56	03:18	(unrelated sample)
ZZZZZZ	G0013278.D	06/06/00	05:36	03:58	(unrelated sample)
ZZZZZZ	G0013279.D	06/06/00	06:16	04:38	(unrelated sample)
ZZZZZZ	G0013280.D	06/06/00	06:55	05:17	(unrelated sample)
F6635-7	G0013281.D	06/06/00	07:35	05:57	29TB052600
ZZZZZZ	G0013282.D	06/06/00	08:14	06:36	(unrelated sample)
ZZZZZZ	G0013283.D	06/06/00	08:54	07:16	(unrelated sample)
ZZZZZZ	G0013284.D	06/06/00	09:35	07:57	(unrelated sample)
ZZZZZZ	G0013285.D	06/06/00	10:14	08:36	(unrelated sample)

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\060500\G0013272.D Vial: 27
Acq On : 6 Jun 2000 1:38 am Operator: JuanG
Sample : CC364-20 Inst : MSVOA1
Misc : ms583,vg370,,,,, Multiplr: 1.00
MS Integration Params: SMALL.P

Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : SW-846 Method 8260B & EPA 624 (low level)
Last Update : Tue May 30 12:54:28 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
I	Fluorobenzene	1.000	1.000	0.0	108	0.00
	Dichlorodifluoromethane	0.348	0.320	8.0	94	0.00
P	Chloromethane	0.250	0.262	-4.8	104	0.00
C	Vinyl Chloride	0.262	0.275	-5.0	105	0.00
	Bromomethane	0.195	0.162	16.9	81	0.00
	Chloroethane	0.161	0.170	-5.6	107	0.00
	Trichlorofluoromethane	0.462	0.455	1.5	102	0.00
	Acrolein	0.008	0.008	0.0	103	0.00
C	1,1-Dichloroethene	0.333	0.308	7.5	97	0.00
	Freon 113	0.332	0.326	1.8	108	0.00
	Acetone	0.020	0.021	-5.0	114	0.00
	Carbon Disulfide	0.639	0.563	11.9	91	0.00
	Methylene Chloride	0.280	0.308	-10.0	115	0.00
	trans-1,2-Dichloroethene	0.283	0.308	-8.8	117	0.01
	Acrylonitrile	0.025	0.030	-20.0	122	0.01
	Methyl Tert Butyl Ether	0.412	0.430	-4.4	120	0.01
P	1,1-Dichloroethane	0.337	0.370	-9.8	119	0.00
	Vinyl acetate	0.347	0.380	-9.5	123	0.00
	Di-isopropyl ether	0.835	0.884	-5.9	121	0.00
	2,2-Dichloropropane	0.307	0.262	14.7	96	0.00
	cis-1,2-Dichloroethene	0.176	0.172	2.3	108	0.00
	2-Butanone	0.040	0.041	-2.5	126	0.00
	Bromochloromethane	0.097	0.100	-3.1	113	0.01
C	Chloroform	0.352	0.383	-8.8	116	0.00
	1,1,1-Trichloroethane	0.333	0.339	-1.8	111	0.00
S	Dibromofluoromethane	0.146	0.154	-5.5	122	0.01
	1,1-Dichloropropene	0.345	0.353	-2.3	106	-0.02
	Carbon Tetrachloride	0.297	0.285	4.0	101	0.00
S	1,2-Dichloroethane-d4	0.092	0.102	-10.9	125	0.01
	Benzene	0.792	0.783	1.1	103	0.01
	1,2-Dichloroethane	0.205	0.211	-2.9	115	0.00
	Trichloroethene	0.300	0.287	4.3	98	0.00
C	1,2-Dichloropropane	0.308	0.339	-10.1	115	0.00
	Dibromomethane	0.154	0.158	-2.6	109	0.00
	1,4-Dioxane	0.001	0.001	0.0	123	0.02
	Bromodichloromethane	0.393	0.404	-2.8	107	-0.02
	2-Nitropropane	0.038	0.041	-7.9	107	0.00
	2-Chloroethyl vinyl ether	0.017	0.017	0.0	101	0.00
	4-Methyl-2-pentanone	0.178	0.181	-1.7	109	0.00
	cis-1,3-Dichloropropene	0.413	0.399	3.4	97	0.00

258

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\060500\G0013272.D
Acq On : 6 Jun 2000 1:38 am
Sample : CC364-20
Misc : ms583,vg370,,,,,
MS Integration Params: SMALL.P

Vial: 27
Operator: JuanG
Inst : MSVOA1
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : SW-846 Method 8260B & EPA 624 (low level)
Last Update : Tue May 30 12:54:28 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
S	Toluene-d8	0.694	0.731	-5.3	105	0.00
C	Toluene	1.301	1.322	-1.6	98	0.00
	trans-1,3-Dichloropropene	0.438	0.431	1.6	91	0.00
	1,1,2-Trichloroethane	0.273	0.281	-2.9	98	0.00
	Tetrachloroethene	0.396	0.382	3.5	88	0.00
	2-hexanone	0.168	0.180	-7.1	104	0.00
	1,3-Dichloropropane	0.536	0.565	-5.4	101	0.00
	Dibromochloromethane	0.376	0.365	2.9	89	-0.02
	1,2-Dibromoethane	0.342	0.337	1.5	93	0.00
	1-Chlorohexane	0.575	0.544	5.4	88	-0.02
P	Chlorobenzene	0.927	0.885	4.5	93	0.00
	1,1,1,2-Tetrachloroethane	0.393	0.374	4.8	90	0.00
C	Ethylbenzene	1.610	1.577	2.0	93	0.00
	m,p-Xylene	1.304	1.257	3.6	90	0.00
	o-Xylene	1.351	1.303	3.6	91	0.00
	Styrene	0.960	0.932	2.9	91	0.00
P	Bromoform	0.244	0.204	16.4	78	0.00
I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	91	-0.02
	Isopropylbenzene	3.029	3.003	0.9	87	0.00
S	4-Bromofluorobenzene	0.646	0.662	-2.5	96	-0.02
	Bromobenzene	0.667	0.669	-0.3	90	0.00
P	1,1,2,2-Tetrachloroethane	0.823	0.841	-2.2	94	0.00
	1,2,3-Trichloropropane	0.188	0.180	4.3	88	0.00
	n-Propylbenzene	3.678	3.572	2.9	86	-0.02
	2-Chlorotoluene	2.268	2.291	-1.0	92	-0.02
	4-Chlorotoluene	2.540	2.520	0.8	89	0.00
	1,3,5-Trimethylbenzene	2.417	2.382	1.4	88	0.00
	sec-Butylbenzene	3.379	3.333	1.4	88	0.00
	1,3-Dichlorobenzene	1.339	1.290	3.7	88	0.00
	4-Isopropyltoluene	2.519	2.437	3.3	88	0.00
	1,4-Dichlorobenzene	1.348	1.310	2.8	86	0.00
	tert-Butylbenzene	1.894	1.865	1.5	91	0.00
	n-Butylbenzene	2.669	2.667	0.1	88	0.00
	1,2-Dichlorobenzene	1.237	1.258	-1.7	94	0.00
	1,2,4-Trimethylbenzene	2.488	2.525	-1.5	90	-0.02
	1,2-Dibromo-3-Chloropropane	0.144	0.150	-4.2	95	0.00
	1,2,4-Trichlorobenzene	0.810	0.783	3.3	85	-0.02
	Hexachlorobutadiene	0.307	0.281	8.5	84	0.00
	Naphthalene	1.419	1.333	6.1	87	0.00
	1,2,3-Trichlorobenzene	0.717	0.682	4.9	86	0.00

259

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Instrument Performance Check (BFB)

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: VG370-BFB
Lab File ID: G0013340.D
Instrument ID: GCMSG
Injection Date: 06/09/00
Injection Time: 10:21

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	7044	22.3		Pass
75	30.0 - 60.0% of mass 95	18515	58.5		Pass
95	Base peak, 100% relative abundance	31648	100.0		Pass
96	5.0 - 9.0% of mass 95	2210	7.0		Pass
173	Less than 2.0% of mass 174	108	0.34	(0.57) [a]	Pass
174	50.0 - 100.0% of mass 95	19005	60.1		Pass
175	5.0 - 9.0% of mass 174	1349	4.3	(7.1) [a]	Pass
176	95.0 - 101.0% of mass 174	18808	59.4	(99.0) [a]	Pass
177	5.0 - 9.0% of mass 176	1394	4.4	(7.4) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VG370-CC364	G0013341.D	06/09/00	10:36	00:15	Continuing cal 20
VG374-LB	G0013343.D	06/09/00	11:55	01:34	Leachate Blank
VG370-MB4	G0013343.D	06/09/00	11:55	01:34	Method Blank
VG373-MB2	G0013343.D	06/09/00	11:55	01:34	Method Blank
ZZZZZZ	G0013344.D	06/09/00	12:35	02:14	(unrelated sample)
ZZZZZZ	G0013345.D	06/09/00	13:15	02:54	(unrelated sample)
VG370-BS4	G0013347.D	06/09/00	14:36	04:15	Blank Spike
VG373-BS2	G0013347.D	06/09/00	14:36	04:15	Blank Spike
VG374-BS	G0013347.D	06/09/00	14:36	04:15	Blank Spike
F6635-1A	G0013348.D	06/09/00	15:16	04:55	29D00101
F6635-2A	G0013349.D	06/09/00	15:56	05:35	29D00201
F6635-3A	G0013350.D	06/09/00	16:35	06:14	29D00301
F6635-4A	G0013351.D	06/09/00	17:15	06:54	29D00401
F6635-5A	G0013352.D	06/09/00	17:56	07:35	29D00501
F6635-6A	G0013353.D	06/09/00	18:35	08:14	29D00601
F6677-3MS	G0013354.D	06/09/00	19:15	08:54	Matrix Spike
F6677-3MSD	G0013355.D	06/09/00	19:55	09:34	Matrix Spike Duplicate
F6635-2MS	G0013356.D	06/09/00	20:35	10:14	Matrix Spike
F6635-2AMS	G0013356.D	06/09/00	20:35	10:14	Matrix Spike

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\060900\G0013341.D
Acq On : 9 Jun 2000 10:36 am
Sample : CC364-20
Misc :
MS Integration Params: SMALL.P

Vial: 10
Operator: JuanG
Inst : MSVOA1
Multiplr: 1.00

Raw

Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : SW-846 Method 8260B & EPA 624 (low level)
Last Update : Tue May 30 12:54:28 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorobenzene	1.000	1.000	0.0	108	0.01
2		Dichlorodifluoromethane	0.348	0.320	8.0	93	0.00
3	P	Chloromethane	0.250	0.270	-8.0	107	0.01
4	C	Vinyl Chloride	0.262	0.280	-6.9	106	0.00
5		Bromomethane	0.195	0.158	19.0	78	0.01
6		Chloroethane	0.161	0.176	-9.3	110	0.02
7		Trichlorofluoromethane	0.462	0.456	1.3	101	0.00
8		Acrolein	0.008	0.007	12.5	87	0.00
9	C	1,1-Dichloroethene	0.333	0.311	6.6	97	0.01
0		Freon 113	0.332	0.344	-3.6	112	0.00
1		Acetone	0.020	0.021	-5.0	112	0.00
2		Carbon Disulfide	0.639	0.545	14.7	88	0.00
3		Methylene Chloride	0.280	0.308	-10.0	114	0.00
4		trans-1,2-Dichloroethene	0.283	0.319	-12.7	120	0.02
5		Acrylonitrile	0.025	0.028	-12.0	115	0.01
6		Methyl Tert Butyl Ether	0.412	0.419	-1.7	116	0.01
7	P	1,1-Dichloroethane	0.337	0.384	-13.9	123	0.02
8		Vinyl acetate	0.347	0.372	-7.2	119	0.01
9		Di-isopropyl ether	0.835	0.885	-6.0	120	0.01
0		2,2-Dichloropropane	0.307	0.336	-9.4	122	0.01
1		cis-1,2-Dichloroethene	0.176	0.181	-2.8	113	0.02
2		2-Butanone	0.040	0.042	-5.0	128	0.01
3		Bromochloromethane	0.097	0.104	-7.2	116	0.02
4	C	Chloroform	0.352	0.419	-19.0	126	0.01
5		1,1,1-Trichloroethane	0.333	0.369	-10.8	120	0.01
6	S	Dibromofluoromethane	0.146	0.156	-6.8	123	0.03
7		1,1-Dichloropropene	0.345	0.377	-9.3	112	0.00
8		Carbon Tetrachloride	0.297	0.323	-8.8	113	0.01
9	S	1,2-Dichloroethane-d4	0.092	0.102	-10.9	123	0.01
0		Benzene	0.792	0.835	-5.4	109	0.01
1		1,2-Dichloroethane	0.205	0.226	-10.2	121	0.00
2		Trichloroethene	0.300	0.316	-5.3	107	0.00
3	C	1,2-Dichloropropane	0.308	0.348	-13.0	117	0.00
4		Dibromomethane	0.154	0.161	-4.5	110	0.02
5		1,4-Dioxane	0.001	0.001	0.0	126	0.04
6		Bromodichloromethane	0.393	0.442	-12.5	116	0.01
7		2-Nitropropane	0.038	0.036	5.3	95	0.02
8		2-Chloroethyl vinyl ether	0.017	0.017	0.0	104	0.01
9		4-Methyl-2-pentanone	0.178	0.172	3.4	103	0.00
0		cis-1,3-Dichloropropene	0.413	0.437	-5.8	106	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\060900\G0013341.D Vial: 10
Acq On : 9 Jun 2000 10:36 am Operator: JuanG
Sample : CC364-20 Inst : MSVOA1
Misc : Multiplr: 1.00
MS Integration Params: SMALL.P

Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : SW-846 Method 8260B & EPA 624 (low level)
Last Update : Tue May 30 12:54:28 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
	S	Toluene-d8	0.694	0.739	-6.5	103	0.01
	C	Toluene	1.301	1.437	-10.5	103	0.01
		trans-1,3-Dichloropropene	0.438	0.465	-6.2	96	0.01
		1,1,2-Trichloroethane	0.273	0.287	-5.1	97	0.00
		Tetrachloroethene	0.396	0.426	-7.6	95	0.01
		2-hexanone	0.168	0.176	-4.8	98	0.00
		1,3-Dichloropropane	0.536	0.570	-6.3	99	0.00
		Dibromochloromethane	0.376	0.393	-4.5	93	0.00
		1,2-Dibromoethane	0.342	0.331	3.2	89	0.00
		1-Chlorohexane	0.575	0.623	-8.3	97	0.00
	P	Chlorobenzene	0.927	0.976	-5.3	99	0.00
		1,1,1,2-Tetrachloroethane	0.393	0.395	-0.5	93	0.00
	C	Ethylbenzene	1.610	1.706	-6.0	98	0.00
		m,p-Xylene	1.304	1.366	-4.8	95	0.00
		o-Xylene	1.351	1.409	-4.3	96	0.00
		Styrene	0.960	0.967	-0.7	92	0.01
	P	Bromoform	0.244	0.228	6.6	85	0.01
	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	86	0.00
		Isopropylbenzene	3.029	3.325	-9.8	91	0.00
	S	4-Bromofluorobenzene	0.646	0.693	-7.3	95	0.00
		Bromobenzene	0.667	0.704	-5.5	89	0.01
	P	1,1,2,2-Tetrachloroethane	0.823	0.841	-2.2	88	0.00
		1,2,3-Trichloropropane	0.188	0.189	-0.5	87	0.00
		n-Propylbenzene	3.678	4.099	-11.4	93	0.00
		2-Chlorotoluene	2.268	2.486	-9.6	94	0.00
		4-Chlorotoluene	2.540	2.788	-9.8	93	0.00
		1,3,5-Trimethylbenzene	2.417	2.564	-6.1	89	0.00
		sec-Butylbenzene	3.379	3.540	-4.8	88	0.01
		1,3-Dichlorobenzene	1.339	1.398	-4.4	90	0.00
		4-Isopropyltoluene	2.519	2.678	-6.3	91	0.00
		1,4-Dichlorobenzene	1.348	1.421	-5.4	88	0.00
		tert-Butylbenzene	1.894	2.020	-6.7	93	0.01
		n-Butylbenzene	2.669	2.993	-12.1	92	0.00
		1,2-Dichlorobenzene	1.237	1.303	-5.3	92	0.00
		1,2,4-Trimethylbenzene	2.488	2.694	-8.3	90	0.00
		1,2-Dibromo-3-Chloropropane	0.144	0.143	0.7	85	0.00
		1,2,4-Trichlorobenzene	0.810	0.876	-8.1	90	0.00
		Hexachlorobutadiene	0.307	0.344	-12.1	97	0.00
		Naphthalene	1.419	1.325	6.6	81	0.01
		1,2,3-Trichlorobenzene	0.717	0.729	-1.7	86	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0 243

Volatile Internal Standard Area Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Check Std: VH90-CC88 **Injection Date:** 06/03/00
Lab File ID: H007784.D **Injection Time:** 09:20
Instrument ID: GCMSH

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Check Std	429564	14.39	338666	19.62	189399	23.99
Upper Limit [a]	859128	14.89	677332	20.12	378798	24.49
Lower Limit [b]	214782	13.89	169333	19.12	94700	23.49

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
VH90-BS	468162	14.41	344442	19.62	199465	23.99
VH89-BS3	468162	14.41	344442	19.62	199465	23.99
VH90-MB	443854	14.40	308733	19.62	157992	23.99
VH89-MB3	443854	14.40	308733	19.62	157992	23.99
ZZZZZZ	409923	14.40	262245	19.62	106254	23.99
ZZZZZZ	436625	14.40	301635	19.63	153330	23.99
ZZZZZZ	427354	14.40	313293	19.63	160604	24.00
ZZZZZZ	421359	14.41	310375	19.62	154206	24.00
F6635-1	396594	14.41	299218	19.63	152720	24.00
F6635-2	409955	14.41	288241	19.64	145472	24.01
F6635-3	405690	14.41	288588	19.64	140960	24.00
F6635-4	411765	14.41	282741	19.64	147861	24.01
F6635-5	407046	14.41	293162	19.64	140644	24.00
F6635-6	399628	14.42	284335	19.64	145206	24.01
ZZZZZZ	471444	14.41	384669	19.64	214563	24.01
ZZZZZZ	582351	14.41	420933	19.64	215875	24.00
ZZZZZZ	614433	14.41	432964	19.63	225736	24.00

IS 1 = Fluorobenzene
IS 2 = Chlorobenzene-D5
IS 3 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of internal standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of internal standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Check Std: VG368-CC364 **Injection Date:** 06/06/00
Lab File ID: G0013272.D **Injection Time:** 01:38
Instrument ID: GCMSG

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Check Std	1470295	11.18	1014026	16.26	562065	20.39
Upper Limit [a]	2940590	11.68	2028052	16.76	1124130	20.89
Lower Limit [b]	735148	10.68	507013	15.76	281033	19.89

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
VG367-BS4	1425287	11.18	1022818	16.26	566791	20.41
VG369-BS3	1425287	11.18	1022818	16.26	566791	20.41
VG372-BS1	1425287	11.18	1022818	16.26	566791	20.41
VG367-MB4	1555838	11.19	1086058	16.26	581627	20.40
VG369-MB3	1555838	11.19	1086058	16.26	581627	20.40
VG372-MB1	1555838	11.19	1086058	16.26	581627	20.40
ZZZZZZ	1454607	11.17	1100772	16.25	575746	20.40
ZZZZZZ	1532599	11.17	1090470	16.26	575418	20.39
ZZZZZZ	1438062	11.19	1046442	16.27	551914	20.42
ZZZZZZ	1477276	11.17	1121651	16.25	578400	20.39
ZZZZZZ	1414394	11.18	1090849	16.26	553028	20.40
ZZZZZZ	1559395	11.17	1055562	16.25	540669	20.39
F6635-7 [c]	1431863	11.19	1053025	16.26	545442	20.40
ZZZZZZ	1443743	11.19	1048224	16.27	547725	20.39
ZZZZZZ	1232752	11.17	1015361	16.25	549026	20.39
ZZZZZZ	1431761	11.17	1089566	16.25	563378	20.38
ZZZZZZ	1440311	11.17	1038132	16.25	557787	20.38

IS 1 = Fluorobenzene
IS 2 = Chlorobenzene-D5
IS 3 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of internal standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of internal standard area; Retention time -0.5 minutes.
(c) Sample vial(s) contained significant headspace; reported results are considered minimum values.

Volatile Internal Standard Area Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Check Std: VG370-CC364 **Injection Date:** 06/09/00
Lab File ID: G0013341.D **Injection Time:** 10:36
Instrument ID: GCMSG

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Check Std	1458109	11.19	984078	16.27	528175	20.41
Upper Limit [a]	2916218	11.69	1968156	16.77	1056350	20.91
Lower Limit [b]	729055	10.69	492039	15.77	264088	19.91

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
VG370-MB4	1534198	11.17	1101140	16.25	584447	20.40
VG374-LB	1534198	11.17	1101140	16.25	584447	20.40
VG373-MB2	1534198	11.17	1101140	16.25	584447	20.40
ZZZZZZ	1530748	11.17	1122527	16.26	599967	20.40
ZZZZZZ	1477550	11.16	1135906	16.25	596426	20.38
VG370-BS4	1484852	11.16	1082376	16.25	587381	20.38
VG374-BS	1484852	11.16	1082376	16.25	587381	20.38
VG373-BS2	1484852	11.16	1082376	16.25	587381	20.38
F6635-1A	1512562	11.16	1122819	16.25	593056	20.40
F6635-2A	1495577	11.16	1132547	16.24	613100	20.39
F6635-3A	1457003	11.16	1102447	16.25	582209	20.39
F6635-4A	1459467	11.18	1109277	16.26	595067	20.38
F6635-5A	1464485	11.17	1091761	16.25	572404	20.39
F6635-6A	1437506	11.18	1076828	16.26	602922	20.40
F6677-3MS	1455034	11.18	1068246	16.26	574004	20.40
F6677-3MSD	1501045	11.18	1049000	16.25	577944	20.40
F6635-2MS	1508237	11.18	1041488	16.26	576517	20.40
F6635-2AMS	1508237	11.18	1041488	16.26	576517	20.40

IS 1 = Fluorobenzene
IS 2 = Chlorobenzene-D5
IS 3 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of internal standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of internal standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Check Std: VH90-CC88 **Injection Date:** 06/05/00
Lab File ID: H007802.D **Injection Time:** 09:33
Instrument ID: GCMSH

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Check Std	622768	14.40	445191	19.62	239852	23.99
Upper Limit [a]	1245536	14.90	890382	20.12	479704	24.49
Lower Limit [b]	311384	13.90	222596	19.12	119926	23.49

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
VH90-BS2	605800	14.40	445994	19.63	230945	23.99
VH90-MB2	603865	14.40	425190	19.63	221345	23.99
ZZZZZZ	643390	14.40	457006	19.62	245737	24.00
ZZZZZZ	649284	14.40	474841	19.63	250077	23.99
ZZZZZZ	656347	14.40	480710	19.63	254357	23.99
ZZZZZZ	661265	14.40	470958	19.63	252452	23.99
ZZZZZZ	636195	14.41	474961	19.63	248760	24.00
ZZZZZZ	675632	14.40	490022	19.63	253194	24.00
ZZZZZZ	693548	14.41	516569	19.63	272527	24.00
ZZZZZZ	644964	14.41	480310	19.63	255557	24.01
ZZZZZZ	674172	14.41	487461	19.64	261984	24.00
ZZZZZZ	666749	14.41	486655	19.64	257272	24.01
ZZZZZZ	648572	14.42	484055	19.64	253087	24.01
F6635-1MS	675247	14.41	503104	19.64	271841	24.00
F6635-1MSD	667979	14.41	485754	19.64	261215	24.00
ZZZZZZ	658995	14.41	481881	19.64	263167	24.00

IS 1 = Fluorobenzene
IS 2 = Chlorobenzene-D5
IS 3 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of internal standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of internal standard area; Retention time -0.5 minutes.

Semivolatile Surrogate Recovery Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Method: SW846 8270C **Matrix:** LEACHATE

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
F6635-3A	W002216.D	53.0	34.0	83.0	80.0	79.0	97.0
F6635-4A	W002217.D	54.0	36.0	83.0	86.0	84.0	98.0
F6635-5A	W002218.D	59.0	41.0	87.0	86.0	84.0	102.0
F6635-6A	W002219.D	56.0	36.0	85.0	90.0	87.0	109.0
OP1696-LB	W002210.D	60.0	37.0	95.0	99.0	94.0	109.0
OP1696-LB2	W002211.D	50.0	32.0	80.0	78.0	74.0	99.0
OP1696-LBS	W002209.D	62.0	40.0	99.0	96.0	92.0	107.0
OP1696-LS	W002223.D	55.0	35.0	89.0	90.0	88.0	97.0

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	21-100%
S2 = Phenol-d5	10-94%
S3 = 2,4,6-Tribromophenol	10-123%
S4 = Nitrobenzene-d5	35-114%
S5 = 2-Fluorobiphenyl	43-116%
S6 = Terphenyl-d14	33-141%

Semivolatile Surrogate Recovery Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Method: SW846 3550B/8270C **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
F6635-1	W001937.D	81.0	84.0	105.0	91.0	95.0	106.0
F6635-2	W001940.D	78.0	82.0	105.0	87.0	94.0	110.0
F6635-3	W001941.D	59.0	64.0	96.0	66.0	77.0	97.0
F6635-4	W001942.D	74.0	84.0	114.0	84.0	99.0	120.0
F6635-5	W001943.D	73.0	81.0	104.0	84.0	94.0	108.0
F6635-6	W001944.D	67.0	73.0	97.0	75.0	86.0	106.0
OP1636-BS	W001934.D	89.0	93.0	108.0	100.0	101.0	102.0
OP1636-MB	W001935.D	74.0	83.0	98.0	82.0	83.0	104.0
OP1636-MS	W001938.D	83.0	85.0	104.0	92.0	97.0	102.0
OP1636-MSD	W001939.D	82.0	85.0	105.0	91.0	97.0	104.0

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	36-129%
S2 = Phenol-d5	38-135%
S3 = 2,4,6-Tribromophenol	37-144%
S4 = Nitrobenzene-d5	36-135%
S5 = 2-Fluorobiphenyl	44-135%
S6 = Terphenyl-d14	42-149%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1636-MS	W001938.D	1	06/03/00	ME	06/03/00	OP1636	SW122
OP1636-MSD	W001939.D	1	06/03/00	ME	06/03/00	OP1636	SW122
F6635-1	W001937.D	1	06/03/00	ME	06/03/00	OP1636	SW122

The QC reported here applies to the following samples: **Method:** SW846 3550B/8270C

F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

CAS No.	Compound	F6635-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic acid	ND		1720	773	45	774	45	0	5-125/52
95-57-8	2-Chlorophenol	ND		1720	1430	83	1410	82	1	56-125/14
59-50-7	4-Chloro-3-methyl phenol	ND		1720	1460	85	1460	85	0	56-125/10
120-83-2	2,4-Dichlorophenol	ND		1720	1560	91	1540	90	1	59-125/12
105-67-9	2,4-Dimethylphenol	ND		1720	1260	73	1290	75	2	30-139/17
51-28-5	2,4-Dinitrophenol	ND		1720	1820	106	1830	107	0	5-125/48
534-52-1	4,6-Dinitro-o-cresol	ND		1720	1470	86	1470	86	0	16-125/24
95-48-7	2-Methylphenol	ND		1720	1350	79	1300	76	4	57-125/13
	3&4-Methylphenol	ND		3430	2900	84	2860	83	1	49-125/14
88-75-5	2-Nitrophenol	ND		1720	1610	94	1560	91	3	56-125/15
100-02-7	4-Nitrophenol	ND		1720	1600	93	1580	92	1	25-141/22
87-86-5	Pentachlorophenol	ND		1720	1700	99	1690	98	0	20-126/21
108-95-2	Phenol	ND		1720	1400	82	1370	80	2	48-125/12
95-95-4	2,4,5-Trichlorophenol	ND		1720	1730	101	1700	99	2	59-125/15
88-06-2	2,4,6-Trichlorophenol	ND		1720	1680	98	1680	98	0	54-125/17
83-32-9	Acenaphthene	ND		1720	1600	93	1600	93	0	62-125/14
208-96-8	Acenaphthylene	ND		1720	1770	103	1770	103	0	75-137/13
120-12-7	Anthracene	ND		1720	1690	98	1700	99	0	68-125/12
56-55-3	Benzo(a)anthracene	ND		1720	1670	97	1650	96	1	64-126/22
50-32-8	Benzo(a)pyrene	ND		1720	1720	100	1720	100	0	60-133/16
205-99-2	Benzo(b)fluoranthene	ND		1720	1530	89	1570	92	2	54-130/20
191-24-2	Benzo(g,h,i)perylene	ND		1720	2230	130	2310	135	4	34-174/29
207-08-9	Benzo(k)fluoranthene	ND		1720	1510	88	1530	89	1	55-128/20
101-55-3	4-Bromophenyl phenyl ether	ND		1720	1650	96	1680	98	2	56-125/18
85-68-7	Butyl benzyl phthalate	ND		1720	1440	84	1450	84	1	68-134/15
100-51-6	Benzyl Alcohol	ND		1720	1600	93	1560	91	2	52-125/16
91-58-7	2-Chloronaphthalene	ND		1720	1620	94	1630	95	1	64-125/18
106-47-8	4-Chloroaniline	ND		1720	1050	61	1060	62	1	49-125/12
86-74-8	Carbazole	ND		1720	1590	93	1600	93	1	46-141/13
218-01-9	Chrysene	ND		1720	1600	93	1590	93	1	57-130/16
111-91-1	bis(2-Chloroethoxy)methane	ND		1720	1380	80	1350	79	2	43-138/15
111-44-4	bis(2-Chloroethyl)ether	ND		1720	1340	78	1310	76	2	39-136/14
108-60-1	bis(2-Chloroisopropyl)ether	ND		1720	1430	83	1400	82	2	59-125/15
7005-72-3	4-Chlorophenyl phenyl ether	ND		1720	1500	87	1510	88	1	66-125/12
95-50-1	1,2-Dichlorobenzene	ND		1720	1430	83	1420	83	1	57-125/15
541-73-1	1,3-Dichlorobenzene	ND		1720	1430	83	1390	81	3	55-125/14

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1636-MS	W001938.D	1	06/03/00	ME	06/03/00	OP1636	SW122
OP1636-MSD	W001939.D	1	06/03/00	ME	06/03/00	OP1636	SW122
F6635-1	W001937.D	1	06/03/00	ME	06/03/00	OP1636	SW122

The QC reported here applies to the following samples: **Method:** SW846 3550B/8270C

F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

CAS No.	Compound	F6635-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
106-46-7	1,4-Dichlorobenzene	ND		1720	1510	88	1480	86	2	56-125/15
121-14-2	2,4-Dinitrotoluene	ND		1720	1710	100	1720	100	0	68-125/12
606-20-2	2,6-Dinitrotoluene	ND		1720	1800	105	1790	104	0	69-125/12
91-94-1	3,3'-Dichlorobenzidine	ND		1720	1180	69	1170	68	1	44-125/23
53-70-3	Dibenzo(a,h)anthracene	ND		1720	2140	125	2230	130	4	34-133/31
132-64-9	Dibenzofuran	ND		1720	1560	91	1560	91	0	65-125/13
84-74-2	Di-n-butyl phthalate	ND		1720	1670	97	1700	99	2	65-125/18
117-84-0	Di-n-octyl phthalate	ND		1720	1600	93	1620	94	1	49-136/16
84-66-2	Diethyl phthalate	ND		1720	1710	100	1720	100	0	65-125/12
131-11-3	Dimethyl phthalate	ND		1720	1590	93	1600	93	1	66-125/14
117-81-7	bis(2-Ethylhexyl)phthalate	ND		1720	1770	103	1770	103	0	70-137/14
206-44-0	Fluoranthene	ND		1720	1650	96	1680	98	2	31-158/16
86-73-7	Fluorene	ND		1720	1640	96	1660	97	1	63-125/11
118-74-1	Hexachlorobenzene	ND		1720	1720	100	1740	101	1	68-125/17
87-68-3	Hexachlorobutadiene	ND		1720	1480	86	1460	85	1	51-131/17
77-47-4	Hexachlorocyclopentadiene	ND		1720	914	53	995	58	8	15-125/33
67-72-1	Hexachloroethane	ND		1720	1530	89	1510	88	1	61-127/16
193-39-5	Indeno(1,2,3-cd)pyrene	ND		1720	2220	129	2280	133	3	39-162/25
78-59-1	Isophorone	ND		1720	1380	80	1360	79	1	40-144/14
91-57-6	2-Methylnaphthalene	ND		1720	1480	86	1470	86	1	63-125/12
88-74-4	2-Nitroaniline	ND		1720	1610	94	1610	94	0	61-125/11
99-09-2	3-Nitroaniline	ND		1720	1190	69	1240	72	4	50-125/18
100-01-6	4-Nitroaniline	ND		1720	1400	82	1410	82	1	40-133/21
91-20-3	Naphthalene	ND		1720	1610	94	1580	92	2	60-125/13
98-95-3	Nitrobenzene	ND		1720	1510	88	1480	86	2	55-125/14
621-64-7	N-Nitroso-di-n-propylamine	ND		1720	1330	78	1310	76	2	52-125/15
86-30-6	N-Nitrosodiphenylamine	ND		1720	1760	103	1800	105	2	64-131/17
85-01-8	Phenanthrene	ND		1720	1700	99	1710	100	0	49-138/20
129-00-0	Pyrene	ND		1720	1660	97	1700	99	2	39-156/16
120-82-1	1,2,4-Trichlorobenzene	ND		1720	1510	88	1470	86	3	56-125/14

CAS No.	Surrogate Recoveries	MS	MSD	F6635-1	Limits
367-12-4	2-Fluorophenol	83%	82%	81%	36-129%
4165-62-2	Phenol-d5	85%	85%	84%	38-135%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1636-MS	W001938.D	1	06/03/00	ME	06/03/00	OP1636	SW122
OP1636-MSD	W001939.D	1	06/03/00	ME	06/03/00	OP1636	SW122
F6635-1	W001937.D	1	06/03/00	ME	06/03/00	OP1636	SW122

The QC reported here applies to the following samples: **Method:** SW846 3550B/8270C

F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

CAS No.	Surrogate Recoveries	MS	MSD	F6635-1	Limits
118-79-6	2,4,6-Tribromophenol	104%	105%	105%	37-144%
4165-60-0	Nitrobenzene-d5	92%	91%	91%	36-135%
321-60-8	2-Fluorobiphenyl	97%	97%	95%	44-135%
1718-51-0	Terphenyl-d14	102%	104%	106%	42-149%

Blank Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1636-BS	W001934.D	1	06/03/00	ME	06/03/00	OP1636	SW122

The QC reported here applies to the following samples: **Method:** SW846 3550B/8270C

F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
65-85-0	Benzoic acid	1660	1500	90	5-125
95-57-8	2-Chlorophenol	1660	1490	89	56-125
59-50-7	4-Chloro-3-methyl phenol	1660	1600	96	56-125
120-83-2	2,4-Dichlorophenol	1660	1620	97	59-125
105-67-9	2,4-Dimethylphenol	1660	1290	77	30-139
51-28-5	2,4-Dinitrophenol	1660	1810	109	5-125
534-52-1	4,6-Dinitro-o-cresol	1660	1450	87	16-125
95-48-7	2-Methylphenol	1660	1430	86	57-125
	3&4-Methylphenol	3330	3040	91	49-125
88-75-5	2-Nitrophenol	1660	1670	100	56-125
100-02-7	4-Nitrophenol	1660	1580	95	25-141
87-86-5	Pentachlorophenol	1660	1680	101	20-126
108-95-2	Phenol	1660	1440	86	48-125
95-95-4	2,4,5-Trichlorophenol	1660	1720	103	59-125
88-06-2	2,4,6-Trichlorophenol	1660	1700	102	54-125
83-32-9	Acenaphthene	1660	1620	97	62-125
208-96-8	Acenaphthylene	1660	1820	109	75-137
120-12-7	Anthracene	1660	1700	102	68-125
56-55-3	Benzo(a)anthracene	1660	1680	101	64-126
50-32-8	Benzo(a)pyrene	1660	1760	106	60-133
205-99-2	Benzo(b)fluoranthene	1660	1680	101	54-130
191-24-2	Benzo(g,h,i)perylene	1660	1630	98	34-174
207-08-9	Benzo(k)fluoranthene	1660	1600	96	55-128
101-55-3	4-Bromophenyl phenyl ether	1660	1690	102	56-125
85-68-7	Butyl benzyl phthalate	1660	1340	80	68-134
100-51-6	Benzyl Alcohol	1660	1650	99	52-125
91-58-7	2-Chloronaphthalene	1660	1650	99	64-125
106-47-8	4-Chloroaniline	1660	1160	70	49-125
86-74-8	Carbazole	1660	1620	97	46-141
218-01-9	Chrysene	1660	1620	97	57-130
111-91-1	bis(2-Chloroethoxy)methane	1660	1420	85	43-138
111-44-4	bis(2-Chloroethyl)ether	1660	1410	85	39-136
108-60-1	bis(2-Chloroisopropyl)ether	1660	1480	89	59-125
7005-72-3	4-Chlorophenyl phenyl ether	1660	1530	92	66-125
95-50-1	1,2-Dichlorobenzene	1660	1500	90	57-125
541-73-1	1,3-Dichlorobenzene	1660	1470	88	55-125

Blank Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1636-BS	W001934.D	1	06/03/00	ME	06/03/00	OP1636	SW122

The QC reported here applies to the following samples: **Method:** SW846 3550B/8270C

F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
106-46-7	1,4-Dichlorobenzene	1660	1580	95	56-125
121-14-2	2,4-Dinitrotoluene	1660	1690	102	68-125
606-20-2	2,6-Dinitrotoluene	1660	1770	106	69-125
91-94-1	3,3'-Dichlorobenzidine	1660	1280	77	44-125
53-70-3	Dibenzo(a,h)anthracene	1660	1730	104	34-133
132-64-9	Dibenzofuran	1660	1550	93	65-125
84-74-2	Di-n-butyl phthalate	1660	1630	98	65-125
117-84-0	Di-n-octyl phthalate	1660	1580	95	49-136
84-66-2	Diethyl phthalate	1660	1660	100	65-125
131-11-3	Dimethyl phthalate	1660	1540	92	66-125
117-81-7	bis(2-Ethylhexyl)phthalate	1660	1650	99	70-137
206-44-0	Fluoranthene	1660	1710	103	31-158
86-73-7	Fluorene	1660	1660	100	63-125
118-74-1	Hexachlorobenzene	1660	1750	105	68-125
87-68-3	Hexachlorobutadiene	1660	1520	91	51-131
77-47-4	Hexachlorocyclopentadiene	1660	1270	76	15-125
67-72-1	Hexachloroethane	1660	1610	97	61-127
193-39-5	Indeno(1,2,3-cd)pyrene	1660	1730	104	39-162
78-59-1	Isophorone	1660	1430	86	40-144
91-57-6	2-Methylnaphthalene	1660	1580	95	63-125
88-74-4	2-Nitroaniline	1660	1610	97	61-125
99-09-2	3-Nitroaniline	1660	1150	69	50-125
100-01-6	4-Nitroaniline	1660	1380	83	40-133
91-20-3	Naphthalene	1660	1660	100	60-125
98-95-3	Nitrobenzene	1660	1570	94	55-125
621-64-7	N-Nitroso-di-n-propylamine	1660	1400	84	52-125
86-30-6	N-Nitrosodiphenylamine	1660	1770	106	64-131
85-01-8	Phenanthrene	1660	1730	104	49-138
129-00-0	Pyrene	1660	1590	95	39-156
120-82-1	1,2,4-Trichlorobenzene	1660	1570	94	56-125

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	89%	36-129%
4165-62-2	Phenol-d5	93%	38-135%

Blank Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1636-BS	W001934.D	1	06/03/00	ME	06/03/00	OP1636	SW122

The QC reported here applies to the following samples: **Method:** SW846 3550B/8270C

F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

CAS No.	Surrogate Recoveries	BSP	Limits
118-79-6	2,4,6-Tribromophenol	108%	37-144%
4165-60-0	Nitrobenzene-d5	100%	36-135%
321-60-8	2-Fluorobiphenyl	101%	44-135%
1718-51-0	Terphenyl-d14	102%	42-149%

Blank Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1696-LBS	W002209.D	1	06/20/00	ME	06/17/00	OP1696	SW136

The QC reported here applies to the following samples: **Method:** SW846 8270C

F6635-3A, F6635-4A, F6635-5A, F6635-6A

OK

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	500	77.8	16	10-125
95-57-8	2-Chlorophenol	500	433	87	33-125
59-50-7	4-Chloro-3-methyl phenol	500	440	88	56-125
120-83-2	2,4-Dichlorophenol	500	452	90	52-125
105-67-9	2,4-Dimethylphenol	500	348	70	10-143
51-28-5	2,4-Dinitrophenol	500	276	55	27-128
534-52-1	4,6-Dinitro-o-cresol	500	358	72	54-140
95-48-7	2-Methylphenol	500	381	76	28-125
	3&4-Methylphenol	1000	731	73	28-125
88-75-5	2-Nitrophenol	500	454	91	35-127
100-02-7	4-Nitrophenol	500	187	37	19-125
87-86-5	Pentachlorophenol	500	410	82	33-147
108-95-2	Phenol	500	212	42	19-125
95-95-4	2,4,5-Trichlorophenol	500	464	93	60-125
88-06-2	2,4,6-Trichlorophenol	500	478	96	61-125
83-32-9	Acenaphthene	500	461	92	57-125
208-96-8	Acenaphthylene	500	513	103	59-125
120-12-7	Anthracene	500	510	102	64-125
56-55-3	Benzo(a)anthracene	500	501	100	60-125
50-32-8	Benzo(a)pyrene	500	528	106	66-115
205-99-2	Benzo(b)fluoranthene	500	479	96	39-126
191-24-2	Benzo(g,h,i)perylene	500	608	122	39-146
207-08-9	Benzo(k)fluoranthene	500	512	102	45-127
101-55-3	4-Bromophenyl phenyl ether	500	480	96	44-125
85-68-7	Butyl benzyl phthalate	500	406	81	46-142
100-51-6	Benzyl Alcohol	500	412	82	28-125
91-58-7	2-Chloronaphthalene	500	454	91	49-125
106-47-8	4-Chloroaniline	500	402	80	12-125
86-74-8	Carbazole	500	462	92	58-125
218-01-9	Chrysene	500	505	101	62-125
111-91-1	bis(2-Chloroethoxy)methane	500	426	85	38-128
111-44-4	bis(2-Chloroethyl)ether	500	435	87	33-125
108-60-1	bis(2-Chloroisopropyl)ether	500	441	88	19-125
7005-72-3	4-Chlorophenyl phenyl ether	500	426	85	53-125
95-50-1	1,2-Dichlorobenzene	500	348	70	36-125
541-73-1	1,3-Dichlorobenzene	500	328	66	31-125

Blank Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1696-LBS	W002209.D	1	06/20/00	ME	06/17/00	OP1696	SW136

The QC reported here applies to the following samples: **Method:** SW846 8270C

F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
106-46-7	1,4-Dichlorobenzene	500	359	72	33-125
121-14-2	2,4-Dinitrotoluene	500	478	96	56-125
606-20-2	2,6-Dinitrotoluene	500	510	102	54-125
91-94-1	3,3'-Dichlorobenzidine	500	391	78	12-146
53-70-3	Dibenzo(a,h)anthracene	500	577	115	39-134
132-64-9	Dibenzofuran	500	447	89	60-125
84-74-2	Di-n-butyl phthalate	500	480	96	56-125
117-84-0	Di-n-octyl phthalate	500	455	91	30-133
84-66-2	Diethyl phthalate	500	488	98	51-125
131-11-3	Dimethyl phthalate	500	464	93	15-125
117-81-7	bis(2-Ethylhexyl)phthalate	500	479	96	34-142
206-44-0	Fluoranthene	500	475	95	56-135
86-73-7	Fluorene	500	475	95	58-125
118-74-1	Hexachlorobenzene	500	512	102	60-125
87-68-3	Hexachlorobutadiene	500	304	61	28-125
77-47-4	Hexachlorocyclopentadiene	500	200	40	17-140
67-72-1	Hexachloroethane	500	348	70	18-157
193-39-5	Indeno(1,2,3-cd)pyrene	500	547	109	53-134
78-59-1	Isophorone	500	441	88	44-125
91-57-6	2-Methylnaphthalene	500	398	80	35-125
88-74-4	2-Nitroaniline	500	466	93	54-125
99-09-2	3-Nitroaniline	500	407	81	44-125
100-01-6	4-Nitroaniline	500	421	84	44-125
91-20-3	Naphthalene	500	423	85	22-131
98-95-3	Nitrobenzene	500	443	89	37-125
621-64-7	N-Nitroso-di-n-propylamine	500	462	92	45-125
86-30-6	N-Nitrosodiphenylamine	500	545	109	61-127
85-01-8	Phenanthrene	500	508	102	64-125
129-00-0	Pyrene	500	527	105	47-142
120-82-1	1,2,4-Trichlorobenzene	500	354	71	36-125

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	62%	21-100%
4165-62-2	Phenol-d5	40%	10-94%

Blank Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1696-LBS	W002209.D	1	06/20/00	ME	06/17/00	OP1696	SW136

The QC reported here applies to the following samples: **Method:** SW846 8270C

F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Surrogate Recoveries	BSP	Limits
118-79-6	2,4,6-Tribromophenol	99%	10-123%
4165-60-0	Nitrobenzene-d5	96%	35-114%
321-60-8	2-Fluorobiphenyl	92%	43-116%
1718-51-0	Terphenyl-d14	107%	33-141%

Leachate Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1696-LS	W002223.D	1	06/20/00	ME	06/17/00	OP1696	SW136
F6676-4A	W002222.D	1	06/20/00	ME	06/17/00	OP1696	SW136

The QC reported here applies to the following samples: **Method:** SW846 8270C

F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Compound	F6676-4A ug/l	Q	Spike ug/l	LS ug/l	LS %	Limits
65-85-0	Benzoic Acid	ND		500	ND	0*	10-125
95-57-8	2-Chlorophenol	ND		500	391	78	33-125
59-50-7	4-Chloro-3-methyl phenol	ND		500	415	83	56-125
120-83-2	2,4-Dichlorophenol	ND		500	420	84	52-125
105-67-9	2,4-Dimethylphenol	ND		500	277	55	10-143
51-28-5	2,4-Dinitrophenol	ND		500	127	25*	27-128
534-52-1	4,6-Dinitro-o-cresol	ND		500	287	57	54-140
95-48-7	2-Methylphenol	ND		500	342	68	28-125
	3&4-Methylphenol	ND		1000	648	65	28-125
88-75-5	2-Nitrophenol	ND		500	420	84	35-127
100-02-7	4-Nitrophenol	ND		500	157	31	19-125
87-86-5	Pentachlorophenol	ND		500	312	62	33-147
108-95-2	Phenol	ND		500	180	36	19-125
95-95-4	2,4,5-Trichlorophenol	ND		500	424	85	60-125
88-06-2	2,4,6-Trichlorophenol	ND		500	438	88	61-125
83-32-9	Acenaphthene	ND		500	440	88	57-125
208-96-8	Acenaphthylene	ND		500	503	101	59-125
120-12-7	Anthracene	ND		500	478	96	64-125
56-55-3	Benzo(a)anthracene	ND		500	456	91	60-125
50-32-8	Benzo(a)pyrene	ND		500	487	97	66-115
205-99-2	Benzo(b)fluoranthene	ND		500	454	91	39-126
191-24-2	Benzo(g,h,i)perylene	ND		500	528	106	39-146
207-08-9	Benzo(k)fluoranthene	ND		500	471	94	45-127
101-55-3	4-Bromophenyl phenyl ether	ND		500	437	87	44-125
85-68-7	Butyl benzyl phthalate	ND		500	366	73	46-142
100-51-6	Benzyl Alcohol	ND		500	362	72	28-125
91-58-7	2-Chloronaphthalene	ND		500	432	86	49-125
106-47-8	4-Chloroaniline	ND		500	382	76	12-125
86-74-8	Carbazole	ND		500	444	89	58-125
218-01-9	Chrysene	ND		500	464	93	62-125
111-91-1	bis(2-Chloroethoxy)methane	ND		500	401	80	38-128
111-44-4	bis(2-Chloroethyl)ether	ND		500	402	80	33-125
108-60-1	bis(2-Chloroisopropyl)ether	ND		500	425	85	19-125
7005-72-3	4-Chlorophenyl phenyl ether	ND		500	399	80	53-125
95-50-1	1,2-Dichlorobenzene	ND		500	334	67	36-125
541-73-1	1,3-Dichlorobenzene	ND		500	311	62	31-125

Leachate Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1696-LS	W002223.D	1	06/20/00	ME	06/17/00	OP1696	SW136
F6676-4A	W002222.D	1	06/20/00	ME	06/17/00	OP1696	SW136

The QC reported here applies to the following samples: **Method:** SW846 8270C

F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Compound	F6676-4A ug/l	Q	Spike ug/l	LS ug/l	LS %	Limits
106-46-7	1,4-Dichlorobenzene	ND		500	342	68	33-125
121-14-2	2,4-Dinitrotoluene	ND		500	447	89	56-125
606-20-2	2,6-Dinitrotoluene	ND		500	483	97	54-125
91-94-1	3,3'-Dichlorobenzidine	ND		500	347	69	12-146
53-70-3	Dibenzo(a,h)anthracene	ND		500	489	98	39-134
132-64-9	Dibenzofuran	ND		500	422	84	60-125
84-74-2	Di-n-butyl phthalate	ND		500	451	90	56-125
117-84-0	Di-n-octyl phthalate	ND		500	412	82	30-133
84-66-2	Diethyl phthalate	ND		500	458	92	51-125
131-11-3	Dimethyl phthalate	ND		500	440	88	15-125
117-81-7	bis(2-Ethylhexyl)phthalate	ND		500	432	86	34-142
206-44-0	Fluoranthene	ND		500	462	92	56-135
86-73-7	Fluorene	ND		500	453	91	58-125
118-74-1	Hexachlorobenzene	ND		500	460	92	60-125
87-68-3	Hexachlorobutadiene	ND		500	267	53	28-125
77-47-4	Hexachlorocyclopentadiene	ND		500	172	34	17-140
67-72-1	Hexachloroethane	ND		500	306	61	18-157
193-39-5	Indeno(1,2,3-cd)pyrene	ND		500	480	96	53-134
78-59-1	Isophorone	ND		500	421	84	44-125
91-57-6	2-Methylnaphthalene	ND		500	394	79	35-125
88-74-4	2-Nitroaniline	ND		500	431	86	54-125
99-09-2	3-Nitroaniline	ND		500	395	79	44-125
100-01-6	4-Nitroaniline	ND		500	397	79	44-125
91-20-3	Naphthalene	ND		500	424	85	22-131
98-95-3	Nitrobenzene	ND		500	423	85	37-125
621-64-7	N-Nitroso-di-n-propylamine	ND		500	437	87	45-125
86-30-6	N-Nitrosodiphenylamine	ND		500	498	100	61-127
85-01-8	Phenanthrene	ND		500	474	95	64-125
129-00-0	Pyrene	ND		500	473	95	47-142
120-82-1	1,2,4-Trichlorobenzene	ND		500	341	68	36-125

CAS No.	Surrogate Recoveries	LS	F6676-4A	Limits
367-12-4	2-Fluorophenol	55%	62%	21-100%
4165-62-2	Phenol-d5	35%	41%	10-94%

Leachate Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1696-LS	W002223.D	1	06/20/00	ME	06/17/00	OP1696	SW136
F6676-4A	W002222.D	1	06/20/00	ME	06/17/00	OP1696	SW136

The QC reported here applies to the following samples: **Method:** SW846 8270C

F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Surrogate Recoveries	LS	F6676-4A	Limits
118-79-6	2,4,6-Tribromophenol	89%	84%	10-123%
4165-60-0	Nitrobenzene-d5	90%	89%	35-114%
321-60-8	2-Fluorobiphenyl	88%	86%	43-116%
1718-51-0	Terphenyl-d14	97%	103%	33-141%

Leachate Blank Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1696-LB	W002210.D	1	06/20/00	ME	06/17/00	OP1696	SW136

The QC reported here applies to the following samples: **Method:** SW846 8270C

F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	250	ug/l	
95-57-8	2-Chlorophenol	ND	50	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	50	ug/l	
120-83-2	2,4-Dichlorophenol	ND	50	ug/l	
105-67-9	2,4-Dimethylphenol	ND	250	ug/l	
51-28-5	2,4-Dinitrophenol	ND	250	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	100	ug/l	
95-48-7	2-Methylphenol	ND	50	ug/l	
	3&4-Methylphenol	ND	50	ug/l	
88-75-5	2-Nitrophenol	ND	50	ug/l	
100-02-7	4-Nitrophenol	ND	250	ug/l	
87-86-5	Pentachlorophenol	ND	250	ug/l	
108-95-2	Phenol	ND	50	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	50	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	50	ug/l	
83-32-9	Acenaphthene	ND	50	ug/l	
208-96-8	Acenaphthylene	ND	50	ug/l	
120-12-7	Anthracene	ND	50	ug/l	
56-55-3	Benzo(a)anthracene	ND	50	ug/l	
50-32-8	Benzo(a)pyrene	ND	50	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	50	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	50	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	50	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	50	ug/l	
85-68-7	Butyl benzyl phthalate	ND	50	ug/l	
100-51-6	Benzyl Alcohol	ND	50	ug/l	
91-58-7	2-Chloronaphthalene	ND	50	ug/l	
106-47-8	4-Chloroaniline	ND	50	ug/l	
86-74-8	Carbazole	ND	50	ug/l	
218-01-9	Chrysene	ND	50	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	50	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	50	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	50	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	50	ug/l	

Leachate Blank Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1696-LB	W002210.D	1	06/20/00	ME	06/17/00	OP1696	SW136

The QC reported here applies to the following samples: **Method:** SW846 8270C

F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	50	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	50	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	50	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	100	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	50	ug/l	
132-64-9	Dibenzofuran	ND	50	ug/l	
84-74-2	Di-n-butyl phthalate	ND	50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	50	ug/l	
84-66-2	Diethyl phthalate	ND	50	ug/l	
131-11-3	Dimethyl phthalate	ND	50	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	50	ug/l	
206-44-0	Fluoranthene	ND	50	ug/l	
86-73-7	Fluorene	ND	50	ug/l	
118-74-1	Hexachlorobenzene	ND	50	ug/l	
87-68-3	Hexachlorobutadiene	ND	50	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	50	ug/l	
67-72-1	Hexachloroethane	ND	50	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	50	ug/l	
78-59-1	Isophorone	ND	50	ug/l	
91-57-6	2-Methylnaphthalene	ND	50	ug/l	
88-74-4	2-Nitroaniline	ND	50	ug/l	
99-09-2	3-Nitroaniline	ND	50	ug/l	
100-01-6	4-Nitroaniline	ND	50	ug/l	
91-20-3	Naphthalene	ND	50	ug/l	
98-95-3	Nitrobenzene	ND	50	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	50	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	50	ug/l	
85-01-8	Phenanthrene	ND	50	ug/l	
129-00-0	Pyrene	ND	50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	50	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	60%	21-100%
4165-62-2	Phenol-d5	37%	10-94%

Leachate Blank Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1696-LB	W002210.D	1	06/20/00	ME	06/17/00	OP1696	SW136

The QC reported here applies to the following samples: **Method:** SW846 8270C

F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Surrogate Recoveries		Limits
118-79-6	2,4,6-Tribromophenol	95%	10-123%
4165-60-0	Nitrobenzene-d5	99%	35-114%
321-60-8	2-Fluorobiphenyl	94%	43-116%
1718-51-0	Terphenyl-d14	109%	33-141%

Leachate Blank Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1696-LB2	W002211.D	1	06/20/00	ME	06/17/00	OP1696	SW136

The QC reported here applies to the following samples: **Method:** SW846 8270C

F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	250	ug/l	
95-57-8	2-Chlorophenol	ND	50	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	50	ug/l	
120-83-2	2,4-Dichlorophenol	ND	50	ug/l	
105-67-9	2,4-Dimethylphenol	ND	250	ug/l	
51-28-5	2,4-Dinitrophenol	ND	250	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	100	ug/l	
95-48-7	2-Methylphenol	ND	50	ug/l	
	3&4-Methylphenol	ND	50	ug/l	
88-75-5	2-Nitrophenol	ND	50	ug/l	
100-02-7	4-Nitrophenol	ND	250	ug/l	
87-86-5	Pentachlorophenol	ND	250	ug/l	
108-95-2	Phenol	ND	50	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	50	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	50	ug/l	
83-32-9	Acenaphthene	ND	50	ug/l	
208-96-8	Acenaphthylene	ND	50	ug/l	
120-12-7	Anthracene	ND	50	ug/l	
56-55-3	Benzo(a)anthracene	ND	50	ug/l	
50-32-8	Benzo(a)pyrene	ND	50	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	50	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	50	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	50	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	50	ug/l	
85-68-7	Butyl benzyl phthalate	ND	50	ug/l	
100-51-6	Benzyl Alcohol	ND	50	ug/l	
91-58-7	2-Chloronaphthalene	ND	50	ug/l	
106-47-8	4-Chloroaniline	ND	50	ug/l	
86-74-8	Carbazole	ND	50	ug/l	
218-01-9	Chrysene	ND	50	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	50	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	50	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	50	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	50	ug/l	

Leachate Blank Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1696-LB2	W002211.D	1	06/20/00	ME	06/17/00	OP1696	SW136

The QC reported here applies to the following samples: **Method:** SW846 8270C

F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	50	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	50	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	50	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	100	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	50	ug/l	
132-64-9	Dibenzofuran	ND	50	ug/l	
84-74-2	Di-n-butyl phthalate	ND	50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	50	ug/l	
84-66-2	Diethyl phthalate	ND	50	ug/l	
131-11-3	Dimethyl phthalate	ND	50	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	50	ug/l	
206-44-0	Fluoranthene	ND	50	ug/l	
86-73-7	Fluorene	ND	50	ug/l	
118-74-1	Hexachlorobenzene	ND	50	ug/l	
87-68-3	Hexachlorobutadiene	ND	50	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	50	ug/l	
67-72-1	Hexachloroethane	ND	50	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	50	ug/l	
78-59-1	Isophorone	ND	50	ug/l	
91-57-6	2-Methylnaphthalene	ND	50	ug/l	
88-74-4	2-Nitroaniline	ND	50	ug/l	
99-09-2	3-Nitroaniline	ND	50	ug/l	
100-01-6	4-Nitroaniline	ND	50	ug/l	
91-20-3	Naphthalene	ND	50	ug/l	
98-95-3	Nitrobenzene	ND	50	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	50	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	50	ug/l	
85-01-8	Phenanthrene	ND	50	ug/l	
129-00-0	Pyrene	ND	50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	50	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	50%	21-100%
4165-62-2	Phenol-d5	32%	10-94%

Leachate Blank Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1696-LB2	W002211.D	1	06/20/00	ME	06/17/00	OP1696	SW136

The QC reported here applies to the following samples: **Method:** SW846 8270C

F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Surrogate Recoveries		Limits
118-79-6	2,4,6-Tribromophenol	80%	10-123%
4165-60-0	Nitrobenzene-d5	78%	35-114%
321-60-8	2-Fluorobiphenyl	74%	43-116%
1718-51-0	Terphenyl-d14	99%	33-141%

Method Blank Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1636-MB	W001935.D	1	06/03/00	ME	06/03/00	OP1636	SW122

The QC reported here applies to the following samples: **Method:** SW846 3550B/8270C

F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic acid	ND	830	ug/kg	
95-57-8	2-Chlorophenol	ND	330	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	330	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	330	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	830	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	830	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	670	ug/kg	
95-48-7	2-Methylphenol	ND	330	ug/kg	
	3&4-Methylphenol	ND	330	ug/kg	
88-75-5	2-Nitrophenol	ND	330	ug/kg	
100-02-7	4-Nitrophenol	ND	830	ug/kg	
87-86-5	Pentachlorophenol	ND	830	ug/kg	
108-95-2	Phenol	ND	330	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	330	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	330	ug/kg	
83-32-9	Acenaphthene	ND	330	ug/kg	
208-96-8	Acenaphthylene	ND	330	ug/kg	
120-12-7	Anthracene	ND	330	ug/kg	
56-55-3	Benzo(a)anthracene	ND	330	ug/kg	
50-32-8	Benzo(a)pyrene	ND	330	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	330	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	330	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	330	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	330	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	330	ug/kg	
100-51-6	Benzyl Alcohol	ND	330	ug/kg	
91-58-7	2-Chloronaphthalene	ND	330	ug/kg	
106-47-8	4-Chloroaniline	ND	330	ug/kg	
86-74-8	Carbazole	ND	330	ug/kg	
218-01-9	Chrysene	ND	330	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	330	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	330	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	330	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	330	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	330	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	330	ug/kg	

Method Blank Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1636-MB	W001935.D	1	06/03/00	ME	06/03/00	OP1636	SW122

The QC reported here applies to the following samples: **Method:** SW846 3550B/8270C

F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

CAS No.	Compound	Result	RL	Units	Q
106-46-7	1,4-Dichlorobenzene	ND	330	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	330	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	330	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	670	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	330	ug/kg	
132-64-9	Dibenzofuran	ND	330	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	330	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	330	ug/kg	
84-66-2	Diethyl phthalate	ND	330	ug/kg	
131-11-3	Dimethyl phthalate	ND	330	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	330	ug/kg	
206-44-0	Fluoranthene	ND	330	ug/kg	
86-73-7	Fluorene	ND	330	ug/kg	
118-74-1	Hexachlorobenzene	ND	330	ug/kg	
87-68-3	Hexachlorobutadiene	ND	330	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	330	ug/kg	
67-72-1	Hexachloroethane	ND	330	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	330	ug/kg	
78-59-1	Isophorone	ND	330	ug/kg	
91-57-6	2-Methylnaphthalene	ND	330	ug/kg	
88-74-4	2-Nitroaniline	ND	330	ug/kg	
99-09-2	3-Nitroaniline	ND	330	ug/kg	
100-01-6	4-Nitroaniline	ND	330	ug/kg	
91-20-3	Naphthalene	ND	330	ug/kg	
98-95-3	Nitrobenzene	ND	330	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	330	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	330	ug/kg	
85-01-8	Phenanthrene	ND	330	ug/kg	
129-00-0	Pyrene	ND	330	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	330	ug/kg	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	74%	36-129%
4165-62-2	Phenol-d5	83%	38-135%

Method Blank Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1636-MB	W001935.D	1	06/03/00	ME	06/03/00	OP1636	SW122

The QC reported here applies to the following samples: **Method:** SW846 3550B/8270C

F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

CAS No.	Surrogate Recoveries		Limits
118-79-6	2,4,6-Tribromophenol	98%	37-144%
4165-60-0	Nitrobenzene-d5	82%	36-135%
321-60-8	2-Fluorobiphenyl	83%	44-135%
1718-51-0	Terphenyl-d14	104%	42-149%

Response Factor Report MSBNA01

Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Tue Apr 11 11:09:48 2000
Response via : Initial Calibration

Calibration Files

5	=W001397.D	25	=W001398.D	50	=W001399.D
75	=W001400.D	100	=W001401.D	125	=W001402.D

		Compound	5	25	50	75	100	125	Avg	%RSD
1)	I	1,4-Dichlorobenzene-d	----------	----------	----------	ISTD	----------	----------	----------	
2)		1,4-Dioxane	0.410	0.426	0.441	0.459	0.445	0.462	0.440	4.47
3)		N-nitrosodimethylam	0.695	0.691	0.716	0.763	0.734	0.757	0.726	4.20
4)		Pyridine	1.002	1.090	1.050	1.162	1.129	1.175	1.101	6.09
5)		Aniline	1.766	1.799	1.702	1.615	1.485	1.470	1.640	8.57
6)	S	2-Fluorophenol	1.142	1.189	1.166	1.151	1.074	1.077	1.133	4.19
7)		bis(2-Chloroethyl)e	1.219	1.261	1.241	1.258	1.209	1.203	1.232	2.02
8)	S	Phenol-d5	1.361	1.381	1.314	1.251	1.133	1.113	1.259	9.09
9)	C	Phenol	1.521	1.561	1.504	1.467	1.346	1.333	1.455	6.53
10)		2-Chlorophenol	1.320	1.389	1.356	1.402	1.351	1.361	1.363	2.14
11)		1,3-Dichlorobenzene	1.631	1.686	1.649	1.655	1.553	1.562	1.623	3.30
12)	C	1,4-Dichlorobenzene	1.564	1.587	1.568	1.544	1.455	1.450	1.528	3.92
13)		1,2-Dichlorobenzene	1.483	1.550	1.523	1.538	1.444	1.444	1.497	3.13
14)		Benzyl alcohol	0.467	0.688	0.728	0.788	0.794	0.817	0.714	18.19 off cal
15)		bis(2-chloroisoprop	2.676	2.693	2.604	2.496	2.289	2.210	2.495	8.17
16)		2-Methylphenol	1.067	1.121	1.147	1.190	1.096	1.113	1.122	3.80
17)		Hexachloroethane	0.523	0.544	0.532	0.534	0.511	0.518	0.527	2.25
18)	P	N-Nitroso-di-n-prop	0.776	0.782	0.780	0.810	0.763	0.752	0.777	2.52
19)		3&4-Methylphenol	1.005	1.099	1.106	1.133	1.088	1.073	1.084	4.04
20)	I	Naphthalene-d8	----------	----------	----------	ISTD	----------	----------	----------	
21)	S	Nitrobenzene-d5	0.288	0.303	0.294	0.304	0.285	0.287	0.293	2.80
22)		Nitrobenzene	0.309	0.318	0.312	0.317	0.296	0.294	0.308	3.30
23)		Isophorone	0.552	0.558	0.560	0.581	0.548	0.551	0.559	2.16
24)	C	2-Nitrophenol	0.179	0.197	0.201	0.213	0.204	0.204	0.200	5.76
25)		2,4-Dimethylphenol	0.291	0.325	0.313	0.324	0.307	0.311	0.312	3.95
26)		bis(2-Chloroethoxy)	0.393	0.389	0.382	0.382	0.358	0.355	0.377	4.30
27)		Benzoic Acid		0.162	0.195	0.235	0.232	0.228	0.210	14.99
28)	C	2,4-Dichlorophenol	0.278	0.298	0.295	0.305	0.281	0.278	0.289	3.99
29)		1,2,4-Trichlorobenz	0.326	0.339	0.334	0.334	0.316	0.313	0.327	3.22
30)		Naphthalene	1.029	1.051	1.002	0.970	0.905	0.883	0.973	6.92
31)		4-Chloroaniline	0.417	0.422	0.409	0.423	0.392	0.390	0.409	3.60
32)		2,6-Dichlorophenol	0.283	0.287	0.284	0.291	0.274	0.269	0.281	2.91
33)	C	Hexachlorobutadiene	0.191	0.193	0.188	0.185	0.175	0.173	0.184	4.67
34)	C	4-Chloro-3-methylph	0.238	0.252	0.254	0.272	0.256	0.254	0.254	4.32
35)		2-Methylnaphthalene	0.708	0.720	0.709	0.707	0.648	0.636	0.688	5.25
36)		1-Methylnaphthalene	0.621	0.629	0.613	0.622	0.569	0.562	0.603	4.84
37)	I	Acenaphthene-d10	----------	----------	----------	ISTD	----------	----------	----------	
38)	P	Hexachlorocyclopent	0.284	0.371	0.391	0.402	0.382	0.403	0.372	11.99
39)	C	2,4,6-Trichlorophen	0.343	0.373	0.374	0.382	0.363	0.374	0.368	3.76
40)		2,4,5-Trichlorophen	0.359	0.381	0.386	0.409	0.376	0.387	0.383	4.22
41)	S	2-Fluorobiphenyl	1.422	1.481	1.438	1.376	1.297	1.302	1.386	5.41

382

) = Out of Range

Response Factor Report MSBNA01

Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Tue Apr 11 11:09:48 2000
Response via : Initial Calibration

Calibration Files

5	=W001397.D	25	=W001398.D	50	=W001399.D
75	=W001400.D	100	=W001401.D	125	=W001402.D

		Compound	5	25	50	75	100	125	Avg	%RSD
2)		2-Chloronaphthalene	1.176	1.244	1.223	1.184	1.114	1.130	1.178	4.30
3)		2-Nitroaniline	0.279	0.312	0.306	0.326	0.307	0.305	0.306	5.00
4)		Acenaphthylene	1.764	1.864	1.806	1.742	1.616	1.590	1.730	6.20
5)		Dimethylphthalate	1.311	1.352	1.278	1.363	1.293	1.297	1.316	2.61
6)		2,6-Dinitrotoluene	0.248	0.277	0.272	0.285	0.267	0.264	0.269	4.72
7)	C	Acenaphthene	1.205	1.240	1.197	1.184	1.099	1.106	1.172	4.86
8)		3-Nitroaniline	0.300	0.348	0.346	0.373	0.350	0.349	0.344	7.00
9)	P	2,4-Dinitrophenol		0.137	0.163	0.203	0.199	0.205	0.181	16.84
0)		Dibenzofuran	1.671	1.735	1.666	1.651	1.524	1.493	1.623	5.78
1)		2,4-Dinitrotoluene	0.319	0.357	0.352	0.395	0.372	0.368	0.361	6.95
2)	P	4-Nitrophenol	0.124	0.146	0.145	0.162	0.154	0.150	0.147	8.67
3)		2,3,4,6-Tetrachloro	0.240	0.273	0.271	0.295	0.279	0.277	0.272	6.65
4)		Fluorene	1.275	1.324	1.277	1.257	1.171	1.137	1.240	5.75
5)		4-Chlorophenyl-phen	0.657	0.667	0.642	0.634	0.597	0.588	0.631	5.06
6)		Diethylphthalate	1.181	1.216	1.167	1.250	1.176	1.154	1.191	2.99
7)		4-Nitroaniline	0.292	0.320	0.314	0.353	0.331	0.325	0.322	6.24
8)	I	Phenanthrene-d10	----------	----------	----------	ISTD	----------	----------	----------	
9)		4,6-Dinitro-2-methy		0.141	0.153	0.177	0.171	0.174	0.163	9.47
0)	C	n-Nitrosodiphenylam	0.604	0.633	0.626	0.629	0.598	0.616	0.618	2.29
1)		1,2-Diphenylhydrazi	0.740	0.771	0.749	0.735	0.702	0.710	0.735	3.44
2)	S	2,4,6-Tribromopheno	0.072	0.078	0.078	0.080	0.077	0.079	0.077	3.65
3)		4-Bromophenyl-pheny	0.214	0.224	0.218	0.218	0.206	0.212	0.215	2.94
4)		Hexachlorobenzene	0.201	0.209	0.209	0.204	0.195	0.199	0.203	2.80
5)	C	Pentachlorophenol		0.104	0.113	0.127	0.124	0.125	0.119	8.05
6)		Phenanthrene	1.180	1.189	1.142	1.146	1.084	1.069	1.135	4.31
7)		Anthracene	1.185	1.219	1.173	1.166	1.090	1.079	1.152	4.82
8)		Carbazole	1.086	1.119	1.079	1.118	1.036	1.012	1.075	4.02
9)		Di-n-butylphthalate	1.245	1.353	1.346	1.377	1.295	1.252	1.311	4.22
0)	C	Fluoranthene	1.023	1.084	1.055	1.064	1.003	0.953	1.030	4.63
1)	I	Chrysene-d12	----------	----------	----------	ISTD	----------	----------	----------	
2)		Benzidine	0.696	0.792	0.804	0.819	0.782	0.796	0.781	5.61
3)		Pyrene	1.638	1.786	1.729	1.753	1.646	1.744	1.716	3.52
4)	S	Terphenyl-d14	0.990	1.063	1.039	1.090	1.018	1.090	1.048	3.85
5)		Butylbenzylphthalat	0.783	0.912	0.927	0.990	0.946	0.953	0.918	7.79
6)		3,3'-Dichlorobenzid	0.361	0.404	0.419	0.439	0.422	0.427	0.412	6.64
7)		Benzo[a]anthracene	1.154	1.249	1.244	1.280	1.232	1.238	1.233	3.39
8)		Chrysene	1.189	1.230	1.215	1.220	1.164	1.175	1.199	2.22
9)		bis(2-Ethylhexyl)ph	0.812	0.966	0.996	1.072	1.035	1.052	0.989	9.59
0)	I	Perylene-d12	----------	----------	----------	ISTD	----------	----------	----------	
1)	C	Di-n-octylphthalate		1.959	2.068	2.402	2.368	2.415	2.242	9.49
2)		Benzo[b]fluoranthen	1.244	1.321	1.385	1.484	1.424	1.410	1.378	6.13

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) = Out of Range

Response Factor Report MSBNA01

Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Tue Apr 11 11:09:48 2000
Response via : Initial Calibration

Calibration Files

5	=W001397.D	25	=W001398.D	50	=W001399.D
75	=W001400.D	100	=W001401.D	125	=W001402.D

	Compound	5	25	50	75	100	125	Avg	%RSD
3)	Benzo[k]fluoranthen	1.279	1.475	1.420	1.418	1.358	1.441	1.398	4.99
4) C	Benzo[a]pyrene	1.052	1.158	1.167	1.219	1.156	1.194	1.158	4.94
5)	Indeno[1,2,3-cd]pyr	0.709	0.876	0.909	0.934	0.884	0.922	0.872	9.50
6)	Dibenz[a,h]anthrace	0.814	0.897	1.000	0.989	0.918	0.987	0.934	7.74
7)	Benzo[g,h,i]perylen	0.860	1.006	1.006	0.989	0.909	0.988	0.960	6.35

4) = Out of Range

Sample Calculations
SDG F6638

VOC 29D00401 (F6635-4) - Acetone

$$\frac{A_s}{A_{IS}} \times \frac{C_{IS}}{RRF} \times \frac{V_{mj}}{Wt_s} \times \frac{DF}{\%sol}$$

$$\frac{46987}{411765} \times \frac{50\ \mu g/kg}{0.189} \times \frac{5\ mL}{4.69\ g} \times \frac{1\ g}{1\ mL} \times \frac{1}{0.98} = 32.8\ \frac{\mu g}{kg} \Rightarrow 33\ \frac{\mu g}{kg}$$

SVOC 29D00501 (F6635-5) - Butylbenzyl phthalate

$$\frac{A_s}{A_{IS}} \times \frac{C_{IS}}{RRF} \times \frac{Vol_{Fin}}{Wt_s} \times \frac{DF}{\%sol}$$

$$\frac{475082}{345649} \times \frac{40\ \mu g/kg}{0.918} \times \frac{1\ mL}{30\ g} \times \frac{1\ g}{1\ mL} \times \frac{1000\ \mu g}{1\ mg} \times \frac{1}{0.986} = 2024\ \frac{\mu g}{kg}$$

$$\Rightarrow 2020\ \frac{\mu g}{kg}$$

Instrument Performance Check (DFTPP)

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: SW122-DFTPP
Lab File ID: W001932.D
Instrument ID: GCMSW
Injection Date: 06/03/00
Injection Time: 14:59

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	141994	43.1		Pass
68	Less than 2.0% of mass 69	175	0.05	(0.17) [a]	Pass
69	Mass 69 relative abundance	100207	30.4		Pass
70	Less than 2.0% of mass 69	518	0.16	(0.52) [a]	Pass
127	40.0 - 60.0% of mass 198	152864	46.4		Pass
197	Less than 1.0% of mass 198	0	0.0		Pass
198	Base peak, 100% relative abundance	329576	100.0		Pass
199	5.0 - 9.0% of mass 198	22889	6.9		Pass
275	10.0 - 30.0% of mass 198	68672	20.8		Pass
365	1.0 - 100.0% of mass 198	7051	2.1		Pass
441	Present, but less than mass 443	31810	9.7	(76.5) [b]	Pass
442	40.0 - 100.0% of mass 198	212189	64.4		Pass
443	17.0 - 23.0% of mass 442	41608	12.6	(19.6) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
SW122-CC93	W001933.D	06/03/00	15:17	00:18	Continuing cal 75
OP1636-BS	W001934.D	06/03/00	15:47	00:48	Blank Spike
OP1636-MB	W001935.D	06/03/00	16:16	01:17	Method Blank
ZZZZZZ	W001936.D	06/03/00	16:46	01:47	(unrelated sample)
F6635-1	W001937.D	06/03/00	17:15	02:16	29D00101
OP1636-MS	W001938.D	06/03/00	17:45	02:46	Matrix Spike
OP1636-MSD	W001939.D	06/03/00	18:14	03:15	Matrix Spike Duplicate
F6635-2	W001940.D	06/03/00	18:43	03:44	29D00201
F6635-3	W001941.D	06/03/00	19:13	04:14	29D00301
F6635-4	W001942.D	06/03/00	19:42	04:43	29D00401
F6635-5	W001943.D	06/03/00	20:12	05:13	29D00501
F6635-6	W001944.D	06/03/00	20:41	05:42	29D00601

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\060300\W001933.D
Acq On : 3 Jun 2000 3:17 pm
Sample : cc93-75
Misc : op1623,sw122,water,,,1,
MS Integration Params: LSCINT.P

Vial: 2
Operator: marke
Inst : MSBNA01
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Thu Jun 01 11:10:17 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	136	-0.03
2		1,4-Dioxane	0.440	0.385	12.5	114	-0.01
3		N-nitrosodimethylamine	0.726	0.793	-9.2	142	-0.11
4		Pyridine	1.101	0.953	13.4	112	-0.03
5		Aniline	1.640	1.433	12.6	121	-0.03
6	S	2-Fluorophenol	1.133	1.007	11.1	119	-0.06
7		bis(2-Chloroethyl)ether	1.232	1.138	7.6	123	-0.03
8	S	Phenol-d5	1.259	1.153	8.4	126	-0.01
9	C	Phenol	1.455	1.298	10.8	121	-0.01
0		2-Chlorophenol	1.363	1.309	4.0	127	-0.03
1		1,3-Dichlorobenzene	1.623	1.535	5.4	126	-0.04
2	C	1,4-Dichlorobenzene	1.528	1.448	5.2	128	-0.04
3		1,2-Dichlorobenzene	1.497	1.413	5.6	125	-0.04
4		Benzyl alcohol	0.714	0.795	-11.3	138	-0.02
5		bis(2-chloroisopropyl)ether	2.495	2.117	15.2	116	-0.02
6		2-Methylphenol	1.122	1.036	7.7	119	0.00
7		Hexachloroethane	0.527	0.510	3.2	130	-0.04
8	P	N-Nitroso-di-n-propylamine	0.777	0.696	10.4	117	-0.02
9		3&4-Methylphenol	1.084	1.066	1.7	128	0.00
0	I	Naphthalene-d8	1.000	1.000	0.0	133	-0.03
1	S	Nitrobenzene-d5	0.293	0.287	2.0	125	-0.04
2		Nitrobenzene	0.308	0.298	3.2	125	-0.04
3		Isophorone	0.559	0.538	3.8	123	-0.04
4	C	2-Nitrophenol	0.200	0.203	-1.5	127	-0.04
5		2,4-Dimethylphenol	0.312	0.305	2.2	125	-0.02
6		bis(2-Chloroethoxy)methane	0.377	0.357	5.3	124	-0.03
7		Benzoic Acid	0.210	0.238	-13.3	135	-0.01
8	C	2,4-Dichlorophenol	0.289	0.288	0.3	125	-0.03
9		1,2,4-Trichlorobenzene	0.327	0.326	0.3	130	-0.04
0		Naphthalene	0.973	0.912	6.3	125	-0.04
1		4-Chloroaniline	0.409	0.384	6.1	120	-0.03
2		2,6-Dichlorophenol	0.281	0.286	-1.8	131	-0.03
3	C	Hexachlorobutadiene	0.184	0.191	-3.8	137	-0.04
4	C	4-Chloro-3-methylphenol	0.254	0.253	0.4	123	0.00
5		2-Methylnaphthalene	0.688	0.675	1.9	127	-0.03
6		1-Methylnaphthalene	0.603	0.593	1.7	126	-0.03
7	I	Acenaphthene-d10	1.000	1.000	0.0	135	-0.03
8	P	Hexachlorocyclopentadiene	0.372	0.356	4.3	120	-0.07
9	C	2,4,6-Trichlorophenol	0.368	0.378	-2.7	134	-0.05
0		2,4,5-Trichlorophenol	0.383	0.406	-6.0	134	-0.04
1	S	2-Fluorobiphenyl	1.386	1.329	4.1	130	-0.06
2		2-Chloronaphthalene	1.178	1.119	5.0	128	-0.06
3		2-Nitroaniline	0.306	0.303	1.0	125	-0.05

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4		Acenaphthylene	1.730	1.611	6.9	125	-0.05
5		Dimethylphthalate	1.316	1.302	1.1	129	-0.04
6		2,6-Dinitrotoluene	0.269	0.275	-2.2	130	-0.04
7	C	Acenaphthene	1.172	1.127	3.8	128	-0.05
8		3-Nitroaniline	0.344	0.326	5.2	118	-0.04
9	P	2,4-Dinitrophenol	0.181	0.195	-7.7	130	-0.03
0		Dibenzofuran	1.623	1.529	5.8	125	-0.04
1		2,4-Dinitrotoluene	0.361	0.365	-1.1	125	-0.03
2	P	4-Nitrophenol	0.147	0.145	1.4	121	0.00
3		2,3,4,6-Tetrachlorophenol	0.272	0.292	-7.4	133	-0.02
4		Fluorene	1.240	1.186	4.4	127	-0.02
5		4-Chlorophenyl-phenylether	0.631	0.616	2.4	131	-0.02
6		Diethylphthalate	1.191	1.172	1.6	126	-0.01
7		4-Nitroaniline	0.322	0.294	8.7	113	-0.02
8	I	Phenanthrene-d10	1.000	1.000	0.0	133	-0.05
9		4,6-Dinitro-2-methylphenol	0.163	0.169	-3.7	127	-0.05
0	C	n-Nitrosodiphenylamine	0.618	0.600	2.9	127	-0.06
1		1,2-Diphenylhydrazine	0.735	0.690	6.1	125	-0.06
2	S	2,4,6-Tribromophenol	0.077	0.081	-5.2	134	-0.06
3		4-Bromophenyl-phenylether	0.215	0.217	-0.9	132	-0.06
4		Hexachlorobenzene	0.203	0.203	0.0	133	-0.05
5	C	Pentachlorophenol	0.119	0.132	-10.9	138	-0.05
6		Phenanthrene	1.135	1.069	5.8	124	-0.05
7		Anthracene	1.152	1.089	5.5	124	-0.05
8		Carbazole	1.075	0.984	8.5	117	-0.05
9		Di-n-butylphthalate	1.311	1.289	1.7	124	-0.03
0	C	Fluoranthene	1.030	0.960	6.8	120	-0.03
1	I	Chrysene-d12	1.000	1.000	0.0	126	-0.05
2		Benzidine	0.781	0.553	29.2	85	-0.09
3		Pyrene	1.716	1.678	2.2	120	-0.11
4	S	Terphenyl-d14	1.048	1.061	-1.2	122	-0.08
5		Butylbenzylphthalate	0.918	0.917	0.1	116	-0.05
6		3,3'-Dichlorobenzidine	0.412	0.414	-0.5	118	-0.04
7		Benzo[a]anthracene	1.233	1.195	3.1	118	-0.05
8		Chrysene	1.199	1.114	7.1	115	-0.05
9		bis(2-Ethylhexyl)phthalate	0.989	1.006	-1.7	118	-0.02
0	I	Perylene-d12	1.000	1.000	0.0	128	-0.06
1	C	Di-n-octylphthalate	2.242	2.285	-1.9	122	-0.04
2		Benzo[b]fluoranthene	1.378	1.399	-1.5	121	-0.07
3		Benzo[k]fluoranthene	1.398	1.273	8.9	115	-0.07
4	C	Benzo[a]pyrene	1.158	1.126	2.8	118	-0.06
5		Indeno[1,2,3-cd]pyrene	0.872	0.879	-0.8	120	-0.02
6		Dibenz[a,h]anthracene	0.934	0.913	2.2	118	-0.02
7		Benzo[g,h,i]perylene	0.960	0.852	11.2	110	-0.03

(#) = Out of Range SPCC's out = 0 CCC's out = 0
W001400.D 8270C.M Sat Jun 03 15:40:08 2000 MSBNA01

Response Factor Report MSBNA01

Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Tue Jun 20 09:01:32 2000
Response via : Initial Calibration

Calibration Files

5	=W002182.D	25	=W002183.D	50	=W002184.D
75	=W002181.D	100	=W002185.D	125	=W002186.D

	Compound	5	25	50	75	100	125	Avg	%RSD
I	1,4-Dichlorobenzene-d	----------	----------	----------	ISTD	----------	----------	----------	
	1,4-Dioxane	0.376	0.404	0.386	0.395	0.388	0.386	0.389	2.37
	N-nitrosodimethylam	0.742	0.797	0.820	0.857	0.908	0.860	0.831	6.94
	Pyridine	0.988	0.963	1.001	1.006	1.069	1.049	1.013	3.88
	Aniline	1.566	1.675	1.629	1.648	1.648	1.544	1.619	3.19
S	2-Fluorophenol	1.097	1.184	1.126	1.138	1.142	1.070	1.126	3.49
	bis(2-Chloroethyl)e	1.180	1.216	1.191	1.197	1.214	1.134	1.189	2.55
S	Phenol-d5	1.299	1.367	1.331	1.335	1.307	1.182	1.303	4.92
C	Phenol	1.478	1.501	1.459	1.465	1.468	1.334	1.451	4.06
	2-Chlorophenol	1.348	1.449	1.392	1.414	1.436	1.351	1.398	3.04
	1,3-Dichlorobenzene	1.606	1.703	1.661	1.665	1.691	1.611	1.656	2.43
C	1,4-Dichlorobenzene	1.552	1.617	1.574	1.579	1.602	1.518	1.574	2.26
	1,2-Dichlorobenzene	1.530	1.594	1.526	1.548	1.574	1.491	1.544	2.38
	Benzyl alcohol	0.782	0.815	0.810	0.830	0.856	0.795	0.815	3.20
	bis(2-chloroisoprop	2.675	2.779	2.601	2.569	2.576	2.286	2.581	6.38
	2-Methylphenol	1.141	1.179	1.131	1.140	1.171	1.079	1.140	3.08
	Hexachloroethane	0.523	0.566	0.543	0.555	0.565	0.533	0.548	3.20
P	N-Nitroso-di-n-prop	0.725	0.742	0.722	0.741	0.754	0.675	0.727	3.84
	3&4-Methylphenol	1.166	1.190	1.156	1.189	1.197	1.083	1.164	3.65
I	Naphthalene-d8	----------	----------	----------	ISTD	----------	----------	----------	
S	Nitrobenzene-d5	0.302	0.322	0.310	0.312	0.324	0.301	0.312	3.13
	Nitrobenzene	0.320	0.346	0.329	0.330	0.337	0.315	0.329	3.39
	Isophorone	0.538	0.556	0.540	0.553	0.572	0.523	0.547	3.10
C	2-Nitrophenol	0.191	0.220	0.216	0.218	0.227	0.211	0.214	5.64
	2,4-Dimethylphenol	0.322	0.342	0.329	0.327	0.344	0.315	0.330	3.44
	bis(2-Chloroethoxy)	0.373	0.390	0.371	0.378	0.390	0.357	0.377	3.34
	Benzoic Acid	0.207	0.247	0.252	0.265	0.277	0.254	0.250	9.62
C	2,4-Dichlorophenol	0.301	0.324	0.307	0.313	0.326	0.293	0.311	4.13
	1,2,4-Trichlorobenz	0.358	0.377	0.359	0.361	0.370	0.343	0.361	3.20
	Naphthalene	1.039	1.101	1.038	1.053	1.071	0.963	1.044	4.42
	4-Chloroaniline	0.411	0.445	0.420	0.432	0.446	0.400	0.426	4.32
	2,6-Dichlorophenol	0.297	0.317	0.304	0.310	0.323	0.293	0.308	3.72
C	Hexachlorobutadiene	0.205	0.224	0.212	0.210	0.219	0.203	0.212	3.78
C	4-Chloro-3-methylph	0.254	0.259	0.254	0.261	0.272	0.247	0.258	3.23
	2-Methylnaphthalene	0.724	0.754	0.727	0.740	0.762	0.680	0.731	4.00
	1-Methylnaphthalene	0.618	0.654	0.625	0.647	0.664	0.600	0.634	3.82
I	Acenaphthene-d10	----------	----------	----------	ISTD	----------	----------	----------	
P	Hexachlorocyclopent		0.341	0.361	0.383	0.419	0.417	0.384	8.85
C	2,4,6-Trichlorophen	0.375	0.431	0.409	0.415	0.425	0.403	0.410	4.90
	2,4,5-Trichlorophen	0.416	0.450	0.439	0.445	0.458	0.428	0.439	3.49
S	2-Fluorobiphenyl	1.443	1.584	1.489	1.493	1.532	1.439	1.497	3.67

410

= Out of Range

Response Factor Report MSBNA01

Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Tue Jun 20 09:01:32 2000
Response via : Initial Calibration

Calibration Files

5	=W002182.D	25	=W002183.D	50	=W002184.D
75	=W002181.D	100	=W002185.D	125	=W002186.D

		Compound	5	25	50	75	100	125	Avg	%RSD
)		2-Chloronaphthalene	1.244	1.349	1.268	1.275	1.320	1.216	1.279	3.81
)		2-Nitroaniline	0.294	0.336	0.321	0.327	0.342	0.315	0.322	5.22
)		Acenaphthylene	1.761	1.906	1.803	1.816	1.858	1.727	1.812	3.57
)		Dimethylphthalate	1.304	1.361	1.295	1.336	1.405	1.259	1.327	3.91
)		2,6-Dinitrotoluene	0.241	0.289	0.283	0.296	0.304	0.277	0.282	7.82
)	C	Acenaphthene	1.213	1.304	1.234	1.234	1.264	1.181	1.238	3.44
)		3-Nitroaniline	0.313	0.352	0.346	0.360	0.369	0.336	0.346	5.70
)	P	2,4-Dinitrophenol		0.167	0.186	0.210	0.223	0.207	0.199	11.22
)		Dibenzofuran	1.713	1.801	1.723	1.729	1.773	1.639	1.730	3.23
)		2,4-Dinitrotoluene	0.328	0.377	0.363	0.379	0.393	0.350	0.365	6.38
)	P	4-Nitrophenol	0.144	0.160	0.157	0.164	0.167	0.151	0.157	5.33
)		2,3,4,6-Tetrachloro	0.279	0.318	0.301	0.318	0.328	0.296	0.307	5.80
)		Fluorene	1.288	1.353	1.295	1.290	1.343	1.205	1.296	4.08
)		4-Chlorophenyl-phen	0.654	0.706	0.655	0.660	0.681	0.625	0.664	4.16
)		Diethylphthalate	1.127	1.228	1.169	1.208	1.245	1.122	1.183	4.41
)		4-Nitroaniline	0.292	0.331	0.324	0.339	0.347	0.309	0.324	6.30
)	I	Phenanthrene-d10	----------	----------	----------	ISTD	----------	----------	----------	
)		4,6-Dinitro-2-methy		0.170	0.174	0.188	0.193	0.186	0.182	5.49
)	C	n-Nitrosodiphenylam	0.600	0.666	0.629	0.645	0.658	0.622	0.637	3.86
)		1,2-Diphenylhydrazi	0.700	0.815	0.768	0.763	0.798	0.754	0.766	5.18
)	S	2,4,6-Tribromopheno	0.082	0.092	0.088	0.088	0.091	0.086	0.088	4.14
)		4-Bromophenyl-pheny	0.223	0.249	0.237	0.236	0.242	0.233	0.237	3.69
)		Hexachlorobenzene	0.218	0.235	0.222	0.218	0.227	0.215	0.223	3.28
)	C	Pentachlorophenol	0.106	0.142	0.141	0.148	0.152	0.144	0.139	11.89
)		Phenanthrene	1.215	1.273	1.208	1.210	1.246	1.158	1.218	3.20
)		Anthracene	1.181	1.290	1.231	1.241	1.273	1.169	1.231	3.92
)		Carbazole	1.100	1.223	1.148	1.151	1.184	1.096	1.150	4.24
)		Di-n-butylphthalate	1.136	1.302	1.276	1.345	1.373	1.273	1.284	6.42
)	C	Fluoranthene	1.026	1.146	1.083	1.129	1.153	1.051	1.098	4.81
)	I	Chrysene-d12	----------	----------	----------	ISTD	----------	----------	----------	
)		Benzidine	0.877	0.869	0.790	0.777	0.740	0.706	0.793	8.63
)		Pyrene	1.595	1.766	1.647	1.638	1.643	1.553	1.640	4.35
)	S	Terphenyl-d14	0.934	1.051	0.992	0.987	0.996	0.933	0.982	4.49
)		Butylbenzylphthalat	0.732	0.857	0.811	0.849	0.874	0.827	0.825	6.13
)		3,3'-Dichlorobenzid	0.408	0.459	0.437	0.462	0.468	0.441	0.446	5.02
)		Benzo[a]anthracene	1.200	1.303	1.237	1.291	1.315	1.221	1.261	3.80
)		Chrysene	1.199	1.273	1.208	1.232	1.237	1.161	1.218	3.13
)		bis(2-Ethylhexyl)ph	0.697	0.858	0.821	0.905	0.932	0.871	0.847	9.78
)	I	Perylene-d12	----------	----------	----------	ISTD	----------	----------	----------	
)	C	Di-n-octylphthalate	1.368	1.717	1.654	1.799	1.899	1.724	1.693	10.64
)		Benzo[b]fluoranthen	1.365	1.546	1.427	1.462	1.542	1.392	1.456	5.23

411

= Out of Range

Response Factor Report MSBNA01

Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Tue Jun 20 09:01:32 2000
Response via : Initial Calibration

Calibration Files

5	=W002182.D	25	=W002183.D	50	=W002184.D
75	=W002181.D	100	=W002185.D	125	=W002186.D

		Compound	5	25	50	75	100	125	Avg	%RSD
)		Benzo[k]fluoranthen	1.378	1.558	1.422	1.479	1.476	1.415	1.455	4.39
)	C	Benzo[a]pyrene	1.207	1.362	1.287	1.328	1.385	1.280	1.308	4.91
)		Indeno[1,2,3-cd]pyr	1.052	1.204	1.250	1.338	1.388	1.291	1.254	9.42
)		Dibenz[a,h]anthrace	0.981	1.199	1.308	1.364	1.411	1.352	1.269	12.47
)		Benzo[g,h,i]perylen	1.224	1.373	1.452	1.418	1.471	1.414	1.392	6.41

412

= Out of Range

Instrument Performance Check (DFTPP)

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

OK

Sample:	SW136-DFTPP	**Injection Date:**	06/20/00
Lab File ID:	W002205.D	**Injection Time:**	09:31
Instrument ID:	GCMSW		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	136544	48.2		Pass
68	Less than 2.0% of mass 69	0	0.0	(0.0) [a]	Pass
69	Mass 69 relative abundance	92179	32.6		Pass
70	Less than 2.0% of mass 69	481	0.17	(0.52) [a]	Pass
127	40.0 - 60.0% of mass 198	136653	48.3		Pass
197	Less than 1.0% of mass 198	0	0.0		Pass
198	Base peak, 100% relative abundance	283061	100.0		Pass
199	5.0 - 9.0% of mass 198	19659	6.9		Pass
275	10.0 - 30.0% of mass 198	56237	19.9		Pass
365	1.0 - 100.0% of mass 198	5321	1.9		Pass
441	Present, but less than mass 443	23862	8.4	(74.6) [b]	Pass
442	40.0 - 100.0% of mass 198	156469	55.3		Pass
443	17.0 - 23.0% of mass 442	32003	11.3	(20.5) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
SW136-CC135	W002206.D	06/20/00	09:49	00:18	Continuing cal 75
OP1696-LBS	W002209.D	06/20/00	11:16	01:45	Blank Spike
OP1696-LB	W002210.D	06/20/00	11:45	02:14	Leachate Blank
OP1696-LB2	W002211.D	06/20/00	12:15	02:44	Leachate Blank
ZZZZZZ	W002212.D	06/20/00	12:44	03:13	(unrelated sample)
ZZZZZZ	W002213.D	06/20/00	13:13	03:42	(unrelated sample)
ZZZZZZ	W002214.D	06/20/00	13:42	04:11	(unrelated sample)
ZZZZZZ	W002215.D	06/20/00	14:12	04:41	(unrelated sample)
F6635-3A	W002216.D	06/20/00	14:41	05:10	29D00301
F6635-4A	W002217.D	06/20/00	15:10	05:39	29D00401
F6635-5A	W002218.D	06/20/00	15:39	06:08	29D00501
F6635-6A	W002219.D	06/20/00	16:08	06:37	29D00601
ZZZZZZ	W002220.D	06/20/00	16:37	07:06	(unrelated sample)
ZZZZZZ	W002221.D	06/20/00	17:07	07:36	(unrelated sample)
ZZZZZZ	W002222.D	06/20/00	17:36	08:05	(unrelated sample)
OP1696-LS	W002223.D	06/20/00	18:05	08:34	Leachate Spike
ZZZZZZ	W002224.D	06/20/00	18:34	09:03	(unrelated sample)
ZZZZZZ	W002225.D	06/20/00	19:04	09:33	(unrelated sample)

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\062000\W002206.D
Acq On : 20 Jun 2000 9:49 am
Sample : cc135-75
Misc : op1699,sw136,soil,,,1,
MS Integration Params: LSCINT.P

Vial: 2
Operator: marke
Inst : MSBNA01
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Tue Jun 20 09:01:32 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	134	0.00
2		1,4-Dioxane	0.389	0.399	-2.6	135	0.00
3		N-nitrosodimethylamine	0.831	0.887	-6.7	138	-0.01
4		Pyridine	1.013	1.035	-2.2	137	-0.05
5		Aniline	1.619	1.581	2.3	128	0.00
6	S	2-Fluorophenol	1.126	1.129	-0.3	133	0.00
7		bis(2-Chloroethyl)ether	1.189	1.196	-0.6	134	0.00
8	S	Phenol-d5	1.303	1.292	0.8	129	0.00
9	C	Phenol	1.451	1.449	0.1	132	0.00
0		2-Chlorophenol	1.398	1.399	-0.1	132	0.00
1		1,3-Dichlorobenzene	1.656	1.657	-0.1	133	0.00
2	C	1,4-Dichlorobenzene	1.574	1.581	-0.4	134	0.00
3		1,2-Dichlorobenzene	1.544	1.543	0.1	133	0.00
4		Benzyl alcohol	0.815	0.810	0.6	130	0.00
5		bis(2-chloroisopropyl)ether	2.581	2.553	1.1	133	0.00
6		2-Methylphenol	1.140	1.138	0.2	133	0.00
7		Hexachloroethane	0.548	0.541	1.3	130	0.00
8	P	N-Nitroso-di-n-propylamine	0.727	0.723	0.6	130	0.00
9		3&4-Methylphenol	1.164	1.163	0.1	131	0.00
0	I	Naphthalene-d8	1.000	1.000	0.0	130	0.00
1	S	Nitrobenzene-d5	0.312	0.315	-1.0	132	0.00
2		Nitrobenzene	0.329	0.329	0.0	130	0.00
3		Isophorone	0.547	0.559	-2.2	132	0.00
4	C	2-Nitrophenol	0.214	0.216	-0.9	129	0.00
5		2,4-Dimethylphenol	0.330	0.330	0.0	132	0.00
6		bis(2-Chloroethoxy)methane	0.377	0.380	-0.8	131	0.00
7		Benzoic Acid	0.250	0.247	1.2	121	0.01
8	C	2,4-Dichlorophenol	0.311	0.316	-1.6	132	0.00
9		1,2,4-Trichlorobenzene	0.361	0.368	-1.9	133	0.00
0		Naphthalene	1.044	1.049	-0.5	130	0.00
1		4-Chloroaniline	0.426	0.425	0.2	128	0.00
2		2,6-Dichlorophenol	0.308	0.311	-1.0	131	0.00
3	C	Hexachlorobutadiene	0.212	0.217	-2.4	135	0.00
4	C	4-Chloro-3-methylphenol	0.258	0.258	0.0	129	0.00
5		2-Methylnaphthalene	0.731	0.738	-1.0	130	0.00
6		1-Methylnaphthalene	0.634	0.642	-1.3	129	0.00
7	I	Acenaphthene-d10	1.000	1.000	0.0	129	0.00
8	P	Hexachlorocyclopentadiene	0.384	0.389	-1.3	131	0.00
9	C	2,4,6-Trichlorophenol	0.410	0.409	0.2	127	0.00
0		2,4,5-Trichlorophenol	0.439	0.439	0.0	127	0.00
1	S	2-Fluorobiphenyl	1.497	1.518	-1.4	131	0.00
2		2-Chloronaphthalene	1.279	1.283	-0.3	129	0.00
3		2-Nitroaniline	0.322	0.325	-0.9	128	0.00

437

		Acenaphthylene	1.812	1.823	-0.6	129	0.00
		Dimethylphthalate	1.327	1.349	-1.7	130	0.00
		2,6-Dinitrotoluene	0.282	0.288	-2.1	125	0.00
	C	Acenaphthene	1.238	1.243	-0.4	130	0.00
		3-Nitroaniline	0.346	0.342	1.2	122	0.00
	P	2,4-Dinitrophenol	0.199	0.183	8.0	112	0.00
		Dibenzofuran	1.730	1.722	0.5	128	0.00
		2,4-Dinitrotoluene	0.365	0.372	-1.9	126	0.00
	P	4-Nitrophenol	0.157	0.154	1.9	121	0.00
		2,3,4,6-Tetrachlorophenol	0.307	0.304	1.0	123	0.00
		Fluorene	1.296	1.275	1.6	127	0.00
		4-Chlorophenyl-phenylether	0.664	0.661	0.5	129	0.00
		Diethylphthalate	1.183	1.176	0.6	125	0.00
		4-Nitroaniline	0.324	0.321	0.9	122	0.00
	I	Phenanthrene-d10	1.000	1.000	0.0	125	0.00
		4,6-Dinitro-2-methylphenol	0.182	0.173	4.9	115	0.00
	C	n-Nitrosodiphenylamine	0.637	0.647	-1.6	126	0.00
		1,2-Diphenylhydrazine	0.766	0.777	-1.4	128	0.00
	S	2,4,6-Tribromophenol	0.088	0.088	0.0	125	0.00
		4-Bromophenyl-phenylether	0.237	0.242	-2.1	129	0.00
		Hexachlorobenzene	0.223	0.224	-0.4	129	0.00
	C	Pentachlorophenol	0.139	0.143	-2.9	121	0.00
		Phenanthrene	1.218	1.203	1.2	125	0.00
		Anthracene	1.231	1.220	0.9	123	0.00
		Carbazole	1.150	1.131	1.7	123	0.00
		Di-n-butylphthalate	1.284	1.325	-3.2	123	0.00
	C	Fluoranthene	1.098	1.072	2.4	119	0.00
	I	Chrysene-d12	1.000	1.000	0.0	112	0.00
		Benzidine	0.793	0.676	14.8	97	0.00
		Pyrene	1.640	1.729	-5.4	118	0.00
	S	Terphenyl-d14	0.982	1.041	-6.0	118	0.00
		Butylbenzylphthalate	0.825	0.873	-5.8	115	0.00
		3,3'-Dichlorobenzidine	0.446	0.442	0.9	107	0.00
		Benzo[a]anthracene	1.261	1.248	1.0	108	0.00
		Chrysene	1.218	1.223	-0.4	111	0.00
		bis(2-Ethylhexyl)phthalate	0.847	0.890	-5.1	110	0.00
	I	Perylene-d12	1.000	1.000	0.0	107	0.00
	C	Di-n-octylphthalate	1.693	1.695	-0.1	100	0.00
		Benzo[b]fluoranthene	1.456	1.411	3.1	103	0.00
		Benzo[k]fluoranthene	1.455	1.471	-1.1	106	0.00
	C	Benzo[a]pyrene	1.308	1.319	-0.8	106	0.00
		Indeno[1,2,3-cd]pyrene	1.254	1.381	-10.1	110	0.00
		Dibenz[a,h]anthracene	1.269	1.468	-15.7	115	0.00
		Benzo[g,h,i]perylene	1.392	1.566	-12.5	118	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
W002181.D 8270C.M Tue Jun 20 10:10:26 2000 MSBNA01

Semivolatile Internal Standard Area Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Check Std: SW122-CC93 **Injection Date:** 06/03/00
Lab File ID: W001933.D **Injection Time:** 15:17
Instrument ID: GCMSW

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	350856	4.82	1274732	5.99	649898	8.25	866361	10.69	494926	15.57	324096	18.05
Upper Limit [a]	701712	5.32	2549464	6.49	1299796	8.75	1732722	11.19	989852	16.07	648192	18.55
Lower Limit [b]	175428	4.32	637366	5.49	324949	7.75	433181	10.19	247463	15.07	162048	17.55

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP1636-BS	302941	4.81	1059009	5.98	523928	8.25	694647	10.68	438434	15.56	316285	18.05
OP1636-MB	305896	4.81	1122645	5.98	584720	8.24	822486	10.67	501349	15.56	345433	18.05
ZZZZZZ	241690	4.81	850731	5.97	410808	8.25	526190	10.67	273815	15.56	250088	18.05
F6635-1	279589	4.81	945024	5.98	442377	8.25	580850	10.68	340912	15.56	247407	18.05
OP1636-MS	285714	4.81	974937	5.98	457821	8.25	608022	10.68	355139	15.56	258748	18.05
OP1636-MSD	276168	4.81	944224	5.98	440073	8.25	586619	10.68	338524	15.56	243509	18.05
F6635-2	300338	4.81	1026171	5.98	483832	8.24	643916	10.67	348184	15.56	251908	18.05
F6635-3	297225	4.81	1012095	5.98	475430	8.25	625713	10.68	349979	15.56	255103	18.05
F6635-4	310701	4.81	1081772	5.98	514452	8.24	658719	10.68	316859	15.56	236486	18.05
F6635-5	347032	4.81	1214822	5.98	575391	8.25	704466	10.68	345649	15.56	286323	18.06
F6635-6	318691	4.81	1109278	5.98	511832	8.25	657477	10.68	316165	15.56	267235	18.05

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Upper Limit = +100% of internal standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of internal standard area; Retention time -0.5 minutes.

Semivolatile Internal Standard Area Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Check Std: SW136-CC135 **Injection Date:** 06/20/00
Lab File ID: W002206.D **Injection Time:** 09:49
Instrument ID: GCMSW

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	210413	4.75	720444	5.90	345775	8.15	440894	10.57	276209	15.44	209796	17.93
Upper Limit [a]	420826	5.25	1440888	6.40	691550	8.65	881788	11.07	552418	15.94	419592	18.43
Lower Limit [b]	105207	4.25	360222	5.40	172888	7.65	220447	10.07	138105	14.94	104898	17.43

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP1696-LBS	203788	4.75	707311	5.90	318651	8.15	386346	10.56	227616	15.44	180009	17.93
OP1696-LB	183049	4.74	628942	5.90	292789	8.15	363057	10.56	217418	15.44	196005	17.93
OP1696-LB2	191723	4.74	673863	5.90	330883	8.14	441346	10.56	296027	15.44	240529	17.93
ZZZZZZ	202996	4.74	700049	5.90	344556	8.15	429647	10.56	255018	15.44	220579	17.93
ZZZZZZ	215505	4.74	738092	5.90	356585	8.15	420554	10.56	248377	15.43	210010	17.92
ZZZZZZ	206480	4.74	726255	5.90	350801	8.14	450228	10.56	293307	15.43	234696	17.93
ZZZZZZ	195346	4.74	679751	5.90	330391	8.14	413243	10.56	260113	15.44	225183	17.93
F6635-3A [c]	197011	4.74	687955	5.90	328441	8.15	411117	10.56	259318	15.44	214252	17.93
F6635-4A [c]	213121	4.75	732942	5.90	347564	8.14	418734	10.56	256253	15.44	215940	17.93
F6635-5A [c]	200251	4.74	703966	5.90	343499	8.14	439915	10.56	281167	15.43	235783	17.92
F6635-6A [c]	215391	4.74	757581	5.90	376583	8.14	484003	10.56	298036	15.43	224769	17.92
ZZZZZZ	201779	4.74	708494	5.90	331414	8.15	406770	10.56	244627	15.44	204725	17.93
ZZZZZZ	220179	4.75	771322	5.90	369123	8.14	465046	10.56	299401	15.44	229702	17.93
ZZZZZZ	212537	4.74	760564	5.90	372571	8.14	486422	10.56	305265	15.43	231743	17.92
OP1696-LS	201130	4.74	680954	5.90	314255	8.15	396514	10.57	254844	15.44	191776	17.93
ZZZZZZ	198486	4.75	690500	5.90	330942	8.14	414960	10.56	243192	15.43	210667	17.92
ZZZZZZ	205079	4.74	711095	5.90	342565	8.14	417054	10.56	260352	15.44	223436	17.93

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Upper Limit = +100% of internal standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of internal standard area; Retention time -0.5 minutes.
(c) Sample extracted beyond hold time; reported results are considered minimum values.

Semivolatile Surrogate Recovery Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Method: FLORIDA-PRO **Matrix:** LEACHATE

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]
F6635-1A	OP08619.D	107.0
F6635-2A	OP08621.D	105.0
F6635-3A	OP08622.D	122.0
F6635-4A	OP08623.D	111.0
F6635-5A	OP08624.D	111.0
F6635-6A	OP08625.D	109.0
OP1665-LB	OP08617.D	114.0
OP1665-LBS	OP08618.D	118.0
OP1665-LS	OP08620.D	110.0

Surrogate Compounds	Recovery Limits
S1 = o-Terphenyl	40-140%

(a) Recovery from GC signal #1

Semivolatile Surrogate Recovery Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Method: FLORIDA-PRO **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]
F6635-1	OP08524.D	92.0
F6635-2	OP08547.D	95.0
F6635-3	OP08548.D	93.0
F6635-4	OP08528.D	102.0
F6635-5	OP08529.D	92.0
F6635-6	OP08549.D	95.0
OP1637-BS	OP08509.D	101.0
OP1637-MB	OP08508.D	107.0
OP1637-MS	OP08538.D	96.0
OP1637-MSD	OP08539.D	99.0

Surrogate Compounds	Recovery Limits
S1 = o-Terphenyl	40-140%

(a) Recovery from GC signal #1

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1637-MS	OP08538.D	1	06/06/00	CCJ	06/03/00	OP1637	GOP388
OP1637-MSD	OP08539.D	1	06/06/00	CCJ	06/03/00	OP1637	GOP388
F6619-3	OP08537.D	1	06/06/00	CCJ	06/03/00	OP1637	GOP388

The QC reported here applies to the following samples: **Method:** FLORIDA-PRO

F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

Not a project sample

CAS No.	Compound	F6619-3 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH (C8-C40)	13		29.5	32.0	64	35.6	77	11	50-132/35

CAS No.	Surrogate Recoveries	MS	MSD	F6619-3	Limits
84-15-1	o-Terphenyl	96%	99%	99%	40-140%

Blank Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1637-BS	OP08509.D	1	06/05/00	CCJ	06/03/00	OP1637	GOP388

The QC reported here applies to the following samples: **Method:** FLORIDA-PRO

F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH (C8-C40)	28.3	26.6	94	50-132

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	101%	40-140%

OK

Blank Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1665-LBS	OP08618.D	1	06/12/00	CCJ	06/09/00	OP1665	GOP390

The QC reported here applies to the following samples: **Method:** FLORIDA-PRO

F6635-1A, F6635-2A, F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH (C8-C40)	8.5	8.21	96	50-135

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	118%	40-140%

OK

Leachate Spike Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1665-LS	OP08620.D	1	06/12/00	CCJ	06/09/00	OP1665	GOP390
F6635-1A	OP08619.D	1	06/12/00	CCJ	06/09/00	OP1665	GOP390

The QC reported here applies to the following samples: **Method:** FLORIDA-PRO

F6635-1A, F6635-2A, F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Compound	F6635-1A mg/l	Q	Spike mg/l	LS mg/l	LS %	Limits
	TPH (C8-C40)	ND		8.5	7.47	88	50-135

CAS No.	Surrogate Recoveries	LS	F6635-1A	Limits
84-15-1	o-Terphenyl	110%	107%	40-140%

CF

Leachate Blank Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1665-LB	OP08617.D	1	06/12/00	CCJ	06/09/00	OP1665	GOP390

The QC reported here applies to the following samples: **Method:** FLORIDA-PRO

F6635-1A, F6635-2A, F6635-3A, F6635-4A, F6635-5A, F6635-6A

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	ND	2.5	mg/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	114%	40-140%

Method Blank Summary

Job Number: F6635
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1637-MB	OP08508.D	1	06/05/00	CCJ	06/03/00	OP1637	GOP388

The QC reported here applies to the following samples: **Method:** FLORIDA-PRO

F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	ND	8.3	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	107%	40-140%

Response Factor Report FID 2

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Tue Feb 22 12:34:31 2000

Calibration Files
1 =OP07150.D 2 =OP07151.D 3 =OP07152.D
4 =OP07153.D 5 =OP07154.D

		Compound	1	2	3	4	5	Avg	%RSD
1)	S	O-TERPHENYL	3.351	3.396	3.363	3.385	3.514	3.402 E4	1.92
2)	H	TPH (C8-C40)	3.105	3.019	3.032	2.973	3.057	3.037 E4	1.61

529

* Out of Range

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\0612PRO\OP08614.D
Acq On : 12 Jun 2000 5:05 pm
Sample : 1020ppm TPHS ccv s833
Misc : op,gop390,soil,,,1,
IntFile : events.e

Vial: 1
Operator: ChelseaJ
Inst : FID 2
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Mon May 01 10:22:06 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	S	O-TERPHENYL	34.017	35.276 E3	-3.7	105	-0.03
2	H	TPH (C8-C40)	30.371	30.925 E3	-1.8	102	0.00

536

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\0612PRO\OP08615.D
Acq On : 12 Jun 2000 5:52 pm
Sample : 340ppm TPHS s833
Misc : op,gop390,soil,,,1,
IntFile : events.e

Vial: 2
Operator: ChelseaJ
Inst : FID 2
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Mon May 01 10:22:06 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	S	O-TERPHENYL	34.017	36.032 E3	-5.9	108	-0.03
2	H	TPH (C8-C40)	30.371	35.104 E3	-15.6	113	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
OP08615.D FL_PRO.M Tue Jun 13 08:10:37 2000 GCFID1 Page 1

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\0612PRO\OP08626.D Vial: 13
Acq On : 13 Jun 2000 12:11 am Operator: ChelseaJ
Sample : 1020ppm ccv Inst : FID 2
Misc : op1665,gop390,water,,,1, Multiplr: 1.00
IntFile : events.e

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Mon May 01 10:22:06 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	S	O-TERPHENYL	34.017	36.299 E3	-6.7	108	-0.03
2	H	TPH (C8-C40)	30.371	31.515 E3	-3.8	104	0.00

542

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\0605PRO\OP08492.D
Acq On : 5 Jun 2000 10:08 am
Sample : 1020ppm TPHS ccv s833
Misc : op1629,gop388,soil,,,1,15
IntFile : events.e

Vial: 1
Operator: ChelseaJ
Inst : FID 2
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Fri May 19 17:18:54 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	S	O-TERPHENYL	34.017	33.546 E3	1.4	100	-0.02
2	H	TPH (C8-C40)	30.371	30.061 E3	1.0	99	0.00

ok

545

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\0605PRO\OP08493.D Vial: 2
Acq On : 5 Jun 2000 10:43 am Operator: ChelseaJ
Sample : 340ppm TPHS ccv s835 Inst : FID 2
Misc : op1629,gop388,soil,,,1,15 Multiplr: 1.00
IntFile : events.e

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Fri May 19 17:18:54 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	S	O-TERPHENYL	34.017	33.763 E3	0.7	101	-0.02
2	H	TPH (C8-C40)	30.371	32.288 E3	-6.3	104	0.00

548

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\0605PRO\OP08507.D Vial: 16
Acq On : 5 Jun 2000 7:07 pm Operator: ChelseaJ
Sample : 1020ppm TPHS ccv Inst : FID 2
Misc : op1629,gop388,soil,,,1, Multiplr: 1.00
IntFile : events.e

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Mon May 01 10:22:06 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	S	O-TERPHENYL	34.017	37.165 E3	-9.3	111	-0.02
2	H	TPH (C8-C40)	30.371	31.786 E3	-4.7	105	0.00

551

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\0605PRO\OP08516.D
Acq On : 6 Jun 2000 12:19 am
Sample : 1020ppm TPHS ccv
Misc : op1637,gop388,soil,,,1,
IntFile : events.e

Vial: 25
Operator: ChelseaJ
Inst : FID 2
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Mon May 01 10:22:06 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	S	O-TERPHENYL	34.017	35.873 E3	-5.5	107	-0.02
2	H	TPH (C8-C40)	30.371	30.604 E3	-0.8	101	0.00

554

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\0605PRO\OP08525.D Vial: 34
Acq On : 6 Jun 2000 5:30 am Operator: ChelseaJ
Sample : 1020ppm TPHS ccv Inst : FID 2
Misc : op1637,gop388,soil,,,1, Multiplr: 1.00
IntFile : events.e

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Mon May 01 10:22:06 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	S	O-TERPHENYL	34.017	39.374 E3	-15.7	117	-0.02
2	H	TPH (C8-C40)	30.371	33.124 E3	-9.1	109	0.00

557

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\0605PRO\OP08534.D Vial: 43
Acq On : 6 Jun 2000 10:41 am Operator: ChelseaJ
Sample : 1020ppm TPHS ccv Inst : FID 2
Misc : op1637,gop388,soil,,,1, Multiplr: 1.00
IntFile : events.e

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Mon May 01 10:22:06 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	S	O-TERPHENYL	34.017	34.248 E3	-0.7	102	-0.02
2	H	TPH (C8-C40)	30.371	28.088 E3	7.5	93	0.00

DL

560

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\0605PRO\OP08535.D
Acq On : 6 Jun 2000 11:22 am
Sample : 340ppm TPHS ccv
Misc : op1637,gop388,soil,,,1,
IntFile : events.e

Vial: 44
Operator: ChelseaJ
Inst : FID 2
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Mon May 01 10:22:06 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	S	O-TERPHENYL	34.017	34.995 E3	-2.9	104	-0.02
2	H	TPH (C8-C40)	30.371	30.118 E3	0.8	97	0.00

OK

<25%

6 06/07/00

563

(#) = Out of Range SPCC's out = 0 CCC's out = 0
OP08535.D FL_PRO.M Wed Jun 07 09:32:03 2000 GCFID1

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\0605PRO\OP08544.D Vial: 53
Acq On : 6 Jun 2000 4:43 pm Operator: ChelseaJ
Sample : 1020 TPHS ccv Inst : FID 2
Misc : op1637,gop388,soil,,,1,2 Multiplr: 1.00
IntFile : events.e

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Mon May 01 10:22:06 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	S	O-TERPHENYL	34.017	36.631 E3	-7.7	109	-0.02
2	H	TPH (C8-C40)	30.371	31.259 E3	-2.9	103	0.00

JL

L256

6 outside

566

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\0605PRO\OP08551.D Vial: 60
Acq On : 6 Jun 2000 8:46 pm Operator: ChelseaJ
Sample : 1020 TPHS ccv Inst : FID 2
Misc : op1637,gop388,soil,,,1,2 Multiplr: 1.00
IntFile : events.e

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Mon May 01 10:22:06 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	S	O-TERPHENYL	34.017	37.098 E3	-9.1	110	-0.02
2	H	TPH (C8-C40)	30.371	28.980 E3	4.6	96	0.00

OK

L 25% L

06/07/00

569

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**T. HANSEN**	**DATE:**	**OCTOBER 17, 2000**
FROM:	**JENNIFER MALLE**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION-TAL METALS AND SPLP METALS**
CTO 079 –NAS WHITING FIELD
SDG – F6635

SAMPLES: 6/Soil/Leachates

29D00101 29D00201 29D00301 29D00401
29D00501 29D00601

Overview

The sample set for CTO 079, NAS Whiting Field, SDG F6635 consists of six (6) soil/leachate samples. No field duplicate pairs were included within this SDG.

All samples were analyzed for Target Analyte List (TAL) metals and Synthetic Precipitation Leachate Procedure (SPLP) metals. The samples were collected by Tetra Tech NUS on May 26, 2000 and analyzed by Accutest Laboratories under Naval Facilities Engineering Service Center (NFESC) Guidance Document, "Navy Installation Restoration Chemical Data Quality Manual" (September1999). All metal analyses, with the exception to mercury, were conducted under analytical method SW846 6010B. Mercury analyses were conducted using analytical method SW846 7470.

The data was evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • Calibration Verification
• Laboratory Blank Analysis
• ICP Interference Check Sample Results
• Matrix Spike/Matrix Spike Duplicate Recoveries
* • Laboratory Duplicate Precision
* • Laboratory Control Sample Recoveries
• ICP Serial Dilution Recoveries
* • Sample Quanitation
* • Detection Limits

* - All quality control criteria were met for this parameter.

Laboratory Blank Analyses

The following contaminants were detected in the laboratory method/preparation blanks at the following maximum concentrations:

Affected samples : TAL metals

Analyte	Maximum Concentration	Action Level (soil)
Aluminum	40 ug/L	20 mg/kg
Antimony	6.0 ug/L	3.0 mg/kg
Arsenic	8.3 ug/L	4.15 mg/kg
Barium (1)	0.59 mg/kg	2.95 mg/kg
Beryllium	2.5 ug/L	1.25 mg/kg
Cadmium	1.0 ug/L	0.50 mg/kg
Calcium (1)	13 mg/kg	65 mg/kg
Chromium	3.7 ug/L	1.85 mg/kg
Cobalt	1.4 ug/L	0.70 mg/kg
Copper (1)	0.24 mg/kg	1.2 mg/kg
Iron	39.8 ug/L	19.9 mg/kg
Lead (1)	0.21 mg/kg	1.05 mg/kg
Magnesium	46.6 ug/L	23.3 mg/kg
Manganese	1.9 ug/L	0.95 mg/kg
Mercury (1)	0.026 mg/kg	0.13 mg/kg
Nickel (1)	0.77 mg/kg	3.85 mg/kg
Potassium	268 ug/L	134 mg/kg
Selenium	4.4 ug/L	2.2 mg/kg
Silver	1.6 ug/L	0.8 mg/kg
Sodium (1)	47.6 mg/kg	238 mg/kg
Thallium	4.6 ug/L	2.3 mg/kg
Vanadium	1.4 ug/L	0.70 mg/kg
Zinc (1)	0.96 mg/kg	4.8 mg/kg

Affected samples : SPLP metals

Analyte	Maximum Concentration	Action Level (leachate)
Aluminum (2)	120 ug/L	600 ug/L
Antimony	4.0 ug/L	20 ug/L
Barium	0.86 ug/L	4.3 ug/L
Beryllium	1.1 ug/L	5.5 ug/L
Cadmium	1.0 ug/L	5.0 ug/L
Chromium (2)	2.7 ug/L	13.5 ug/L
Cobalt	1.3 ug/L	56.5 ug/L
Copper	1.0 ug/L	5.0 ug/L
Iron	91 ug/L	455 ug/L
Lead	1.6 ug/L	8.0 ug/L
Manganese	1.0 ug/L	5.0 ug/L
Potassium (2)	200 ug/L	1000 ug/L
Selenium	4.2 ug/L	21 ug/L
Zinc	1.1 ug/L	5.5 ug/L

(1) - Maximum concentration is present in a soil preparation blank
(2) - Maximum concentration is present in a leachate preparation blank

An action level of 5X the maximum concentration was used to evaluate the sample data for blank contamination. Sample aliquot, percent solids (when applicable) and dilution factors were taken into consideration in evaluation for blank contamination. Positive results less than the action level for aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, potassium, selenium and zinc were qualified as nondetected, "U", due to laboratory blank contamination. No validation action was required for the remaining analytes since the results reported for these analytes were either greater than the action level or nondetected.

ICP Interference Results

The interfering analyte iron was present in sample 29D00301 at a concentration which was comparable to the level of iron in the Interference Check Sample (ICS) solution. Several analytes namely antimony, barium, cadmium, chromium, lead, manganese, nickel, potassium, selenium, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for thallium in the affected sample. The nondeteced result reported for thallium was qualified as estimated, "UJ".

ICP Serial Dilution

The ICP Serial Dilution Percent Differences (%Ds) for aluminum, barium, calcium, chromium, iron, manganese and vanadium affecting the soil metals samples were greater than 10% and 50x their respective IDL. Positive results reported for aluminum, barium, calcium, chromium, iron, manganese and vanadium in the affected samples were qualified as estimated, "J".

The ICP Serial Dilution %Ds for calcium and sodium affecting the SPLP metals samples were greater than 10% and 50x their respective IDL. Positive results reported for calcium and sodium in the affected samples were qualified as estimated, "J".

Notes

Several continuing calibration verifications for silver were less than 80% quality control limits. However, validation action was not required since the nocompliant CCVs did not bracket any samples within this SDG.

The Contract Required Detection Limit (CRDL) Percent Recoveries for several analytes were greater than the 120% quality control limt. However, validation action was not required as per regional guidance.

The MS/MSD %R for antimony affecting the TAL metals samples was less than 75% quality control limits. Validation action was not required since results reported for antimony in the affected samples were previously qualifed for blank contamination.

Mercury, affecting the SPLP metals, was reported on the Form I's to the reporting limit instead of the instrument detection limit (IDL). Therefore, the data reviewer changed the Form I's to reflect the correct IDL. The Electronic Deliverable Data (EDD) spreadsheet did report to the correct IDL and changes were not required.

Executive Summary

Laboratory Performance: Several contaminants were present in the laboratory method/preparation blanks.

Other Factors Affecting Data Quality: Aluminum, bairum, calcium, chromium, iron, manganese and vanadium were qualfied for serial dilution noncompliance in the TAL metals samples. Calcium and sodium were qualified for serial dilution noncompliance in the SPLP metals samples. The interfering analyte iron was present in sample 29D00301.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994 and the NFESC document entitled "Navy IRCDQM" (NFESC 9/99).

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
Jennifer Malle
Environmental Scientist

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

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

APPENDIX A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's r < 0.995
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-linear calibrations, tuning r < 0.995 (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

SPLP DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00101			29D00201			29D00301			29D00401		
SAMPLE DATE:	05/26/00			05/26/00			05/26/00			05/26/00		
LABORATORY ID:	F6635-1A			F6635-2A			F6635-3A			F6635-4A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	42.0	U	A	13900			29700			24700		
ANTIMONY	2.4	U		4.8	U		5.0	U	A	4.8	U	
ARSENIC	3.5	U		6.9	U		6.6			10.0		
BARIUM	0.69	U	A	6.7			14.0			10.0		
BERYLLIUM	0.36	U		0.73	U		0.73	U		0.73	U	
CADMIUM	0.33	U		0.66	U		0.66	U		0.66	U	
CALCIUM	1700	J	I	1400	J	I	3100	J	I	5600	J	I
CHROMIUM	0.64	U		13.0	U	A	29.0			20.0		
COBALT	0.80	U		1.6	U		1.6	U		1.6	U	
COPPER	1.2	U	A	2.5	U	A	12.0			8.3		
IRON	29.0	U	A	6900			12600			13000		
LEAD	1.6	U		7.8	U	A	68.0			24.0		
MAGNESIUM	250			300			790			870		
MANGANESE	0.18	U	A	24.0			14.0			22.0		
MERCURY	0.60	U		0.60	U		0.60	U		0.60	U	
NICKEL	1.0	U		2.0	U		5.6			3.5		
POTASSIUM	490	U	A	1000	U	A	1100			1600		
SELENIUM	2.0	U		9.5	U	A	5.8	U	A	8.4	U	A
SILVER	0.96	U		1.9	U		1.9	U		1.9	U	
SODIUM	9200	J	I	18800	J	I	21500	J	I	20700	J	I
THALLIUM	2.7	U		5.4	U		5.4	U		5.4	U	
VANADIUM	0.72	U		20.0			36.0			36.0		
ZINC	3.4	U	A	9.5			140			31.0		

SPLP DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00501			29D00601								
SAMPLE DATE:	05/26/00			05/26/00			/ /			/ /		
LABORATORY ID:	F6635-5A			F6635-6A								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	13700			28700								
ANTIMONY	4.8	U		4.8	U							
ARSENIC	6.9	U		6.9	U							
BARIUM	10.0			13.0								
BERYLLIUM	0.73	U		0.73	U							
CADMIUM	0.66	U		0.66	U							
CALCIUM	6500	J	I	3400	J	I						
CHROMIUM	13.0	U	A	24.0								
COBALT	1.6	U		1.6	U							
COPPER	3.8	U	A	4.7	U	A						
IRON	7600			12300								
LEAD	28.0			19.0								
MAGNESIUM	610			490								
MANGANESE	21.0			17.0								
MERCURY	0.60	U		0.60	U							
NICKEL	2.7			3.7								
POTASSIUM	960	U	A	800	U	A						
SELENIUM	4.9	U	A	8.6	U	A						
SILVER	1.9	U		1.9	U							
SODIUM	18400	J	I	22400	J	I						
THALLIUM	5.4	U		5.4	U							
VANADIUM	20.0			53.0								
ZINC	66.0			43.0								

SOIL DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00101			29D00201			29D00301			29D00401		
SAMPLE DATE:	05/26/00			05/26/00			05/26/00			05/26/00		
LABORATORY ID:	F6635-1			F6635-2			F6635-3			F6635-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	97.1 %			98.5 %			97.0 %			98.0 %		
UNITS:	MG/KG			MG/KG			MG/KG			MG/KG		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	12900	J	I	7390	J	I	17200	J	I	14600	J	I
ANTIMONY	0.53	U	A	0.26	U	A	1.2	U	A	0.35	U	A
ARSENIC	2.6	U	A	1.5	U	A	3.2	U	A	2.7	U	A
BARIUM	11.6	J	I	16.0	J	I	51.1	J	I	20.5	J	I
BERYLLIUM	0.09	U	A	0.09	U	A	0.14	U	A	0.13	U	A
CADMIUM	0.04	U		0.03	U		1.9			0.32	U	A
CALCIUM	192	J	I	225	J	I	711	J	I	557	J	I
CHROMIUM	13.5	J	I	24.7	J	I	30.4	J	I	15.9	J	I
COBALT	0.54	U	A	0.78			1.4			0.80		
COPPER	4.9			3.9			13.5			7.5		
IRON	8700	J	I	4880	J	I	12000	J	I	9530	J	I
LEAD	5.3			16.9			294			36.5		
MAGNESIUM	114			127			261			176		
MANGANESE	28.9	J	I	57.4	J	I	36.0	J	I	41.0	J	I
MERCURY	0.03	U	A	0.04	U	A	0.08	U	A	0.04	U	A
NICKEL	2.0	U	A	9.8			3.6	U	A	3.3	U	A
POTASSIUM	130	U	A	124	U	A	154			196		
SELENIUM	1.2	U	A	0.68	U	A	1.5	U	A	1.5	U	A
SILVER	0.10	U		0.09	U		0.09	U		0.10	U	
SODIUM	380			333			432			369		
THALLIUM	0.29	U		0.26	U		0.26	UJ	K	0.27	U	
VANADIUM	23.1	J	I	12.4	J	I	28.1	J	I	24.6	J	I
ZINC	8.1			11.1			206			34.7		

SOIL DATA
Accutest, NJ
SDG: F6635

SAMPLE NUMBER:	29D00501			29D00601								
SAMPLE DATE:	05/26/00			05/26/00			/ /			/ /		
LABORATORY ID:	F6635-5			F6635-6								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	98.6 %			97.5 %			100.0 %			100.0 %		
UNITS:	MG/KG			MG/KG								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	6910	J	I	11400	J	I						
ANTIMONY	0.44	U	A	0.38	U	A						
ARSENIC	2.2	U	A	3.1	U	A						
BARIUM	40.7	J	I	28.1	J	I						
BERYLLIUM	0.10	U	A	0.11	U	A						
CADMIUM	3.3			0.77								
CALCIUM	695	J	I	555	J	I						
CHROMIUM	16.6	J	I	15.4	J	I						
COBALT	1.0			0.79								
COPPER	6.6			7.7								
IRON	5190	J	I	7290	J	I						
LEAD	69.9			34.7								
MAGNESIUM	154			146								
MANGANESE	30.7	J	I	32.0	J	I						
MERCURY	0.04	U	A	0.06	U	A						
NICKEL	3.0	U	A	3.1	U	A						
POTASSIUM	92.9	U	A	114	U	A						
SELENIUM	0.98	U	A	1.2	U	A						
SILVER	0.10	U		0.10	U							
SODIUM	376			389								
THALLIUM	0.27	U		0.28	U							
VANADIUM	11.9	J	I	26.4	J	I						
ZINC	92.8			44.0								

APPENDIX B

Results as Reported by the Laboratory

ACCUTEST.

Report of Analysis

Client Sample ID:	29D00101		
Lab Sample ID:	F6635-1A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
		Percent Solids:	97.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis, SPLP Leachate

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	0.042 B			0.20	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Antimony	0.0024 U			0.20	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Arsenic	0.0035 U	D004		0.50	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Barium	0.00069 B	D005		1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Beryllium	0.00036 U			0.0050	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Cadmium	0.00033 U	D006		0.050	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Calcium	1.7 B			5.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Chromium	0.00064 U	D007		0.050	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Cobalt	0.00080 U			0.050	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Copper	0.0012 B			0.025	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Iron	0.029 B			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Lead	0.0016 U	D008		0.50	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Magnesium	0.25 B			5.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Manganese	0.00018 B			0.015	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Mercury	.00006 <~~0.0020~~	D009		0.0020	mg/l	1	06/25/00	06/26/00	SJL	SW846 7470A
Molybdenum	0.00068 U			0.050	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Nickel	0.0010 U			0.040	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Potassium	0.49 B			5.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Selenium	0.0020 U	D010		0.50	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Silver	0.00096 U	D011		0.050	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Sodium	9.2			5.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Thallium	0.0027 U			0.50	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Tin	0.0022 U			0.050	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Vanadium	0.00072 U			0.050	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Zinc	0.0034 B			0.020	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A

RL = Reporting Limit
MCL = Maximum Contamination Level (not available)

ACCUTEST.

Report of Analysis

Client Sample ID: 29D00301
Lab Sample ID: F6635-3A
Matrix: SO - Soil

Date Sampled: 05/26/00
Date Received: 05/27/00
Percent Solids: 97.0

Project: NAS Whiting Field PO#NOO52-MSA0200-014

Metals Analysis, SPLP Leachate

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	29.7			0.40	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Antimony	0.0050 B			0.40	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Arsenic	0.0066 B	D004		1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Barium	0.014 B	D005		2.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Beryllium	0.00073 U			0.010	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Cadmium	0.00066 U	D006		0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Calcium	3.1 B			10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Chromium	0.029 B	D007		0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Cobalt	0.0016 U			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Copper	0.012 B			0.050	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Iron	12.6			0.20	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Lead	0.068 B	D008		1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Magnesium	0.79 B			10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Manganese	0.014 B			0.030	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Mercury	~~<0.0020~~	D009		0.0020	mg/l	1	06/25/00	06/26/00	SJL	SW846 7470A
Molybdenum	0.0023 B			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Nickel	0.0056 B			0.080	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Potassium	1.1 B			10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Selenium	0.0058 B	D010		1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Silver	0.0019 U	D011		0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Sodium	21.5			10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Thallium	0.0054 U			1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Tin	0.0045 U			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Vanadium	0.036 B			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Zinc	0.14			0.040	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A

RL = Reporting Limit
MCL = Maximum Contamination Level (not available)

ACCUTEST

Report of Analysis

Client Sample ID:	29D00401		
Lab Sample ID:	F6635-4A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
		Percent Solids:	98.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis, SPLP Leachate

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	24.7			0.40	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Antimony	0.0048 U			0.40	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Arsenic	0.010 B	D004		1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Barium	0.010 B	D005		2.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Beryllium	0.00073 U			0.010	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Cadmium	0.00066 U	D006		0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Calcium	5.6 B			10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Chromium	0.020 B	D007		0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Cobalt	0.0016 U			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Copper	0.0083 B			0.050	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Iron	13.0			0.20	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Lead	0.024 B	D008		1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Magnesium	0.87 B			10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Manganese	0.022 B			0.030	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Mercury	~~<0.0020~~ .00200	D009		0.0020	mg/l	1	06/25/00	06/26/00	SJL	SW846 7470A
Molybdenum	0.0033 B			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Nickel	0.0035 B			0.080	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Potassium	1.6 B			10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Selenium	0.0084 B	D010		1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Silver	0.0019 U	D011		0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Sodium	20.7			10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Thallium	0.0054 U			1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Tin	0.0045 U			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Vanadium	0.036 B			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Zinc	0.031 B			0.040	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A

RL = Reporting Limit
MCL = Maximum Contamination Level (not available)

ACCUTEST.

Report of Analysis

Client Sample ID:	29D00501		
Lab Sample ID:	F6635-5A	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
		Percent Solids:	98.6
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis, SPLP Leachate

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed By		Method
Aluminum	13.7			0.40	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Antimony	0.0048 U			0.40	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Arsenic	0.0069 U	D004		1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Barium	0.010 B	D005		2.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Beryllium	0.00073 U			0.010	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Cadmium	0.00066 U	D006		0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Calcium	6.5 B			10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Chromium	0.013 B	D007		0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Cobalt	0.0016 U			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Copper	0.0038 B			0.050	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Iron	7.6			0.20	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Lead	0.028 B	D008		1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Magnesium	0.61 B			10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Manganese	0.021 B			0.030	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Mercury	~~<0.0020~~ .0016	D009		0.0020	mg/l	1	06/25/00	06/26/00	SJL	SW846 7470A
Molybdenum	0.0014 B			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Nickel	0.0027 B			0.080	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Potassium	0.96 B			10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Selenium	0.0049 B	D010		1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Silver	0.0019 U	D011		0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Sodium	18.4			10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Thallium	0.0054 U			1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Tin	0.0045 U			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Vanadium	0.020 B			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Zinc	0.066			0.040	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A

RL = Reporting Limit
MCL = Maximum Contamination Level (not available)

ACCUTEST.

Report of Analysis

Client Sample ID: 29D00601
Lab Sample ID: F6635-6A
Matrix: SO - Soil
Date Sampled: 05/26/00
Date Received: 05/27/00
Percent Solids: 97.5
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Metals Analysis, SPLP Leachate

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	28.7			0.40	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Antimony	0.0048 U			0.40	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Arsenic	0.0069 U	D004		1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Barium	0.013 B	D005		2.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Beryllium	0.00073 U			0.010	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Cadmium	0.00066 U	D006		0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Calcium	3.4 B			10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Chromium	0.024 B	D007		0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Cobalt	0.0016 U			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Copper	0.0047 B			0.050	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Iron	12.3			0.20	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Lead	0.019 B	D008		1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Magnesium	0.49 B			10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Manganese	0.017 B			0.030	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Mercury	~~<0.0020 U~~ 0.000	D009		0.0020	mg/l	1	06/25/00	06/26/00	SJL	SW846 7470A
Molybdenum	0.0029 B			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Nickel	0.0037 B			0.080	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Potassium	0.80 B			10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Selenium	0.0086 B	D010		1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Silver	0.0019 U	D011		0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Sodium	22.4			10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Thallium	0.0054 U			1.0	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Tin	0.0045 U			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Vanadium	0.053 B			0.10	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A
Zinc	0.043			0.040	mg/l	1	06/21/00	06/23/00	JK	SW846 6010A

RL = Reporting Limit
MCL = Maximum Contamination Level (not available)

Report of Analysis

Client Sample ID:	29D00101		
Lab Sample ID:	F6635-1	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
		Percent Solids:	97.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	12900	21.7	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Antimony	0.53 B	6.5	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Arsenic	2.6	0.54	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Barium	11.6 B	21.7	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Beryllium	0.09 B	0.54	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Cadmium	0.04 U	0.43	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Calcium	192 B	542	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Chromium	13.5	1.1	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Cobalt	0.54 B	5.4	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Copper	4.9	2.7	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Iron	8700	10.8	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Lead	5.3 B	10.8	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Magnesium	114 B	542	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Manganese	28.9	1.6	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Mercury	0.03 B	0.17	mg/kg	1	06/05/00	06/06/00	SJL	SW846 7471A
Nickel	2.0 B	4.3	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Potassium	130 B	542	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Selenium	1.2 B	10.8	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Silver	0.10 U	1.1	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Sodium	380 B	542	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Thallium	0.29 U	1.1	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Vanadium	23.1	5.4	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Zinc	8.1	2.2	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID: 29D00201
Lab Sample ID: F6635-2
Matrix: SO - Soil
Date Sampled: 05/26/00
Date Received: 05/27/00
Percent Solids: 98.5
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	7390	19.2	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Antimony	0.26 B	5.7	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Arsenic	1.5	0.48	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Barium	16.0 B	19.2	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Beryllium	0.09 B	0.48	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Cadmium	0.03 U	0.38	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Calcium	225 B	479	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Chromium	24.7	0.96	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Cobalt	0.78 B	4.8	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Copper	3.9	2.4	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Iron	4880	9.6	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Lead	16.9	9.6	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Magnesium	127 B	479	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Manganese	57.4	1.4	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Mercury	0.04 B	0.14	mg/kg	1	06/05/00	06/06/00	SJL	SW846 7471A
Nickel	9.8	3.8	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Potassium	124 B	479	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Selenium	0.68 B	9.6	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Silver	0.09 U	0.96	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Sodium	333 B	479	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Thallium	0.26 U	0.96	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Vanadium	12.4	4.8	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Zinc	11.1	1.9	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID: 29D00301
Lab Sample ID: F6635-3
Matrix: SO - Soil
Date Sampled: 05/26/00
Date Received: 05/27/00
Percent Solids: 97.0
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	17200	19.5	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Antimony	1.2 B	5.8	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Arsenic	3.2	0.49	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Barium	51.1	19.5	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Beryllium	0.14 B	0.49	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Cadmium	1.9	0.39	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Calcium	711	486	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Chromium	30.4	0.97	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Cobalt	1.4 B	4.9	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Copper	13.5	2.4	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Iron	12000	9.7	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Lead	294	9.7	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Magnesium	261 B	486	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Manganese	36.0	1.5	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Mercury	0.08 B	0.17	mg/kg	1	06/05/00	06/06/00	SJL	SW846 7471A
Nickel	3.6 B	3.9	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Potassium	154 B	486	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Selenium	1.5 B	9.7	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Silver	0.09 U	0.97	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Sodium	432 B	486	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Thallium	0.26 U	0.97	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Vanadium	28.1	4.9	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Zinc	206	1.9	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID: 29D00401
Lab Sample ID: F6635-4
Matrix: SO - Soil
Date Sampled: 05/26/00
Date Received: 05/27/00
Percent Solids: 98.0
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	14600	20.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Antimony	0.35 B	6.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Arsenic	2.7	0.50	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Barium	20.5	20.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Beryllium	0.13 B	0.50	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Cadmium	0.32 B	0.40	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Calcium	557	500	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Chromium	15.9	1.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Cobalt	0.80 B	5.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Copper	7.5	2.5	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Iron	9530	10.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Lead	36.5	10.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Magnesium	176 B	500	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Manganese	41.0	1.5	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Mercury	0.04 B	0.16	mg/kg	1	06/05/00	06/06/00	SJL	SW846 7471A
Nickel	3.3 B	4.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Potassium	196 B	500	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Selenium	1.5 B	10.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Silver	0.1 U	1.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Sodium	369 B	500	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Thallium	0.27 U	1.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Vanadium	24.6	5.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Zinc	34.7	2.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	29D00501		
Lab Sample ID:	F6635-5	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
		Percent Solids:	98.6
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	6910	20.1	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Antimony	0.44 B	6.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Arsenic	2.2	0.50	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Barium	40.7	20.1	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Beryllium	0.10 B	0.50	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Cadmium	3.3	0.40	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Calcium	695	502	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Chromium	16.6	1.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Cobalt	1.0 B	5.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Copper	6.6	2.5	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Iron	5190	10.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Lead	69.9	10.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Magnesium	154 B	502	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Manganese	30.7	1.5	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Mercury	0.04 B	0.16	mg/kg	1	06/05/00	06/06/00	SJL	SW846 7471A
Nickel	3.0 B	4.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Potassium	92.9 B	502	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Selenium	0.98 B	10.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Silver	0.1 U	1.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Sodium	376 B	502	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Thallium	0.27 U	1.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Vanadium	11.9	5.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Zinc	92.8	2.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	29D00601		
Lab Sample ID:	F6635-6	**Date Sampled:**	05/26/00
Matrix:	SO - Soil	**Date Received:**	05/27/00
		Percent Solids:	97.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	11400	20.5	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Antimony	0.38 B	6.2	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Arsenic	3.1	0.51	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Barium	28.1	20.5	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Beryllium	0.11 B	0.51	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Cadmium	0.77	0.41	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Calcium	555	513	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Chromium	15.4	1.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Cobalt	0.79 B	5.1	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Copper	7.7	2.6	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Iron	7290	10.3	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Lead	34.7	10.3	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Magnesium	146 B	513	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Manganese	32.0	1.5	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Mercury	0.06 B	0.16	mg/kg	1	06/05/00	06/06/00	SJL	SW846 7471A
Nickel	3.1 B	4.1	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Potassium	114 B	513	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Selenium	1.2 B	10.3	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Silver	0.1 U	1.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Sodium	389 B	513	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Thallium	0.28 U	1.0	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Vanadium	26.4	5.1	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A
Zinc	44.0	2.1	mg/kg	1	06/05/00	06/07/00	JK	SW846 6010A

RL = Reporting Limit

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0607M1.ASC Date Analyzed: 06/07/00 Methods: SW846 6010A
QC Limits: 70 to 130 % Recovery Run ID: MA1891 Units: ug/l

Metal	CRI True	CRIA True	CRI Results	% Rec	CRIA Results	% Rec
Aluminum	200		222	111.0		
Antimony		5.0			5.0	100.0
Arsenic		10			10.5	105.0
Barium	200		202	101.0		
Beryllium	5.0		5.7	114.0		
Cadmium	5.0		5.4	108.0		
Calcium	1000		1280	128.0		
Chromium	10		11.3	113.0		
Cobalt	50		51.5	103.0		
Copper	25		25.9	103.6		
Iron	300		421	105.0		
Lead		5.0			6.4	128.0
Magnesium	5000		6000	120.0		
Manganese	15		16.1	107.3		
Molybdenum	50					
Nickel	40		43.8	109.5		
Potassium	5000		4550	91.0		
Selenium		10			10.7	107.0
Silver	10		10.4	104.0		
Sodium	5000		681	136.0*		
Thallium		10			9.4	94.0
Tin	50					
Vanadium	50		53.0	106.0		
Zinc	20		24.9	124.5		

(*) Outside of QC limits
(anr) Analyte not requested

APPENDIX C

Support Documentation

CHAIN OF CUSTODY

ACCUTEST

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #: F6635
ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: Tetra Tech NUS, Inc.
ADDRESS: 1401 Oven Park Dr. Suite 102
CITY, STATE, ZIP: Tallahassee FL 32312
SEND REPORT TO:
PHONE #: 850-385-9899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting Field
LOCATION: Milton, FL
PROJECT NO.: 0052
FAX #: 850-385-9860

ANALYTICAL INFORMATION

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	VOC (EPA Cert)	SVOC/TAL/TPH/SPLP	VOC (40ml)
F6635-1	29D00101	5-26-00	1048	JB	SO	5					✓	3	2	
-2	29D00201	5-26-00	1054	LS	SO	5					✓	3	2	
-3	29D00301	5-26-00	1101	JA	SO	5					✓	3	2	
-4	29D00401	5-26-00	1108	LS	SO	5					✓	3	2	
-5	29D00501	5-26-00	1115	JA	SO	5					✓	3	2	
-6	29D00601	5-26-00	1121	JA	SO	5					✓	3	2	
-7	29TB052600													2

MATRIX CODE

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

LAB USE ONLY

DATA TURNAROUND INFORMATION

- [x] STANDARD
- [ ] 48 HOUR RUSH
- [ ] 24 HOUR EMERGENCY
- [ ] OTHER

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- [x] STANDARD
- [ ] COMMERCIAL "B"
- [x] DISK DELIVERABLE
- [ ] STATE FORMS
- [ ] OTHER (SPECIFY)

COMMENTS/REMARKS

Airbill # 8196 8940 6022

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

SAMPLED BY:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
W Smith	5-26-00 1300	1. Mike Finell 5/27/00 0945	2.		2.
		3.	4.		4.

HOLDING TIME
07/28/00

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/KG	29D00101	F6635-1	NORMAL	F6635	HG	05/26/00	06/05/00	06/06/00	10	1	11
MG/KG	29D00201	F6635-2	NORMAL	F6635	HG	05/26/00	06/05/00	06/06/00	10	1	11
MG/KG	29D00301	F6635-3	NORMAL	F6635	HG	05/26/00	06/05/00	06/06/00	10	1	11
MG/KG	29D00401	F6635-4	NORMAL	F6635	HG	05/26/00	06/05/00	06/06/00	10	1	11
MG/KG	29D00501	F6635-5	NORMAL	F6635	HG	05/26/00	06/05/00	06/06/00	10	1	11
MG/KG	29D00601	F6635-6	NORMAL	F6635	HG	05/26/00	06/05/00	06/06/00	10	1	11
MG/KG	29D00101	F6635-1	NORMAL	F6635	M	05/26/00	06/05/00	06/07/00	10	2	12
MG/KG	29D00201	F6635-2	NORMAL	F6635	M	05/26/00	06/05/00	06/07/00	10	2	12
MG/KG	29D00301	F6635-3	NORMAL	F6635	M	05/26/00	06/05/00	06/07/00	10	2	12
MG/KG	29D00401	F6635-4	NORMAL	F6635	M	05/26/00	06/05/00	06/07/00	10	2	12
MG/KG	29D00501	F6635-5	NORMAL	F6635	M	05/26/00	06/05/00	06/07/00	10	2	12
MG/KG	29D00601	F6635-6	NORMAL	F6635	M	05/26/00	06/05/00	06/07/00	10	2	12
UG/KG	29D00101	F6635-1	NORMAL	F6635	OS	05/26/00	06/03/00	06/03/00	8	0	8
UG/KG	29D00201	F6635-2	NORMAL	F6635	OS	05/26/00	06/03/00	06/03/00	8	0	8
UG/KG	29D00301	F6635-3	NORMAL	F6635	OS	05/26/00	06/03/00	06/03/00	8	0	8
UG/KG	29D00401	F6635-4	NORMAL	F6635	OS	05/26/00	06/03/00	06/03/00	8	0	8
UG/KG	29D00501	F6635-5	NORMAL	F6635	OS	05/26/00	06/03/00	06/03/00	8	0	8
UG/KG	29D00601	F6635-6	NORMAL	F6635	OS	05/26/00	06/03/00	06/03/00	8	0	8
UG/KG	29D00101	F6635-1	NORMAL	F6635	OV	05/26/00	/ /	06/03/00	0	0	8
UG/KG	29D00201	F6635-2	NORMAL	F6635	OV	05/26/00	/ /	06/03/00	0	0	8
UG/KG	29D00301	F6635-3	NORMAL	F6635	OV	05/26/00	/ /	06/03/00	0	0	8
UG/KG	29D00401	F6635-4	NORMAL	F6635	OV	05/26/00	/ /	06/03/00	0	0	8
UG/KG	29D00501	F6635-5	NORMAL	F6635	OV	05/26/00	/ /	06/03/00	0	0	8
UG/KG	29D00601	F6635-6	NORMAL	F6635	OV	05/26/00	/ /	06/03/00	0	0	8
UG/L	29TB052600	F6635-7	NORMAL	F6635	OV	05/26/00	/ /	06/06/00	0	0	11

Units	Nsample	Lab Id	QC Type	Sdg	Sort	Sample Date			TO EXTR_DATE	TO ANAL_DATE	TO ANAL_DATE
UG/L	29D00101	F6635-1A	NORMAL	F6635	SPLPM	05/26/00	06/21/00	06/23/00	26	2	28
UG/L	29D00201	F6635-2A	NORMAL	F6635	SPLPM	05/26/00	06/21/00	06/23/00	26	2	28
UG/L	29D00301	F6635-3A	NORMAL	F6635	SPLPM	05/26/00	06/21/00	06/23/00	26	2	28
UG/L	29D00401	F6635-4A	NORMAL	F6635	SPLPM	05/26/00	06/21/00	06/23/00	26	2	28
UG/L	29D00501	F6635-5A	NORMAL	F6635	SPLPM	05/26/00	06/21/00	06/23/00	26	2	28
UG/L	29D00601	F6635-6A	NORMAL	F6635	SPLPM	05/26/00	06/21/00	06/23/00	26	2	28
UG/L	29D00301	F6635-3A	NORMAL	F6635	SPLPS	05/26/00	06/17/00	06/20/00	22	3	25
UG/L	29D00401	F6635-4A	NORMAL	F6635	SPLPS	05/26/00	06/17/00	06/20/00	22	3	25
UG/L	29D00501	F6635-5A	NORMAL	F6635	SPLPS	05/26/00	06/17/00	06/20/00	22	3	25
UG/L	29D00601	F6635-6A	NORMAL	F6635	SPLPS	05/26/00	06/17/00	06/20/00	22	3	25
UG/L	29D00101	F6635-1A	NORMAL	F6635	SPLPT	05/26/00	06/09/00	06/12/00	14	3	17
UG/L	29D00201	F6635-2A	NORMAL	F6635	SPLPT	05/26/00	06/09/00	06/12/00	14	3	17
UG/L	29D00301	F6635-3A	NORMAL	F6635	SPLPT	05/26/00	06/09/00	06/12/00	14	3	17
UG/L	29D00401	F6635-4A	NORMAL	F6635	SPLPT	05/26/00	06/09/00	06/12/00	14	3	17
UG/L	29D00501	F6635-5A	NORMAL	F6635	SPLPT	05/26/00	06/09/00	06/12/00	14	3	17
UG/L	29D00601	F6635-6A	NORMAL	F6635	SPLPT	05/26/00	06/09/00	06/12/00	14	3	17
UG/L	29D00101	F6635-1A	NORMAL	F6635	SPLPV	05/26/00	06/08/00	06/09/00	13	1	14
UG/L	29D00201	F6635-2A	NORMAL	F6635	SPLPV	05/26/00	06/08/00	06/09/00	13	1	14
UG/L	29D00301	F6635-3A	NORMAL	F6635	SPLPV	05/26/00	06/08/00	06/09/00	13	1	14
UG/L	29D00401	F6635-4A	NORMAL	F6635	SPLPV	05/26/00	06/08/00	06/09/00	13	1	14
UG/L	29D00501	F6635-5A	NORMAL	F6635	SPLPV	05/26/00	06/08/00	06/09/00	13	1	14
UG/L	29D00601	F6635-6A	NORMAL	F6635	SPLPV	05/26/00	06/08/00	06/09/00	13	1	14
MG/KG	29D00101	F6635-1	NORMAL	F6635	TPH	05/26/00	06/03/00	06/06/00	8	3	11
MG/KG	29D00201	F6635-2	NORMAL	F6635	TPH	05/26/00	06/03/00	06/06/00	8	3	11
MG/KG	29D00301	F6635-3	NORMAL	F6635	TPH	05/26/00	06/03/00	06/06/00	8	3	11
MG/KG	29D00401	F6635-4	NORMAL	F6635	TPH	05/26/00	06/03/00	06/06/00	8	3	11
MG/KG	29D00501	F6635-5	NORMAL	F6635	TPH	05/26/00	06/03/00	06/06/00	8	3	11

Units	Nsample	Lab Id	QC Type	Seq					TO EXTR_DATE	TO ANAL_DATE	TO ANAL_DATE
MG/KG	29D00601	F6635-6	NORMAL	F6635	TPH	05/26/00	06/03/00	06/06/00	8	3	11

Affected Analyte	Sample	Reported Result mg/kg	Interferent	Interferent level in ICS	Conc. ICS	Interferen Level Sample	Est. Interference	Validation Action
antimony	29D00301	1.2x	Iron	196000	-2.9	12000	-0.18	—
barium	29D00301	51.1	Iron	196000	0.69	12000	0.04	—
cadmium	29D00301	1.9	Iron	196000	-1.4	12000	-0.09	—
chromium	29D00301	30.4	Iron	196000	-2.4	12000	-0.15	—
lead	29D00301	294	Iron	196000	2.2	12000	0.13	—
manganes	29D00301	36	Iron	196000	-3.1	12000	-0.19	—
nickel	29D00301	3.6x	Iron	196000	-9.6	12000	-0.59	—
potassium	29D00301	154	Iron	196000	187	12000	11.45	—
selenium	29D00301	1.5x	Iron	196000	9	12000	0.55	—
thallium	29D00301	0.26u	Iron	196000	-3.4	12000	-0.21	UJ
Vanadium	29D00301	28.1	Iron	196000	0.93	12000	0.06	—
zinc	29D00301	206	Iron	196000	-3.3	12000	-0.20	—

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0623M1.ASC
QC Limits: 70 to 130 % Recovery

Date Analyzed: 06/23/00
Run ID: MA1913

Methods: SW846 6010A
Units: ug/l

Metal	CRI True	CRIA True	CRI Results	% Rec	CRIA Results	% Rec
Aluminum	200					
Antimony		5.0			5.8	116.0
Arsenic		10			9.8	98.0
Barium	200		201	100.5		
Beryllium	5.0		5.7	114.0		
Cadmium	5.0		5.2	104.0		
Calcium	1000					
Chromium	10		11.2	112.0		
Cobalt	50		50.6	101.2		
Copper	25		23.8	95.2		
Iron	300		417	104.0		
Lead		5.0			6.5	130.0
Magnesium	5000					
Manganese	15		15.9	106.0		
Molybdenum	50					
Nickel	40		43.5	108.8		
Potassium	5000					
Selenium		10			13.3	133.0*(a
Silver	10		9.6	96.0		
Sodium	5000		501	100.0		
Thallium		10			9.2	92.0
Tin	50					
Vanadium	50					
Zinc	20		18.7	93.5		

(*) Outside of QC limits
(anr) Analyte not requested
(a) Possible positive bias, but all sample results < the DL.

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0606S1.HGX
QC Limits: to % Recovery

Date Analyzed: 06/06/00
Run ID: MA1889

Methods: SW846 7471A
Units: ug/l

Metal	CRI True	CRIA True	CRI Results	% Rec
Mercury	0.50		0.55	110.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0626W1.HGX Date Analyzed: 06/26/00 Methods: SW846 7470A
QC Limits: to % Recovery Run ID: MA1917 Units: ug/l

Metal	CRI True	CRIA True	CRI Results	% Rec
Mercury	0.50		0.55	110.0

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0606S1.HGX Date Analyzed: 06/06/00 Methods: SW846 7471A
QC Limits: 80 to 120 % Recovery Run ID: MA1889 Units: ug/l

Metal	ICV True	ICV Results	% Rec	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Mercury	3.0	2.8	93.3	3.0	3.0	100.0	3.0	3.0	100.0

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0606S1.HGX
QC Limits: 80 to 120 % Recovery

Date Analyzed: 06/06/00
Run ID: MA1889

Methods: SW846 7471A
Units: ug/l

Metal	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Mercury	3.0	3.0	98.7	3.0	3.0	100.0	3.0	3.0	101.0

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0607M1.ASC Date Analyzed: 06/07/00 Methods: SW846 6010A
QC Limits: 90 to 110 % Recovery Run ID: MA1891 Units: ug/l

Metal	ICV True	ICV Results	% Rec	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Aluminum	40000	38800	97.0	40000	38500	96.2	40000	38400	96.0
Antimony	2000	1990	99.5	2000	1980	99.0	2000	1960	98.0
Arsenic	2000	2010	100.5	2000	2020	101.0	2000	2010	100.5
Barium	2000	2010	100.5	2000	2000	100.0	2000	1980	99.0
Beryllium	2000	2070	103.5	2000	2070	103.5	2000	2060	103.0
Cadmium	2000	2050	102.5	2000	2060	103.0	2000	2050	102.5
Calcium	40000	40900	102.2	40000	41000	102.5	40000	40900	102.2
Chromium	2000	2030	101.5	2000	2030	101.5	2000	2010	100.5
Cobalt	2000	2030	101.5	2000	2030	101.5	2000	2010	100.5
Copper	2000	1970	98.5	2000	1960	98.0	2000	1940	97.0
Iron	40000	41600	104.0	40000	41700	104.2	40000	41600	104.0
Lead	2000	2030	101.5	2000	2030	101.5	2000	2020	101.0
Magnesium	40000	40300	100.8	40000	40400	101.0	40000	40200	100.5
Manganese	2000	2040	102.0	2000	2040	102.0	2000	2030	101.5
Molybdenum									
Nickel	2000	2050	102.5	2000	2050	102.5	2000	2040	102.0
Potassium	40000	37800	94.5	40000	37500	93.8	40000	37000	92.5
Selenium	2000	2010	100.5	2000	2020	101.0	2000	2000	100.0
Silver	250	234	93.6	250	233	93.2	250	230	92.0
Sodium	40000	38800	97.0	40000	38700	96.8	40000	38300	95.8
Thallium	2000	2110	105.5	2000	2100	105.0	2000	2100	105.0
Tin									
Vanadium	2000	2000	100.0	2000	2000	100.0	2000	1990	99.5
Zinc	2000	2060	103.0	2000	2070	103.5	2000	2070	103.5

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0607M1.ASC
QC Limits: 90 to 110 % Recovery

Date Analyzed: 06/07/00
Run ID: MA1891

Methods: SW846 6010A
Units: ug/l

Metal	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Aluminum	40000	38300	95.7	40000	37800	94.5	40000	37900	94.7
Antimony	2000	1970	98.5	2000	1970	98.5	2000	1990	99.5
Arsenic	2000	2020	101.1	2000	2030	101.5	2000	2080	103.9
Barium	2000	1980	98.8	2000	1960	98.0	2000	1950	97.3
Beryllium	2000	2070	103.4	2000	2080	104.0	2000	2120	106.2
Cadmium	2000	2070	103.5	2000	2090	104.5	2000	2140	107.3
Calcium	40000	41100	102.8	40000	41400	103.5	40000	42500	106.3
Chromium	2000	2020	100.9	2000	2030	101.5	2000	2070	103.5
Cobalt	2000	2010	100.7	2000	2020	101.0	2000	2060	103.1
Copper	2000	1930	96.7	2000	1920	96.0	2000	1910	95.3
Iron	40000	41700	104.3	40000	41800	104.5	40000	42700	106.8
Lead	2000	2020	101.2	2000	2030	101.5	2000	2080	104.1
Magnesium	40000	40400	101.0	40000	40600	101.5	40000	41500	103.7
Manganese	2000	2030	101.6	2000	2040	102.0	2000	2070	103.7
Molybdenum									
Nickel	2000	2050	102.6	2000	2060	103.0	2000	2120	105.8
Potassium	40000	37100	92.8	40000	37000	92.5	40000	37200	93.1
Selenium	2000	2010	100.7	2000	2010	100.5	2000	2050	102.7
Silver	250	228	91.3	250	228	91.2	250	228	91.3
Sodium	40000	38200	95.6	40000	37800	94.5	40000	37800	94.6
Thallium	2000	2100	105.3	2000	2120	106.0	2000	2140	107.2
Tin									
Vanadium	2000	1990	99.6	2000	2000	100.0	2000	2020	101.2
Zinc	2000	2080	104.0	2000	2100	105.0	2000	2190	109.3

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0607M1.ASC
QC Limits: 90 to 110 % Recovery

Date Analyzed: 06/07/00
Run ID: MA1891

Methods: SW846 6010A
Units: ug/l

Metal	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Aluminum	40000	37600	94.1				40000	37300	93.2
Antimony	2000	1980	99.2				2000	1950	97.7
Arsenic	2000	2090	104.3				2000	2060	103.0
Barium	2000	1940	96.8				2000	1990	99.5
Beryllium	2000	2120	106.1				2000	2070	103.6
Cadmium	2000	2150	107.5				2000	2100	105.2
Calcium	40000	42700	106.7				40000	42000	105.0
Chromium	2000	2060	103.3				2000	2030	101.4
Cobalt	2000	2060	102.9				2000	1990	99.6
Copper	2000	1890	94.6				2000	1900	94.9
Iron	40000	42800	106.9				40000	42000	105.0
Lead	2000	2080	104.3				2000	2030	101.3
Magnesium	40000	41600	104.0				40000	41200	102.9
Manganese	2000	2070	103.5				2000	2030	101.4
Molybdenum									
Nickel	2000	2120	106.1				2000	2100	105.1
Potassium	40000	36700	91.8				40000	36600	91.5
Selenium	2000	2060	103.1				2000	2030	101.4
Silver	250	226	90.6				250	222	88.8*(a)
Sodium	40000	37700	94.2				40000	37500	93.8
Thallium	2000	2140	107.1				2000	2140	106.9
Tin									
Vanadium	2000	2020	100.9				2000	1990	99.6
Zinc	2000	2200	109.9				2000	2110	105.7

(*) Outside of QC limits
(anr) Analyte not requested
(a) Not bracketing any reportable samples.

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0607M1.ASC Date Analyzed: 06/07/00 Methods: SW846 6010A
QC Limits: 90 to 110 % Recovery Run ID: MA1891 Units: ug/l

Metal	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Aluminum	40000	37200	93.0	40000	38300	95.8
Antimony	2000	1950	97.5	2000	2000	100.0
Arsenic	2000	2060	103.0	2000	2120	106.0
Barium	2000	1980	99.0	2000	2020	101.0
Beryllium	2000	2060	103.0	2000	2140	107.0
Cadmium	2000	2090	104.5	2000	2170	108.5
Calcium	40000	41800	104.5	40000	43300	108.2
Chromium	2000	2020	101.0	2000	2090	104.5
Cobalt	2000	1980	99.0	2000	2060	103.0
Copper	2000	1890	94.5	2000	1940	97.0
Iron	40000	41800	104.5	40000	43300	108.2
Lead	2000	2020	101.0	2000	2090	104.5
Magnesium	40000	41000	102.5	40000	42400	106.0
Manganese	2000	2020	101.0	2000	2090	104.5
Molybdenum						
Nickel	2000	2090	104.5	2000	2160	108.0
Potassium	40000	36800	92.0	40000	37900	94.8
Selenium	2000	2020	101.0	2000	2070	103.5
Silver	250	221	88.4*(a)	250	228	91.2
Sodium	40000	37400	93.5	40000	38500	96.2
Thallium	2000	2130	106.5	2000	2180	109.0
Tin						
Vanadium	2000	1980	99.0	2000	2050	102.5
Zinc	2000	2100	105.0	2000	2200	110.0

(*) Outside of QC limits
(anr) Analyte not requested
(a) Not bracketing any reportable samples.

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0623M1.ASC Date Analyzed: 06/23/00 Methods: SW846 6010A
QC Limits: 90 to 110 % Recovery Run ID: MA1913 Units: ug/l

Metal	ICV True	ICV Results	% Rec	ICV True	ICV Results	% Rec	CCV True	CCV Results	% Rec
Aluminum									
Antimony				2000	1960	98.0	2000	1960	98.0
Arsenic				2000	1980	99.0	2000	1980	99.0
Barium				2000	2000	100.0	2000	1990	99.5
Beryllium				2000	2030	101.5	2000	2020	101.0
Cadmium				2000	2020	101.0	2000	2020	101.0
Calcium									
Chromium				2000	2010	100.5	2000	2000	100.0
Cobalt				2000	2010	100.5	2000	2000	100.0
Copper				2000	1950	97.5	2000	1950	97.5
Iron				40000	41200	103.0	40000	41200	103.0
Lead				2000	2010	100.5	2000	2010	100.5
Magnesium									
Manganese				2000	2020	101.0	2000	2020	101.0
Molybdenum									
Nickel				2000	2020	101.0	2000	2020	101.0
Potassium									
Selenium				2000	1970	98.5	2000	1980	99.0
Silver				250	235	94.0	250	233	93.2
Sodium				40000	38800	97.0	40000	38700	96.8
Thallium				2000	2060	103.0	2000	2070	103.5
Tin									
Vanadium									
Zinc				2000	2010	100.5	2000	2010	100.5

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0623M1.ASC Date Analyzed: 06/23/00 Methods: SW846 6010A
QC Limits: 90 to 110 % Recovery Run ID: MA1913 Units: ug/l

Metal	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Aluminum									
Antimony	2000	1940	97.0	2000	1920	96.0	2000	1960	98.0
Arsenic	2000	1960	98.0	2000	1960	98.0	2000	1990	99.5
Barium	2000	1980	99.0	2000	1990	99.5	2000	1990	99.5
Beryllium	2000	2010	100.5	2000	1990	99.5	2000	2030	101.5
Cadmium	2000	2000	100.0	2000	1980	99.0	2000	2020	101.0
Calcium									
Chromium	2000	1990	99.5	2000	1960	98.0	2000	2010	100.5
Cobalt	2000	1990	99.5	2000	1950	97.5	2000	2010	100.5
Copper	2000	1940	97.0	2000	1930	96.5	2000	1950	97.5
Iron	40000	41000	102.5	40000	40600	101.5	40000	41300	103.2
Lead	2000	1990	99.5	2000	1980	99.0	2000	2020	101.0
Magnesium									
Manganese	2000	2000	100.0	2000	1980	99.0	2000	2010	100.5
Molybdenum									
Nickel	2000	2000	100.0	2000	1980	99.0	2000	2020	101.0
Potassium									
Selenium	2000	1960	98.0	2000	1950	97.5	2000	1990	99.5
Silver	250	232	92.8	250	228	91.2	250	234	93.6
Sodium	40000	38600	96.5	40000	37900	94.8	40000	38600	96.5
Thallium	2000	2060	103.0	2000	2050	102.5	2000	2080	104.0
Tin									
Vanadium									
Zinc	2000	1990	99.5	2000	1960	98.0	2000	2030	101.5

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0623M1.ASC
QC Limits: 90 to 110 % Recovery

Date Analyzed: 06/23/00
Run ID: MA1913

Methods: SW846 6010A
Units: ug/l

Metal	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Aluminum									
Antimony	2000	1970	98.5	2000	1980	99.0	2000	2040	102.0
Arsenic	2000	1970	98.5	2000	1990	99.5	2000	2020	101.0
Barium	2000	1980	99.0	2000	1970	98.5	2000	1950	97.5
Beryllium	2000	2020	101.0	2000	2040	102.0	2000	2100	105.0
Cadmium	2000	2010	100.5	2000	2030	101.5	2000	2090	104.5
Calcium									
Chromium	2000	2010	100.5	2000	2030	101.5	2000	2090	104.5
Cobalt	2000	2000	100.0	2000	2030	101.5	2000	2110	105.5
Copper	2000	1970	98.5	2000	1960	98.0	2000	2010	100.5
Iron	40000	41100	102.8	40000	41500	103.8	40000	42600	106.5
Lead	2000	2010	100.5	2000	2040	102.0	2000	2100	105.0
Magnesium									
Manganese	2000	2010	100.5	2000	2030	101.5	2000	2090	104.5
Molybdenum									
Nickel	2000	2010	100.5	2000	2030	101.5	2000	2090	104.5
Potassium									
Selenium	2000	1970	98.5	2000	2000	100.0	2000	2050	102.5
Silver	250	236	94.4	250	238	95.2	250	246	98.4
Sodium	40000	39100	97.8	40000	39300	98.2	40000	40500	101.2
Thallium	2000	2070	103.5	2000	2080	104.0	2000	2120	106.0
Tin									
Vanadium									
Zinc	2000	2000	100.0	2000	2040	102.0	2000	2120	106.0

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0623M1.ASC Date Analyzed: 06/23/00 Methods: SW846 6010A
QC Limits: 90 to 110 % Recovery Run ID: MA1913 Units: ug/l

Metal	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Aluminum									
Antimony	2000	2050	102.5	2000	2060	103.0	2000	1960	98.0
Arsenic	2000	2050	102.5	2000	2060	103.0	2000	1960	97.8
Barium	2000	1960	98.0	2000	1960	98.0	2000	1860	93.1
Beryllium	2000	2120	106.0	2000	2130	106.5	2000	2040	101.8
Cadmium	2000	2110	105.5	2000	2130	106.5	2000	2030	101.6
Calcium									
Chromium	2000	2110	105.5	2000	2120	106.0	2000	2030	101.4
Cobalt	2000	2120	106.0	2000	2140	107.0	2000	2040	102.2
Copper	2000	2000	100.0	2000	2000	100.0	2000	1910	95.4
Iron	40000	42900	107.2	40000	43100	107.8	40000	41200	102.9
Lead	2000	2120	106.0	2000	2140	107.0	2000	2050	102.3
Magnesium									
Manganese	2000	2100	105.0	2000	2110	105.5	2000	2020	100.9
Molybdenum									
Nickel	2000	2100	105.0	2000	2120	106.0	2000	2020	101.1
Potassium									
Selenium	2000	2070	103.5	2000	2080	104.0	2000	1970	98.7
Silver	250	247	98.8	250	248	99.2	250	237	94.9
Sodium	40000	40700	101.8	40000	40900	102.2	40000	39200	97.9
Thallium	2000	2130	106.5	2000	2140	107.0	2000	2040	101.8
Tin									
Vanadium									
Zinc	2000	2160	108.0	2000	2180	109.0	2000	2080	104.2

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0623M1.ASC Date Analyzed: 06/23/00 Methods: SW846 6010A
QC Limits: 90 to 110 % Recovery Run ID: MA1913 Units: ug/l

Metal	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Aluminum						
Antimony	2000	1980	99.0	2000	1980	99.0
Arsenic	2000	1980	99.0	2000	1990	99.5
Barium	2000	1860	93.0	2000	1860	93.0
Beryllium	2000	2060	103.0	2000	2070	103.5
Cadmium	2000	2070	103.5	2000	2070	103.5
Calcium						
Chromium	2000	2050	102.5	2000	2060	103.0
Cobalt	2000	2070	103.5	2000	2080	104.0
Copper	2000	1910	95.5	2000	1910	95.5
Iron	40000	41600	104.0	40000	41800	104.5
Lead	2000	2080	104.0	2000	2100	105.0
Magnesium						
Manganese	2000	2040	102.0	2000	2040	102.0
Molybdenum						
Nickel	2000	2050	102.5	2000	2060	103.0
Potassium						
Selenium	2000	2010	100.5	2000	2020	101.0
Silver	250	238	95.2	250	239	95.6
Sodium	40000	39300	98.2	40000	39300	98.2
Thallium	2000	2060	103.0	2000	2070	103.5
Tin						
Vanadium						
Zinc	2000	2140	107.0	2000	2150	107.5

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0626W1.HGX
QC Limits: 80 to 120 % Recovery

Date Analyzed: 06/26/00
Run ID: MA1917

Methods: SW846 7470A
Units: ug/l

Metal	ICV True	ICV Results	% Rec	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Mercury	3.0	2.9	96.7	3.0	2.9	96.7	3.0	3.1	103.3

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0626W1.HGX
QC Limits: 80 to 120 % Recovery

Date Analyzed: 06/26/00
Run ID: MA1917

Methods: SW846 7470A
Units: ug/l

Metal	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Mercury	3.0	3.1	103.3	3.0	3.0	100.0

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0606S1.HGX
QC Limits: result < RL

Date Analyzed: 06/06/00
Run ID: MA1889

Methods: SW846 7471A
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Mercury	1.0	.06	0.15	<1.0	0.15	<1.0	0.15	<1.0	0.20	<1.0B

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#NO052-MSA0200-014

File ID: HG0606S1.HGX Date Analyzed: 06/06/00 Methods: SW846 7471A
QC Limits: result < RL Run ID: MA1889 Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final
Mercury	1.0	.06	0.20	<1.0B	0.20	<1.0B

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

TAL metals only JMM 10/17/00

File ID: IR0607M1.ASC
QC Limits: result < RL

Date Analyzed: 06/07/00
Run ID: MA1691

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	ICB raw	final	ICB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	6.0	<200	15.6	<200	10.1	<200	40.0	<200
Antimony	5.0	2.39	6.0	<6.0<	3.7	<5.0	2.1	<5.0	2.9	<5.0
Arsenic	10	3.4	8.3	<10	4.8	<10	3.3	<10	1.2	<10
Barium	200	.39	0.12	<200	0.84	<200	0.55	<200	0.61	<200
Beryllium	5.0	.36	0.55	<5.0	0.78	<5.0	0.68	<5.0	0.98	<5.0
Cadmium	5.0	.33	0.060	<5.0	0.70	<5.0	0.49	<5.0	0.45	<5.0
Calcium	1000	19.5	-0.84	<1000	14.8	<1000	7.7	<1000	39.8	<1000
Chromium	10	.637	0.38	<10	0.68	<10	0.36	<10	1.5	<10
Cobalt	50	.797	0.36	<50	0.88	<50	0.51	<50	0.90	<50
Copper	25	.747	-0.22	<25	0.82	<25	-0.010	<25	0.030	<25
Iron	300	32	10.9	<300	17.3	<300	10.3	<300	33.7	<300
Lead	5.0	1.59	0.52	<5.0	1.6	<5.0	1.0	<5.0	0.95	<5.0
Magnesium	5000	17.6	3.0	<5000	16.0	<5000	11.9	<5000	46.6	<5000
Manganese	15	.16	0.13	<15	0.84	<15	0.49	<15	0.93	<15
Molybdenum	50	.68								
Nickel	40	1	0.24	<40	0.89	<40	0.59	<40	3.0	<40
Potassium	5000	28.2	230	<5000	246	<5000	227	<5000	268	<5000
Selenium	10	2	0.55	<10	2.2	<10	2.0	<10	3.1	<10
Silver	10	.96	0.78	<10	0.82	<10	0.30	<10	0.85	<10
Sodium	5000	153	4.1	<5000	-52	<5000	-110	<5000	89.2	<5000
Thallium	10	2.69	-0.37	<10	1.1	<10	0.73	<10	0.93	<10
Tin	50	2.2								
Vanadium	50	.717	0.35	<50	1.1	<50	0.56	<50	0.82	<50
Zinc	20	.83	0.44	<20	0.96	<20	0.58	<20	0.74	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0607M1.ASC
QC Limits: result < RL

Date Analyzed: 06/07/00
Run ID: MA1891

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	28.4	<200	19.1	<200	14.7	<200	27.4	<200
Antimony	5.0	2.39	3.4	<5.0B	2.7	<5.0	3.8	<5.0B	2.1	<5.0
Arsenic	10	3.4	2.9	<10.0	0.61	<10	0	<10.0	0.20	<10.0
Barium	200	.39	0.60	<200B	1.0	<200	0.70	<200B	0.80	<200B
Beryllium	5.0	.36	1.1	<5.0B	1.5	<5.0<	1.5	<5.0B	1.6	<5.0B
Cadmium	5.0	.33	0.50	<5.0B	0.48	<5.0	0.50	<5.0B	0.70	<5.0B
Calcium	1000	19.5	9.9	<1000	17.1	<1000	13.7	<1000	22.9	<1000B
Chromium	10	.637	2.2	<10.0B	2.0	<10<	2.2	<10.0B	3.7	<10.0B
Cobalt	50	.797	0.90	<50.0B	0.95	<50	1.1	<50.0B	0.90	<50.0B
Copper	25	.747	-0.40	<25.0	-0.21	<25	-0.1	<25.0	0.20	<25.0
Iron	300	32	39.8	<300B	26.2	<300	31.2	<300	35.4	<300B
Lead	5.0	1.59	1.6	<5.0B	0.83	<5.0	1.4	<5.0	1.3	<5.0
Magnesium	5000	17.6	15.5	<5000	20.2	<5000	19.3	<5000B	26.8	<5000B
Manganese	15	.16	1.7	<15.0B	1.3	<15	1.2	<15.0B	1.9	<15.0B
Molybdenum	50	.68								
Nickel	40	1	7.2	<40.0B	3.6	<40	3.6	<40.0B	7.3	<40.0B
Potassium	5000	28.2	216	<5000B	212	<5000	256	<5000B	226	<5000B
Selenium	10	2	1.8	<10.0	3.0	<10	4.3	<10.0B	1.3	<10.0
Silver	10	.96	0.70	<10.0	0.54	<10	0	<10.0	0.60	<10.0
Sodium	5000	153	-112	<5000	-110	<5000	-53.4	<5000	-146	<5000
Thallium	10	2.69	0.70	<10.0	4.6	<10	3.7	<10.0B	0.30	<10.0
Tin	50	2.2								
Vanadium	50	.717	0.70	<50.0	0.64	<50	0.90	<50.0B	0.60	<50.0
Zinc	20	.83	1.0	<20.0B	1.0	<20	0.90	<20.0B	2.1	<20.0B

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N00052-MSA0200-014

File ID: IR0607M1.ASC
QC Limits: result < RL

Date Analyzed: 06/07/00
Run ID: ~~MA1691~~

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30			27.9	<200	27.3	<200	30.8	<200
Antimony	5.0	2.39			2.8	<5.0B	5.6	<6.0<	4.5	<5.0
Arsenic	10	3.4			2.0	<10.0	2.3	<10	3.1	<10
Barium	200	.39			0.80	<200B	0.99	<200	1.2	<200
Beryllium	5.0	.36			2.2	<5.0B	2.4	<5.0<	2.5	<5.0<
Cadmium	5.0	.33			0.40	<5.0B	0.81	<5.0	0.94	<5.0
Calcium	1000	19.5			7.2	<1000	11.3	<1000	15.2	<1000
Chromium	10	.637			0.90	<10.0B	1.1	<10	1.4	<10
Cobalt	50	.797			0.70	<50.0	1.3	<50	1.4	<50
Copper	25	.747			-0.90	<25.0B	-0.66	<25	-0.74	<25
Iron	300	32			20.7	<300	26.8	<300	30.5	<300
Lead	5.0	1.59			2.0	<5.0B	1.6	<5.0	1.4	<5.0
Magnesium	5000	17.6			18.7	<5000B	22.4	<5000	27.6	<5000
Manganese	15	.16			0.90	<15.0B	1.1	<15	1.2	<15
Molybdenum	50	.68								
Nickel	40	1			1.4	<40.0B	1.6	<40	1.8	<40
Potassium	5000	28.2			230	<5000B	253	<5000	256	<5000
Selenium	10	2			1.9	<10.0	3.1	<10	4.4	<10
Silver	10	.96			1.0	<10.0B	1.6	<10	1.1	<10
Sodium	5000	153			-57.2	<5000	23.7	<5000	6.5	<5000
Thallium	10	2.69			2.0	<10.0	2.8	<10	4.0	<10
Tin	50	2.2								
Vanadium	50	.717			0.80	<50.0B	1.1	<50	1.4	<50
Zinc	20	.83			0.80	<20.0B	1.1	<20	1.4	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

SR Data only JMM 10/17/00

File ID: HG0626W1.HGX Date Analyzed: 06/26/00 Methods: SW846 7470A
QC Limits: result < RL Run ID: ~~MA1917~~ Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Mercury	0.20	.06	-0.0071	<0.20	-0.0071	<0.20	-0.0071	<0.20	-0.0071	<0.20

(*) Outside of QC limits
(anr) Analyte not requested

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BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0626W1.HGX Date Analyzed: 06/26/00 Methods: SW846 7470A
QC Limits: result < RL Run ID: MA1917 Units: ug/l

Metal	RL	IDL	CCB raw	final
Mercury	0.20	.06	-0.0071	<0.20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N00052-MSA0200-014

SPLP data methods gmm 10/17/00

File ID: IR0623M1.ASC Date Analyzed: 06/23/00 Methods: SW846 6010A
QC Limits: result < RL Run ID: ~~MA1913~~ Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30								
Antimony	5.0	2.39	4.0	<5.0	1.4	<5.0	2.7	<5.0	3.4	<5.0
Arsenic	10	3.4	2.8	<10	-0.69	<10	0.97	<10	0.49	<10
Barium	200	.39	0.16	<200	0.11	<200	0.13	<200	0.090	<200
Beryllium	5.0	.36	0.45	<5.0	0.47	<5.0	0.61	<5.0	0.80	<5.0
Cadmium	5.0	.33	0.31	<5.0	0.040	<5.0	0.11	<5.0	-0.020	<5.0
Calcium	1000	19.5								
Chromium	10	.637	0.49	<10	0.33	<10	0.29	<10	0.11	<10
Cobalt	50	.797	0.41	<50	0.12	<50	0.14	<50	0.020	<50
Copper	25	.747	-0.070	<25	-0.38	<25	-0.31	<25	-1.1	<25
Iron	300	32	32.0	<300	7.5	<300	5.4	<300	7.4	<300
Lead	5.0	1.59	1.3	<5.0	0.60	<5.0	0.61	<5.0	0.80	<5.0
Magnesium	5000	17.6								
Manganese	15	.16	0.16	<15	0.12	<15	0.14	<15	0.040	<15
Molybdenum	50	.68								
Nickel	40	1	0.19	<40	0.21	<40	-0.060	<40	-0.20	<40
Potassium	5000	28.2								
Selenium	10	2	2.0	<10	1.6	<10	1.4	<10	1.6	<10
Silver	10	.96	0.20	<10	0.42	<10	0.0	<10	0.32	<10
Sodium	5000	153	61.6	<5000	-96	<5000	-190	<5000	-170	<5000
Thallium	10	2.69	-0.61	<10	2.2	<10	0.070	<10	-0.64	<10
Tin	50	2.2								
Vanadium	50	.717								
Zinc	20	.83	-0.16	<20	0.050	<20	-0.020	<20	-0.35	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0623M1.ASC Date Analyzed: 06/23/00 Methods: SW846 6010A
QC Limits: result < RL Run ID: MA1913 Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30								
Antimony	5.0	2.39	1.5	<5.0	3.2	<5.0	1.6	<5.0	1.1	<5.0
Arsenic	10	3.4	-1.5	<10	0.93	<10	1.5	<10	-0.47	<10
Barium	200	.39	0.080	<200	0.32	<200	0.30	<200	0.35	<200
Beryllium	5.0	.36	0.53	<5.0	0.52	<5.0	0.51	<5.0	0.13	<5.0
Cadmium	5.0	.33	0.060	<5.0	0.36	<5.0	0.41	<5.0	0.20	<5.0
Calcium	1000	19.5								
Chromium	10	.637	-0.15	<10	0.19	<10	0.61	<10	0.20	<10
Cobalt	50	.797	-0.19	<50	0.48	<50	0.48	<50	0.32	<50
Copper	25	.747	-0.78	<25	0.010	<25	0.0	<25	0.69	<25
Iron	300	32	4.3	<300	10.1	<300	9.6	<300	8.3	<300
Lead	5.0	1.59	1.2	<5.0	0.28	<5.0	0.28	<5.0	1.3	<5.0
Magnesium	5000	17.6								
Manganese	15	.16	0.12	<15	0.22	<15	0.31	<15	0.28	<15
Molybdenum	50	.68								
Nickel	40	1	-0.27	<40	0.060	<40	0.36	<40	0.22	<40
Potassium	5000	28.2								
Selenium	10	2	3.2	<10	0.80	<10	3.8	<10	1.9	<10
Silver	10	.96	-0.30	<10	0.28	<10	0.0	<10	-0.60	<10
Sodium	5000	153	-310	<5000	-91	<5000	-89	<5000	-34	<5000
Thallium	10	2.69	0.71	<10	0.23	<10	1.1	<10	0.82	<10
Tin	50	2.2								
Vanadium	50	.717								
Zinc	20	.83	-0.020	<20	0.11	<20	0.40	<20	0.82	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0623M1.ASC Date Analyzed: 06/23/00 Methods: SW846 6010A
QC Limits: result < RL Run ID: MA1913 Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30								
Antimony	5.0	2.39	0.37	<5.0	1.1	<5.0	2.4	<5.0B	1.7	<5.0
Arsenic	10	3.4	-1.6	<10	0.80	<10	1.4	<10.0	1.4	<10
Barium	200	.39	0.31	<200	0.48	<200	0.40	<200B	0.83	<200
Beryllium	5.0	.36	0.10	<5.0	0.32	<5.0	0.30	<5.0	0.82	<5.0
Cadmium	5.0	.33	0.17	<5.0	0.49	<5.0	0.60	<5.0B	0.96	<5.0
Calcium	1000	19.5								
Chromium	10	.637	0.17	<10	0.32	<10	0.20	<10.0	0.76	<10
Cobalt	50	.797	0.20	<50	0.57	<50	1.0	<50.0B	1.2	<50
Copper	25	.747	0.58	<25	1.0	<25	-0.60	<25.0	-0.16	<25
Iron	300	32	9.0	<300	16.0	<300	4.9	<300	12.5	<300
Lead	5.0	1.59	0.72	<5.0	0.99	<5.0	1.0	<5.0	0.78	<5.0
Magnesium	5000	17.6								
Manganese	15	.16	0.28	<15	0.45	<15	0.40	<15.0B	0.87	<15
Molybdenum	50	.68								
Nickel	40	1	0.020	<40	0.87	<40	0.80	<40.0	0.77	<40
Potassium	5000	28.2								
Selenium	10	2	2.2	<10	3.4	<10	1.8	<10.0	4.2	<10
Silver	10	.96	-0.77	<10	-0.38	<10	-0.70	<10.0	-0.41	<10
Sodium	5000	153	-210	<5000	-240	<5000	-37.6	<5000	-53	<5000
Thallium	10	2.69	2.3	<10	-0.68	<10	2.6	<10.0	1.0	<10
Tin	50	2.2								
Vanadium	50	.717								
Zinc	20	.83	0.86	<20	1.1	<20	-3.0	<20.0B	-2.0	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0623M1.ASC
QC Limits: result < RL

Date Analyzed: 06/23/00
Run ID: MA1913

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	CCB raw	final
Aluminum	200	30		
Antimony	5.0	2.39	0.63	<5.0
Arsenic	10	3.4	0.57	<10
Barium	200	.39	0.86	<200
Beryllium	5.0	.36	1.1	<5.0<
Cadmium	5.0	.33	1.0	<5.0
Calcium	1000	19.5		
Chromium	10	.637	0.80	<10
Cobalt	50	.797	1.3	<50
Copper	25	.747	-0.40	<25
Iron	300	32	15.2	<300
Lead	5.0	1.59	1.6	<5.0
Magnesium	5000	17.6		
Manganese	15	.16	1.0	<15
Molybdenum	50	.68		
Nickel	40	1	0.43	<40
Potassium	5000	28.2		
Selenium	10	2	2.1	<10
Silver	10	.96	-1.6	<10
Sodium	5000	153	-340	<5000
Thallium	10	2.69	1.4	<10
Tin	50	2.2		
Vanadium	50	.717		
Zinc	20	.83	-2.1	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2742
Matrix Type: SOLID

Methods: SW846 6010A
Units: mg/kg

Prep Date: 06/05/00

Metal	RL	IDL	MB raw	final
Aluminum	20.0	3	1.2	<20.0
Antimony	6.0	.24	0.05	<6.0
Arsenic	0.50	.34	0.01	<0.50
Barium	20.0	.04	0.59	<20.0
Beryllium	0.50	.04	0.06	<0.50
Cadmium	0.40	.03	0.004	<0.40
Calcium	500	2	13.0	<500
Chromium	1.0	.06	0.17	<1.0
Cobalt	5.0	.08	0.05	<5.0
Copper	2.5	.07	0.24	<2.5
Iron	10.0	3.2	2.7	<10.0
Lead	10.0	.16	0.21	<10.0
Magnesium	500	1.8	2.2	<500
Manganese	1.5	.02	0.18	<1.5
Molybdenum	5.0	.07	anr	
Nickel	4.0	.1	0.77	<4.0
Potassium	500	2.8	25.8	<500
Selenium	10.0	.2	0.09	<10.0
Silver	1.0	.1	0.05	<1.0
Sodium	500	15.3	47.6	<500
Thallium	1.0	.27	0.28	<1.0
Tin	5.0	.22	anr	
Vanadium	5.0	.07	0.04	<5.0
Zinc	2.0	.08	0.96	<2.0

Associated samples MP2742: F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2743
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 06/05/00

Metal	RL	IDL	MB raw	final
Mercury	0.17	.01	0.026	<0.17

Associated samples MP2743: F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2783
Matrix Type: LEACHATE

Methods: SW846 6010A
Units: mg/l

Prep Date: 06/21/00

Metal	RL	IDL	MB raw	final
Aluminum	0.20	.03	0.12	<0.20
Antimony	0.20	.00239	-0.00074	<0.20
Arsenic	0.50	.00345	0.00083	<0.50
Barium	1.0	.00039	0.00024	<1.0
Beryllium	0.0050	.000363	-0.000030	<0.0050
Cadmium	0.050	.00033	0.000030	<0.050
Calcium	5.0	.0195	0.011	<5.0
Chromium	0.050	.000637	0.0027	<0.050
Cobalt	0.050	.000797	0.00039	<0.050
Copper	0.025	.000747	-0.00097	<0.025
Iron	0.10	.032	0.091	<0.10
Lead	0.50	.00159	0.00086	<0.50
Magnesium	5.0	.0176	0.0052	<5.0
Manganese	0.015	.00016	0.00062	<0.015
Molybdenum	0.050	.00068	0.000010	<0.050
Nickel	0.040	.001	0.0019	<0.040
Potassium	5.0	.0282	0.20	<5.0
Selenium	0.50	.00204	0.0025	<0.50
Silver	0.050	.000963	-0.00045	<0.050
Sodium	5.0	.153	-0.032	<5.0
Thallium	0.50	.00269	0.00099	<0.50
Tin	0.050	.00223	0.00085	<0.050
Vanadium	0.050	.000717	0.00019	<0.050
Zinc	0.020	.00083	-0.0042	<0.020

Associated samples MP2783: F6635-1A, F6635-2A, F6635-3A, F6635-4A, F6635-5A, F6635-6A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2796
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 06/25/00

Metal	RL	IDL	MB raw	final
Mercury	0.00020	.00006	0.000068	<0.00020

Associated samples MP2796: F6635-1A, F6635-2A, F6635-3A, F6635-4A, F6635-5A, F6635-6A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0607M1.ASC
QC Limits: 80 to 120 % Recovery

Date Analyzed: 06/07/00
Run ID: MA1891

Methods: SW846 6010A
Units: ug/l

Metal	ICSA True	ICSAB True	ICSA Results	% Rec	ICSAB Results	% Rec
Aluminum	500000	500000	483000	96.6	483000	96.6
Antimony		1000	-2.9		1010	101.0
Arsenic		1000	-2.3		1050	105.0
Barium		500	0.69		570	114.0
Beryllium		500	-0.23		515	103.0
Cadmium		1000	-1.4		994	99.4
Calcium	500000	500000	474000	94.8	472000	94.4
Chromium		500	-2.4		497	99.4
Cobalt		500	0.80		483	96.6
Copper		500	0.54		538	107.6
Iron	200000	200000	196000	98.0	196000	98.0
Lead		1000	-2.2		978	97.8
Magnesium	500000	500000	546000	109.2	544000	108.8
Manganese		500	-3.1		513	102.6
Molybdenum		1000	-1.7		48.5	4.8*
Nickel		1000	-9.6		949	94.9
Potassium			187		-170	
Selenium		1000	9.0		987	98.7
Silver		1000	0.51		1000	100.0
Sodium			-74		238	
Thallium		1000	-3.4		982	98.2
Tin		1000	-3.2		48.0	4.8*
Vanadium		500	0.93		530	106.0
Zinc		1000	-3.3		947	94.7

(*) Outside of QC limits
(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0623M1.ASC
QC Limits: 80 to 120 % Recovery

Date Analyzed: 06/23/00
Run ID: MA1913

Methods: SW846 6010A
Units: ug/l

Metal	ICSA True	ICSAB True	ICSA Results	% Rec	ICSAB Results	% Rec
Aluminum	500000	500000	488000	97.6	496000	99.2
Antimony		1000	-0.78		1050	105.0
Arsenic		1000	-0.17		1070	107.0
Barium		500	0.85		577	115.4
Beryllium		500	0.040		518	103.6
Cadmium		1000	-2.6		1000	100.0
Calcium	500000	500000	473000	94.6	477000	95.4
Chromium		500	-1.8		498	99.6
Cobalt		500	0.87		484	96.8
Copper		500	-1.4		540	108.0
Iron	200000	200000	196000	98.0	199000	99.5
Lead		1000	-6.6<		984	98.4
Magnesium	500000	500000	554000	110.8	557000	111.4
Manganese		500	-2.8		515	103.0
Molybdenum		1000	-0.65		50.5	5.0*
Nickel		1000	-9.2		951	95.1
Potassium			248		-180	
Selenium		1000	13.1<		1060	106.0
Silver		1000	1.3		1050	105.0
Sodium			49.4		110	
Thallium		1000	-6.0		994	99.4
Tin		1000	-2.0		46.9	4.7*
Vanadium		500	6.0		539	107.8
Zinc		1000	-5.1		949	94.9

(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2742
Matrix Type: SOLID

Methods: SW846 6010A
Units: mg/kg

Prep Date: 06/05/00 06/05/00

Metal	F6635-1 Original	DUP	RPD	QC Limits	F6635-1 Original	MS	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	12900	11600	10.2 ✓	0-20	12900	16200	2986.61	110.2	80-120
Antimony	0.53	0.36	39.1 (a) ✓	0-20	0.53	62.0	102.99	59.7N	80-120
Arsenic	2.6	2.5	0.6	0-28	2.6	378	411.95	91.2	72-110
Barium	11.6	10.7	8.2 ✓	0-14	11.6	397	411.95	93.6	64-116
Beryllium	0.09	0.09	0.6	0-20	0.09	10.1	10.3	97.3	80-120
Cadmium	0.0	0.0	NC	0-16	0.0	9.7	10.3	94.4	64-120
Calcium	192	174	9.8 ✓	0-20	192	2630	2574.67	94.6	80-120
Chromium	13.5	12.2	9.8 ✓	0-33	13.5	52.6	41.19	95.1	66-119
Cobalt	0.54	0.50	8.4 ✓	0-20	0.54	94.3	102.99	91.1	80-120
Copper	4.9	4.4	9.5 ✓	0-39	4.9	52.9	51.49	93.3	65-124
Iron	8700	7860	10.1 ✓	0-20	8700	10900	2780.64	80.3	80-120
Lead	5.3	4.6	13.5 ✓	0-44	5.3	99.6	102.99	91.6	60-127
Magnesium	114	104	9.8 ✓	0-20	114	2560	2574.67	95.0	80-120
Manganese	28.9	26.2	10.1 ✓	0-20	28.9	120	102.99	88.6	80-120
Molybdenum	anr								
Nickel	2.0	1.8	9.1 ✓	0-30	2.0	100	102.99	95.5	71-119
Potassium	130	117	9.9 ✓	0-20	130	2560	2574.67	94.5	80-120
Selenium	1.2	1.3	7.0 ✓	0-28	1.2	356	411.95	86.2	65-115
Silver	0	0	NC	0-21	0	8.9	10.3	86.3	63-123
Sodium	380	344	9.8 ✓	0-20	380	2720	2574.67	91.0	80-120
Thallium	0.0	0.0	NC	0-20	0.0	392	411.95	95.1	80-120
Tin	anr								
Vanadium	23.1	20.9	9.9 ✓	0-20	23.1	121	102.99	95.0	80-120
Zinc	8.1	7.5	8.6 ✓	0-31	8.1	104	102.99	93.6	69-120

Associated samples MP2742: F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2742
Matrix Type: SOLID

Methods: SW846 6010A
Units: mg/kg

Prep Date: 06/05/00

Metal	F6635-1 Original	MSD	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	12900	16600	3016.78	123.1(a)	80-120
Antimony	0.53	63.9	104.03	60.9N	80-120
Arsenic	2.6	393	416.11	93.8	72-110
Barium	11.6	408	416.11	95.1	64-116
Beryllium	0.09	10.4	10.4	99.5	80-120
Cadmium	0.0	10.1	10.4	96.8	64-120
Calcium	192	2720	2600.67	97.2	80-120
Chromium	13.5	54.4	41.61	98.5	66-119
Cobalt	0.54	97.6	104.03	93.3	80-120
Copper	4.9	54.3	52.01	95.0	65-124
Iron	8700	11300	2808.73	92.7	80-120
Lead	5.3	103	104.03	93.7	60-127
Magnesium	114	2650	2600.67	97.3	80-120
Manganese	28.9	124	104.03	91.5	80-120
Molybdenum					
Nickel	2.0	104	104.03	97.7	71-119
Potassium	130	2610	2600.67	95.2	80-120
Selenium	1.2	367	416.11	87.9	65-115
Silver	0	9.1	10.4	87.0	63-123
Sodium	380	2790	2600.67	92.7	80-120
Thallium	0.0	404	416.11	97.0	80-120
Tin					
Vanadium	23.1	125	104.03	97.7	80-120
Zinc	8.1	109	104.03	96.8	69-120

Associated samples MP2742: F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2743
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 06/05/00 06/05/00

Metal	F6650-1 Original	DUP	RPD	QC Limits	F6650-1 Original	MS	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.035	0.032	9.0	0-20	0.035	0.54	0.55	92.5	75-125

Associated samples MP2743: F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2743
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 06/05/00

Metal	F6650-1 Original	MSD	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.035	0.57	0.56	94.8	75-125

Associated samples MP2743: F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2783
Matrix Type: LEACHATE

Methods: SW846 6010A
Units: mg/l

Prep Date:			06/21/00					06/21/00	
Metal	F6635-1A Original	DUP	RPD	QC Limits	F6635-1A Original	MS	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	0.042	0.042	0.0	0-20	0.042	29.0	29.0	99.8	80-120
Antimony	0.0	0.0	NC	0-20	0.0	1.0	1.0	100.0	80-120
Arsenic	0.0	0.0	NC	0-28	0.0	4.0	4.0	100.0	72-110
Barium	0.00069	0.00070	1.4	0-14	0.00069	3.8	4.0	95.0	64-116
Beryllium	0.0	0.0	NC	0-20	0.0	0.10	0.10	100.0	80-120
Cadmium	0.0	0.0	NC	0-16	0.0	0.10	0.10	100.0	64-120
Calcium	1.7	1.7	0.0	0-20	1.7	28.3	25.0	106.4	80-120
Chromium	0.0	0.0	NC	0-33	0.0	0.42	0.40	105.0	66-119
Cobalt	0.0	0.0	NC	0-20	0.0	1.0	1.0	100.0	80-120
Copper	0.0012	0.0013	8.0	0-39	0.0012	0.49	0.50	97.8	65-124
Iron	0.0	0.038	200.0(a)	0-20	0.0	29.3	27.0	108.5	80-120
Lead	0.0	0.0	NC	0-44	0.0	1.0	1.0	100.0	60-127
Magnesium	0.25	0.24	4.1	0-20	0.25	27.0	25.0	107.0	80-120
Manganese	0.00018	0.00018	0.0	0-20	0.00018	1.0	1.0	100.0	80-120
Molybdenum	0.0	0.0	NC	0-20					
Nickel	0.0	0.0	NC	0-30	0.0	1.0	1.0	100.0	71-119
Potassium	0.49	0.50	2.0	0-20	0.49	24.7	25.0	96.8	80-120
Selenium	0.0	0.0	NC	0-28	0.0	4.0	4.0	100.0	65-115
Silver	0.0	0.0	NC	0-21	0.0	0.096	0.10	96.0	63-123
Sodium	9.2	9.2	0.0	0-20	9.2	35.3	25.0	104.4	80-120
Thallium	0.0	0.0	NC	0-20	0.0	4.2	4.0	105.0	80-120
Tin	0.0	0.0	NC	0-20					
Vanadium	0.0	0.0	NC	0-20	0.0	1.0	1.0	100.0	80-120
Zinc	0.0034	0.0034	0.0	0-31	0.0034	1.0	1.0	99.7	69-120

Associated samples MP2783: F6635-1A, F6635-2A, F6635-3A, F6635-4A, F6635-5A, F6635-6A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2783
Matrix Type: LEACHATE

Methods: SW846 6010A
Units: mg/l

Prep Date: 06/21/00

Metal	F6635-1A Original	MSD	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	0.042	28.9	29.0	99.5	80-120
Antimony	0.0	1.0	1.0	100.0	80-120
Arsenic	0.0	4.0	4.0	100.0	72-110
Barium	0.00069	3.8	4.0	95.0	64-116
Beryllium	0.0	0.10	0.10	100.0	80-120
Cadmium	0.0	0.10	0.10	100.0	64-120
Calcium	1.7	28.1	25.0	105.6	80-120
Chromium	0.0	0.41	0.40	102.5	66-119
Cobalt	0.0	1.0	1.0	100.0	80-120
Copper	0.0012	0.49	0.50	97.8	65-124
Iron	0.0	29.1	27.0	107.8	80-120
Lead	0.0	1.0	1.0	100.0	60-127
Magnesium	0.25	26.8	25.0	106.2	80-120
Manganese	0.00018	1.0	1.0	100.0	80-120
Molybdenum					
Nickel	0.0	1.0	1.0	100.0	71-119
Potassium	0.49	24.8	25.0	97.2	80-120
Selenium	0.0	4.0	4.0	100.0	65-115
Silver	0.0	0.095	0.10	95.0	63-123
Sodium	9.2	35.1	25.0	103.6	80-120
Thallium	0.0	4.1	4.0	102.5	80-120
Tin					
Vanadium	0.0	1.0	1.0	100.0	80-120
Zinc	0.0034	1.0	1.0	99.7	69-120

Associated samples MP2783: F6635-1A, F6635-2A, F6635-3A, F6635-4A, F6635-5A, F6635-6A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2796
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 06/25/00 06/25/00

Metal	F6741-1 Original	DUP	RPD	QC Limits	F6741-1 Original	MS	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.0	0.0	NC	0-20	0.0	0.032	0.030	106.7	75-125

Associated samples MP2796: F6635-1A, F6635-2A, F6635-3A, F6635-4A, F6635-5A, F6635-6A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2796
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 06/25/00

Metal	F6741-1 Original	MSD	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.0	0.033	0.030	110.0	75-125

Associated samples MP2796: F6635-1A, F6635-2A, F6635-3A, F6635-4A, F6635-5A, F6635-6A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2742
Matrix Type: SOLID

Methods: SW846 6010A
Units: ug/l

Prep Date: 06/05/00

Metal	F6635-1 Original	SDL 1:5	RPD	QC Limits
Aluminum	119000	134000	12.3	0-10
Antimony	4.87	0.00	100.0(a)	0-10
Arsenic	23.5	31.7	34.5 (a)	0-10
Barium	107	132	22.6	0-10
Beryllium	0.810	3.20	295.1(a)	0-10
Cadmium	0.00	0.00	NC	0-10
Calcium	1770	2160	22.4	0-10
Chromium	124	141	13.8	0-10
Cobalt	5.02	8.61	71.5 (a)	0-10
Copper	44.9	52.3	16.4	0-10
Iron	80200	92000	14.7	0-10
Lead	48.9	62.4	27.6 (a)	0-10
Magnesium	1060	1300	23.3	0-10
Manganese	267	304	14.1	0-10
Molybdenum	anr			
Nickel	18.6	29.5	58.3 (a)	0-10
Potassium	1200	2400	100.7(a)	0-10
Selenium	11.5	30.1	161.5(a)	0-10
Silver	0.00	0.00	NC	0-10
Sodium	3500	4340	23.9 (a)	0-10
Thallium	0.00	0.00	NC	0-10
Tin	anr			
Vanadium	213	242	13.4	0-10
Zinc	75.1	105	39.4	0-10

Associated samples MP2742: F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

SERIAL DILUTION RESULTS SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#NO052-MSA0200-014

QC Batch ID: MP2783
Matrix Type: LEACHATE

Methods: SW846 6010A
Units: ug/l

Prep Date: 06/21/00

Metal	F6635-1A Original	SDL 1:5	RPD	QC Limits
Aluminum	42.4	0.00	100.0(a)	0-10
Antimony	0.00	0.00	NC	0-10
Arsenic	0.00	0.00	NC	0-10
Barium	0.690	2.82	308.7(a)	0-10
Beryllium	0.00	0.00	NC	0-10
Cadmium	0.00	0.00	NC	0-10
Calcium	1710	2200	28.1*	0-10
Chromium	0.00	0.00	NC	0-10
Cobalt	0.00	0.00	NC	0-10
Copper	1.18	0.00	100.0(a)	0-10
Iron	0.00	623		0-10
Lead	0.00	18.4		0-10
Magnesium	248	329	32.8 (a)	0-10
Manganese	0.180	1.67	827.8(a)	0-10
Molybdenum	0.00	6.99		0-10
Nickel	0.00	0.00	NC	0-10
Potassium	493	1400	183.7(a)	0-10
Selenium	0.00	16.8		0-10
Silver	0.00	0.00	NC	0-10
Sodium	9190	11800	27.8*	0-10
Thallium	0.00	14.6		0-10
Tin	0.00	0.00	NC	0-10
Vanadium	0.00	0.00	NC	0-10
Zinc	3.43	0.00	100.0(a)	0-10

Associated samples MP2783: F6635-1A, F6635-2A, F6635-3A, F6635-4A, F6635-5A, F6635-6A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2742
Matrix Type: SOLID

Methods: SW846 6010A
Units: mg/kg

Prep Date: 06/05/00

Metal	BSP Result	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	2560	2900	88.4	80-120
Antimony	90.8	100	90.8	80-120
Arsenic	374	400	93.4	80-120
Barium	381	400	95.2	80-120
Beryllium	9.8	10	97.7	80-120
Cadmium	9.6	10	96.3	80-120
Calcium	2510	2500	100.5	80-120
Chromium	38.8	40	97.0	80-120
Cobalt	92.7	100	92.7	80-120
Copper	47.7	50	95.4	80-120
Iron	2700	2700	99.9	80-120
Lead	94.8	100	94.8	80-120
Magnesium	2440	2500	97.5	80-120
Manganese	96.0	100	96.0	80-120
Molybdenum				
Nickel	97.2	100	97.2	80-120
Potassium	2210	2500	88.5	80-120
Selenium	350	400	87.4	80-120
Silver	8.7	10	87.2	80-120
Sodium	2530	2500	101.2	80-120
Thallium	390	400	97.6	80-120
Tin				
Vanadium	97.4	100	97.4	80-120
Zinc	98.8	100	98.8	80-120

Associated samples MP2742: F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2743
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 06/05/00

Metal	BSP Result	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.46	0.5	92.0	80-120

Associated samples MP2743: F6635-1, F6635-2, F6635-3, F6635-4, F6635-5, F6635-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2783
Matrix Type: LEACHATE

Methods: SW846 6010A
Units: mg/l

Prep Date: 06/21/00

Metal	BSP Result	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	28.4	29.0	97.9	80-120
Antimony	0.99	1.0	99.0	80-120
Arsenic	4.0	4.0	100.0	80-120
Barium	3.8	4.0	95.0	80-120
Beryllium	0.10	0.10	100.0	80-120
Cadmium	0.10	0.10	100.0	80-120
Calcium	26.1	25.0	104.4	80-120
Chromium	0.41	0.40	102.5	80-120
Cobalt	1.0	1.0	100.0	80-120
Copper	0.48	0.50	96.0	80-120
Iron	28.9	27.0	107.0	80-120
Lead	1.0	1.0	100.0	80-120
Magnesium	26.3	25.0	105.2	80-120
Manganese	1.0	1.0	100.0	80-120
Molybdenum				
Nickel	1.0	1.0	100.0	80-120
Potassium	22.7	25.0	90.8	80-120
Selenium	4.0	4.0	100.0	80-120
Silver	0.094	0.10	94.0	80-120
Sodium	25.0	25.0	100.0	80-120
Thallium	4.1	4.0	102.5	80-120
Tin				
Vanadium	1.0	1.0	100.0	80-120
Zinc	1.0	1.0	100.0	80-120

Associated samples MP2783: F6635-1A, F6635-2A, F6635-3A, F6635-4A, F6635-5A, F6635-6A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2796
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 06/25/00

Metal	BSP Result	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.0031	0.0030	103.3	80-120

Associated samples MP2796: F6635-1A, F6635-2A, F6635-3A, F6635-4A, F6635-5A, F6635-6A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

TCLP

Metals Digestion Log: Water

MP2783

Method Of Digestion: ICP 3010A Temp: 95 Thermometer ID#: 34

	HNO_3	HCl	H_2O_2
Added:			
Mfg:	EM science		
Lot #:	39230	00011 47A	

Sample #	Init. Vol / Wt	Final Vol / Wt	Date	Comments
FW035-1A -DUP	50	50	6.21.00	
-1A -MS				Spiked w/1.0ml ACC194 + 0.5 ml GN1340 + 0.25ml ACC187
1- -1A MSD				same as MS
2- -1A	✓	✓		
3- -2A	25	50		
4- -3A				
5- -4A				
6- -5A				
7- -6A	✓	✓	✓	
8-				
9-				
10-				
11-				
12-				
13-				
14-				
15-				
16-				
17-				
18-				
19-				
20-				
MB/SB	50	50	6.21.00	6:54
MB/SB	✓	✓	✓	same as MS

Analyst's Signature: Steve Lee Date: 6.21.00

QC Review: Date:

Metals Digestion Log: Soil

ethod Of Digestion: ICP 30503 Temp: 95 Thermometer ID#: 34

	HNO_3	HCl	H_2O_2
lded:	—	—	—
fg:	Emscience →		Fisher
t #:	39230	40011	943019

mp22742

mple #	Wt	Final Vol	% Solid	Digestion Factor	Date	Comments
F6035.1 -DUP	1.05	100			6.5.00	
.1 -MS	1.00					spiked w/ 20 ml acc 194 from 9/11/340 + 0.5 ml acc 152
.1 MSD	0.97					same as MS
.1	0.95					
.2	1.06					
.3	1.06					
.4	1.02					
.5	1.01					
✓ .6	1.00					
F6053.1	0.99					
F6050.1	1.07					
.2	1.03					
↓ .3	0.95					
F6031.1	1.04					
↓ .2	0.96					
F6019.13	0.97					
F6025.1	1.06					
.2	1.02					
.3	0.91					
.4	1.05					
.5	0.99					
✓ .6	1.00					
/SB						
/SB		✓			✓	same as MS

alyst's Signature: Steve Lee Date: 6.5.00

Review: Date:

Mercury Digestion Log: Water and Soil

MP27960

Method Of Digestion: EPA 245.1 Temp: 95

Analyst: SJL Thermometer #: 37

Time Started: 1300 Time Ended: 1500

Reagents Added:	HNO3	HCL	H2SO4	Pot. Perm.	Pot. Persulfate
Mfg:	Em Science		Fisher	→	
Lot#:	38720	40011	31504	GNB916	

Sample #	Wt(g)	Init.Vol.(ml)	Final Vol.(ml)	Date	Comments
F6741 Dup		10	100	6.25.00	
.1 MS					3.0ml of GN13A
1 .1 MSD					same as MS
2 ✓ .1					
3 F6835 .1A					
4 .2A					
5 .3A					
6 .4A					
7 .5A					
8 ✓ .6A					
9 F6863 .1					
10 F6865 .1					
11 F6874 .1					
12 ✓ .2					
13 F6711 .1A					
14 .2A					
15 .3A					
16 .4A					
17 .5A					
18 .6A					
19 ✓ .7A		✓	✓		
20					
MB		100	100		
SB				✓	same as MS

Analyst's Signature: [signature] Date: 6.25.00

TCLP

Metals Digestion Log: Water

MP2783

Method Of Digestion: ICP 3010A Temp: 95 Thermometer ID#: 34

Added:	HNO_3	HCl	H_2O_2
Mfg:	EM Science		
Lot #:	39230	00011 44%	

Sample #		Init. Vol / Wt	Final Vol / Wt	Date	Comments
F6035	•1A -DUP	50	50	6/21/00	
	•1A -MS				spiked w/ 1.0ml ACC194 + 05 ml GN1340 + 0.25ml ACC 167
1-	•1A MSD				
2-	•1A	✓	✓		same as MS
3-	•2A	25	50		
4-	•3A				
5-	•4A				
6-	•5A				
7-	•6A	✓	✓	✓	
8-					
9-					
10-					
11-					
12-					
13-					
14-					
15-					
16-					
17-					
18-					
19-					
20-					
MB/SB		50	50	6/21/00	6.57
MB/SB		✓	✓	✓	same as MS

Analyst's Signature: Steve Lee Date: 6/21/00

QC Review: Date:

Mercury Digestion Log: Water and Soil

MP2K3

Method Of Digestion: SW846 7471A

Temp: 95 | 15psi

Analyst: SFZ

Thermometer #: 37

Time Started: 1400

Time Ended: 1415

Reagents Added:	HNO3	HCL	H2SO4	Pot. Perm.	Pot. Persulfate
Mfg:	Emscience		Fisher		
Lot#:	39230	40011	316004	4N1351	

Sample #		Wt(g)	Init.Vol.(ml)	Final Vol.(ml)	Date	Comments
F6050.1	Dup	0.60		100	6.5.00	
.1	MS	0.62				
1 .1	MSD	0.60				30ml of 4N HCl
2 .1		0.61				same as MS
3 .2		0.73				
4 .3		0.65				
5 F6050.1		0.66				
6 F6035.1		0.60				
7 .2		0.72				
8 .3		0.59				
9 .4		0.62				
10 .5		0.65				
11 .6		0.64				
12 F6065.1		0.58				
13 .2		0.61				
14 .3		0.60				
15 .4		0.61				
16 .5		0.75				
17 .6		0.62				
18 .7		0.60				
19 .8		0.72				
20 .9/10		0.60/0.60				
MB						
SB			100			same as MS

Analyst's Signature: [signature]

Date: 6.5.00

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0606S1.HGX
Analyst: SJL
Parameters: Hg

Date Analyzed: 06/06/00
Run ID: MA1889

Methods: SW846 7471A

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	MA1889-ICV1	1		
00:00	MA1889-ICB1	1		
00:00	MA1889-CCV1	1		
00:00	MA1889-CCB1	1		
00:00	MA1889-CRI1	1		
00:00	MP2743-MB1	1		
00:00	MP2743-B1	1		
00:00	MP2743-S1	1		
00:00	MP2743-S2	1		
00:00	MP2743-D1	1		
00:00	F6650-1	1		(sample used for QC only; not part of login F6635)
00:00	ZZZZZZ	1		
00:00	MA1889-CCV2	1		
00:00	MA1889-CCB2	1		
00:00	ZZZZZZ	1		
00:00	F6635-1	1		
00:00	F6635-2	1		
00:00	F6635-3	1		
00:00	F6635-4	1		
00:00	F6635-5	1		
00:00	F6635-6	1		
00:00	ZZZZZZ	2		
00:00	MA1889-CCV3	1		
00:00	MA1889-CCB3	1		
00:00	ZZZZZZ	10		
00:00	ZZZZZZ	10		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	MA1889-CCV4	1		
00:00	MA1889-CCB4	1		
00:00	ZZZZZZ	1		

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Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0606S1.HGX
Analyst: SJL
Parameters: Hg

Date Analyzed: 06/06/00
Run ID: MA1889

Methods: SW846 7471A

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	MA1889-CCV5	1		
00:00	MA1889-CCB5	1		

Refer to raw data for calibration curve and standards.

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Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#NO052-MSA0200-014

File ID: IR0607M1.ASC Date Analyzed: 06/07/00 Methods: SW846 6010A
Analyst: JK Run ID: MA1891
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
08:19	MA1891-ICB1	1		
08:31	MA1891-ICV1	1		
08:37	MA1891-ICB2	1		
08:43	MA1891-CCV1	1		
08:48	MA1891-CCB1	1		
08:54	MA1891-CRI1	1		
09:01	MA1891-CRIA1	1		
09:06	MA1891-ICSA1	1		
09:12	MA1891-ICSAB1	1		
09:18	MA1891-CCV2	1		
09:23	MA1891-CCB2	1		
09:29	MP2742-MB1	1		
09:34	MP2742-B1	1		
09:40	MP2742-D1	1		
09:46	F6635-1	1		
09:51	MP2742-S1	1		
09:57	MP2742-S2	1		
10:02	MP2742-SD1	5		
10:08	F6635-2	1		
10:14	F6635-3	1		
10:21	MA1891-CCV3	1		
10:26	MA1891-CCB3	1		
10:32	F6635-4	1		
10:38	F6635-5	1		
10:43	F6635-6	1		
10:49	MP2741-MB1	1		
10:55	MP2741-B1	1		
11:00	MP2741-D1	1		
11:06	F6664-1	1		(sample used for QC only; not part of login F6635)
11:11	MP2741-S1	1		
11:17	MP2741-S2	1		
11:26	MA1891-CCV4	1		
11:31	MA1891-CCB4	1		

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Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0607M1.ASC Date Analyzed: 06/07/00 Methods: SW846 6010A
Analyst: JK Run ID: MA1891
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
11:38	MP2741-SD1	5		
11:44	ZZZZZZ	1		
11:49	ZZZZZZ	1		
11:55	ZZZZZZ	1		
12:00	ZZZZZZ	1		
12:06	ZZZZZZ	1		
12:12	ZZZZZZ	1		
12:18	ZZZZZZ	1		
12:24	ZZZZZZ	1		
12:34	MA1891-CCV5	1		
12:40	MA1891-CCB5	1		
12:46	ZZZZZZ	1		
12:51	ZZZZZZ	1		
12:57	ZZZZZZ	1		
13:07	ZZZZZZ	1		
13:13	ZZZZZZ	1		
13:18	ZZZZZZ	1		
13:24	ZZZZZZ	1		
13:29	ZZZZZZ	1		
13:35	ZZZZZZ	1		
13:45	MA1891-CCV6	1		
13:51	MA1891-CCB6	1		
14:01	ZZZZZZ	1		
14:07	ZZZZZZ	1		
14:13	ZZZZZZ	1		
14:18	ZZZZZZ	1		
14:24	ZZZZZZ	1		
14:30	ZZZZZZ	1		
14:35	ZZZZZZ	1		
14:41	ZZZZZZ	1		
14:46	ZZZZZZ	1		
14:52	MA1891-CCV7	1	- Ag out	Tip missed cup. All bracketing samples reanalyzed on 6/8/00.
14:58	MA1891-CCB7	1	-	Tip missed cup. All bracketing samples reanalyzed on 6/8/00.

SMM 10/17/00

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Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#NO052-MSA0200-014

File ID: IR0607M1.ASC Date Analyzed: 06/07/00 Methods: SW846 6010A
Analyst: JK Run ID: MA1891
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
15:03	ZZZZZZ	1		
15:09	ZZZZZZ	1		
15:14	ZZZZZZ	5		
15:20	ZZZZZZ	1		
15:26	ZZZZZZ	1		
15:31	ZZZZZZ	1		
15:37	ZZZZZZ	1		
15:42	ZZZZZZ	1		
15:48	ZZZZZZ	1		
15:54	MA1891-CCV8	1	Ag out 9MM 10/17/00	
15:59	MA1891-CCB8	1		
16:05	ZZZZZZ	1		
16:11	ZZZZZZ	1		
16:16	ZZZZZZ	1		
16:22	ZZZZZZ	1		
16:27	ZZZZZZ	1		
16:33	ZZZZZZ	1		
16:39	ZZZZZZ	1		
16:44	ZZZZZZ	1		
16:50	ZZZZZZ	1		
16:55	MA1891-CCV9	1		
17:01	MA1891-CCB9	1		
17:07	ZZZZZZ	1		
17:12	ZZZZZZ	1		
17:18	ZZZZZZ	1		
17:23	ZZZZZZ	1		
17:29	MA1891-CCV10	1		
17:35	MA1891-CCB10	1		

Refer to raw data for calibration curve and standards.

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Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0623M1.ASC Date Analyzed: 06/23/00 Methods: SW846 6010A
Analyst: JK Run ID: MA1913
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Tl,Sn,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
09:08	MA1913-ICV1	1		
09:14	MA1913-ICV2	1		
09:19	MA1913-ICB1	1		
09:25	MA1913-CCV1	1		
09:30	MA1913-CCB1	1		
09:37	MA1913-CRI1	1		
09:43	MA1913-CRIA1	1		
09:49	MA1913-ICSA1	1		
09:54	MA1913-ICSAB1	1		
10:00	MA1913-CCV2	1		
10:09	MA1913-CCB2	1		
10:27	MP2780-MB1	1		
10:33	MP2780-B1	1		
10:39	MP2780-D1	1		
10:44	F6619-3A	1		(sample used for QC only; not part of login F6635)
10:50	MP2780-S1	1		
10:55	MP2780-S2	1		
11:01	MP2780-SD1	5		
11:07	ZZZZZZ	1		
11:12	ZZZZZZ	1		
11:18	MA1913-CCV3	1		
11:25	MA1913-CCB3	1		
11:31	ZZZZZZ	1		
11:36	ZZZZZZ	1		
11:42	ZZZZZZ	1		
11:47	ZZZZZZ	1		
11:53	ZZZZZZ	1		
11:59	ZZZZZZ	1		
12:04	ZZZZZZ	1		
12:10	ZZZZZZ	1		
12:15	ZZZZZZ	1		
12:21	MA1913-CCV4	1		
12:27	MA1913-CCB4	1		

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Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0623M1.ASC Date Analyzed: 06/23/00 Methods: SW846 6010A
Analyst: JK Run ID: MA1913
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Tl,Sn,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:33	ZZZZZZ	1		
12:38	ZZZZZZ	1		
12:44	ZZZZZZ	1		
12:49	ZZZZZZ	1		
12:55	ZZZZZZ	1		
13:01	ZZZZZZ	1		
13:06	ZZZZZZ	1		
13:12	ZZZZZZ	1		
13:17	MP2781-MB1	1		
13:23	MA1913-CCV5	1		
13:30	MA1913-CCB5	1		
13:36	ZZZZZZ	1		
13:44	MP2781-B1	1		
13:49	MP2781-D1	1		
13:55	F6665-10A	1		(sample used for QC only; not part of login F6635)
14:00	MP2781-S1	1		
14:06	MP2781-S2	1		
14:12	MP2781-SD1	5		
14:17	ZZZZZZ	1		
14:23	ZZZZZZ	1		
14:28	ZZZZZZ	1		
14:37	MA1913-CCV6	1		
14:43	MA1913-CCB6	1		
14:56	ZZZZZZ	1		
15:01	ZZZZZZ	1		
15:07	ZZZZZZ	1		
15:13	ZZZZZZ	1		
15:18	ZZZZZZ	1		
15:24	ZZZZZZ	1		
15:29	ZZZZZZ	1		
15:35	ZZZZZZ	1		
15:41	ZZZZZZ	1		
15:46	MA1913-CCV7	1		

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Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0623M1.ASC Date Analyzed: 06/23/00 Methods: SW846 6010A
Analyst: JK Run ID: MA1913
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Tl,Sn,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
15:52	MA1913-CCB7	1		
15:58	ZZZZZZ	1		
16:04	ZZZZZZ	1		
16:09	ZZZZZZ	1		
16:15	MP2781-MB2	1		
16:20	MP2781-MB3	1		
16:26	MP2781-MB4	1		
16:32	MP2781-MB5	1		
16:37	MP2783-MB1	1		
16:43	MP2783-B1	1		
16:48	MA1913-CCV8	1		
16:54	MA1913-CCB8	1		
17:00	MP2783-D1	1		
17:05	F6635-1A	1		
17:11	MP2783-S1	1		
17:16	MP2783-S2	1		
17:22	MP2783-SD1	5		
17:28	F6635-2A	1		
17:33	F6635-3A	1		
17:39	F6635-4A	1		
17:45	F6635-5A	1		
17:50	MA1913-CCV9	1		
17:56	MA1913-CCB9	1		
18:01	F6635-6A	1		
18:07	MP2789-MB1	1		
18:13	MP2789-B1	1		
18:18	MP2789-D1	1		
18:24	F6819-1	1		(sample used for QC only; not part of login F6635)
18:29	MP2789-S1	1		
18:35	MP2789-S2	1		
18:41	MP2789-SD1	5		
18:46	ZZZZZZ	1		
18:52	MA1913-CCV10	1		

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Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0623M1.ASC Date Analyzed: 06/23/00 Methods: SW846 6010A
Analyst: JK Run ID: MA1913
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Tl,Sn,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
18:57	MA1913-CCB10	1		
19:10	ZZZZZZ	1		
19:15	ZZZZZZ	1		
19:21	ZZZZZZ	1		
19:26	ZZZZZZ	1		
19:32	ZZZZZZ	1		
19:38	ZZZZZZ	1		
19:43	ZZZZZZ	1		
19:49	ZZZZZZ	1		
19:54	ZZZZZZ	1		
20:00	MA1913-CCV11	1		
20:06	MA1913-CCB11	1		
20:11	ZZZZZZ	1		
20:17	ZZZZZZ	1		
20:22	ZZZZZZ	1		
20:28	ZZZZZZ	1		
20:34	ZZZZZZ	1		
20:39	ZZZZZZ	1		
20:45	ZZZZZZ	1		
20:50	ZZZZZZ	1		
20:56	MA1913-CCV12	1		
21:02	MA1913-CCB12	1		

Refer to raw data for calibration curve and standards.

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Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0626W1.HGX
Analyst: SJL
Parameters: Hg

Date Analyzed: 06/26/00
Run ID: MA1917

Methods: SW846 7470A

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	MA1917-ICV1	1		
00:00	MA1917-ICB1	1		
00:00	MA1917-CCV1	1		
00:00	MA1917-CCB1	1		
00:00	MA1917-CRI1	1		
00:00	MP2796-MB1	1		
00:00	MP2796-B1	1		
00:00	MP2796-S1	1		
00:00	MP2796-S2	1		
00:00	MP2796-D1	1		
00:00	F6741-1	1		(sample used for QC only; not part of login F6635)
00:00	F6635-1A	1		
00:00	F6635-2A	1		
00:00	MA1917-CCV2	1		
00:00	MA1917-CCB2	1		
00:00	F6635-3A	1		
00:00	F6635-4A	1		
00:00	F6635-5A	1		
00:00	F6635-6A	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	MA1917-CCV3	1		
00:00	MA1917-CCB3	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	MA1917-CCV4	1		

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Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6635
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0626W1.HGX
Analyst: SJL
Parameters: Hg

Date Analyzed: 06/26/00
Run ID: MA1917

Methods: SW846 7470A

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	MA1917-CCB4	1		

Refer to raw data for calibration curve and standards.

670

29D00301

Method: TRACE6 Sample Name: F6635-3 Operator: JK
Run Time: 06/07/00 10:14 Filename: R0607M1
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.:

Elems	Ag3280	Al3082	As1890	Ba4934	Be3130	Ca3179
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0011	176.6	.0328	.5250	.0015	7.309
SDev	.0003	.5943	.0013	.0012	.0001	.0214
%RSD	26.86	.3365	3.96	.2321	5.212	.2932

Elems	Cd2265	Co2286	Cr2677	Cu3247	Fe2714	K_7664
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0197	.0140	.3127	.1390	123.8	1.581
SDev	.0004	.0001	.0013	.0005	.4614	.0041
%RSD	1.791	.907	.4314	.327	.3727	.2596

Elems	Mg2790	Mn2576	Mo2020	Na3302	Ni2316	2203/1
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avge	2.680	.3699	.0113	4.441	.0373	2.988
SDev	.0147	.0012	.0002	.1316	.0001	.0163
%RSD	.5503	.3242	1.664	2.963	.3973	.5455

Elems	2203/2	Pb2203	Se1960	Sb2068	1960/1	1960/2
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avge	3.045	3.027	.0159	.0124	-.0003	.0230
SDev	.0159	.0159	.0016	.0004	.0018	.0022
%RSD	.5216	.5244	10.3	3.544	632.6	9.483

Elems	Sn1899	Tl1908	V 2924	Zn2062
Units	ppm	ppm	ppm	ppm
Avge	.0467	L-.0693	.2891	2.115
SDev	.0004	.0026	.0012	.0074
%RSD	.9297	3.746	.4048	.3478

$3.027\ mg/L \left(\frac{1L}{1000mL}\right)\left(\frac{100mL}{1.06g}\right)\left(\frac{1000g}{1kg}\right)\left(\frac{1}{.97}\right) = 2.94\ mg/Kg$

JMM 10/17/00

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**T. HANSEN**	**DATE:**	**OCTOBER 20, 2000**
FROM:	**DOUGLAS S. SCHLOER**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – VOA**
CTO 079, NAS WHITING FIELD
SDG F6711

SAMPLES: 7/ Solid / VOA

35D01020	35D01115	35D01132
35D01215	35D01230	35D01320
35D01325		

OVERVIEW

The sample set for CTO 079, NAS Whiting Field, SDG F6711 consists seven (7) solid environmental samples. The samples were analyzed for Volatile Organic Compounds. No field duplicate pairs were included in this SDG.

The samples were collected by TetraTech NUS on June 6, 2000 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using SW-846 Method 8260B analytical and reporting protocols. The data contained in this SDG were validated with regard to the following parameters:

- Data completeness
- * Holding times
- * GC/MS Tuning
- * Initial and continuing calibration
- Blank results
- * Surrogate spike recoveries
- * Blank Spike / Blank Spike Duplicate results
- * Matrix Spike / Matrix Spike Duplicate results
- * Detection Limits
- * Compound Quantitation
- * Compound Identification

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

VOA

Due to the presence of target analytes, samples 35D01115 and 35D01215 were analyzed and reported at 1000X and 50X dilutions respectively. This accounts for the elevated reporting limits for these samples.

The result for ethylbenzene in sample 35D01215 exceeded the instrument's linear calibration range. The sample was not re-analyzed at a higher dilution therefore, the result for ethylbenzene may be biased low and was qualified as estimated (J).

Additionally, sample 35D01230 was analyzed immediately following the analysis of sample 35D01215. A cleanup blank was not analyzed therefore, sample 35D01230 may have ethylbenzene contamination due to carryover. The positive result for ethylbenzene in the affected sample was qualified as estimated (J).

The following contaminants were detected in laboratory method blanks:

Compound	Maximum concentration (ug/kg)	Action Level(ug/kg)
Methylene chloride	2.51	25.1

Sample aliquot and dilution factors were considered when applying blank action levels. In the affected samples, positive results for methylene chloride less than action levels were qualified as nondetected (U).

Additional Comments

Positive results below the reporting limit were qualified as estimated, J, due to uncertainty near the detection limit.

Laboratory quantitation software failed to detect methylene chloride for the method blank on 6/20/00. During validation, methylene chloride was suspected to be present. Validator requested that the laboratory re-quantitate and report results for methylene chloride. This action resulted in re-qualification of samples 35D01115 and 35D01215.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Sample 35D01215 was not analyzed at adequate dilution to allow the concentration of ethylbenzene to fall within the working range of the instrument's calibration. Due to this non-compliance, the reported results for ethylbenzene were qualified as estimated (J).

Other Factors Affecting Data Quality: The laboratory was required to re-submit a form 1 for sample 35D01115 due to incorrect reporting limits.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99) and the NFESC guidelines "Navy IRCDQM" (Sept 1999). 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

Douglas Schloer
Chemist/Data Validator

TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

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

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

SOIL DATA
Accutest, NJ
SDG: F6711

SAMPLE NUMBER:	35D01020			35D01115			35D01132			35D01215		
SAMPLE DATE:	06/06/00			06/06/00			06/06/00			06/06/00		
LABORATORY ID:	F6711-1			F6711-2			F6711-3			F6711-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	88.5 %			87.7 %			86.8 %			87.0 %		
UNITS:	UG/KG			UG/KG			UG/KG			UG/KG		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	4.9	U		4600	U		4.8	U		230	U	
1,1,2,2-TETRACHLOROETHANE	4.9	U		4600	U		4.8	U		230	U	
1,1,2-TRICHLOROETHANE	4.9	U		4600	U		4.8	U		230	U	
1,1-DICHLOROETHANE	4.9	U		4600	U		4.8	U		230	U	
1,1-DICHLOROETHENE	4.9	U		4600	U		4.8	U		230	U	
1,2-DIBROMOETHANE	4.9	U		4600	U		4.8	U		230	U	
1,2-DICHLOROETHANE	4.9	U		4600	U		4.8	U		230	U	
1,2-DICHLOROETHENE (TOTAL)	9.8	U		9100	U		9.6	U		450	U	
1,2-DICHLOROPROPANE	4.9	U		4600	U		4.8	U		230	U	
2-BUTANONE	9.8	U		9100	U		9.6	U		450	U	
2-HEXANONE	9.8	U		9100	U		9.6	U		450	U	
4-METHYL-2-PENTANONE	9.8	U		9100	U		9.6	U		450	U	
ACETONE	49	U		46000	U		9.5	J	P	2300	U	
BENZENE	4.9	U		4600	U		1.9	J	P	230	U	
BROMODICHLOROMETHANE	4.9	U		4600	U		4.8	U		230	U	
BROMOFORM	4.9	U		4600	U		4.8	U		230	U	
BROMOMETHANE	4.9	U		4600	U		4.8	U		230	U	
CARBON DISULFIDE	9.8	U		9100	U		9.6	U		450	U	
CARBON TETRACHLORIDE	4.9	U		4600	U		4.8	U		230	U	
CHLOROBENZENE	4.9	U		4600	U		4.8	U		230	U	
CHLOROETHANE	4.9	U		4600	U		4.8	U		230	U	
CHLOROFORM	4.9	U		4600	U		4.8	U		230	U	
CHLOROMETHANE	4.9	U		4600	U		4.8	U		230	U	
CIS-1,3-DICHLOROPROPENE	4.9	U		4600	U		4.8	U		230	U	
DIBROMOCHLOROMETHANE	4.9	U		4600	U		4.8	U		230	U	
ETHYLBENZENE	4.9	U		41000			51.4			5950	J	L
METHYLENE CHLORIDE	9.8	U		9450	U	A	9.6	U		666	U	A
STYRENE	4.9	U		4600	U		4.8	U		230	U	
TETRACHLOROETHENE	4.9	U		4600	U		4.8	U		230	U	
TOLUENE	4.9	U		4600	U		4.8	U		230	U	
TRANS-1,3-DICHLOROPROPENE	4.9	U		4600	U		4.8	U		230	U	
TRICHLOROETHENE	4.9	U		4600	U		4.8	U		230	U	
VINYL CHLORIDE	4.9	U		4600	U		4.8	U		230	U	

SOIL DATA
Accutest, NJ
SDG: F6711

SAMPLE NUMBER:	35D01020			35D01115			35D01132			35D01215		
SAMPLE DATE:	06/06/00			06/06/00			06/06/00			06/06/00		
LABORATORY ID:	F6711-1			F6711-2			F6711-3			F6711-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	88.5 %			87.7 %			86.8 %			87.0 %		
UNITS:	UG/KG			UG/KG			UG/KG			UG/KG		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
XYLENES, TOTAL	15	U		42500			55.8			8900		

SOIL DATA
Accutest, NJ
SDG: F6711

SAMPLE NUMBER:	35D01230			35D01320			35D01325					
SAMPLE DATE:	06/06/00			06/06/00			06/06/00			/ /		
LABORATORY ID:	F6711-5			F6711-6			F6711-7					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	86.3 %			88.4 %			87.1 %			100.0 %		
UNITS:	UG/KG			UG/KG			UG/KG					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	4.8	U		4.8	U		4.7	U				
1,1,2,2-TETRACHLOROETHANE	4.8	U		4.8	U		4.7	U				
1,1,2-TRICHLOROETHANE	4.8	U		4.8	U		4.7	U				
1,1-DICHLOROETHANE	4.8	U		4.8	U		4.7	U				
1,1-DICHLOROETHENE	4.8	U		4.8	U		4.7	U				
1,2-DIBROMOETHANE	4.8	U		4.8	U		4.7	U				
1,2-DICHLOROETHANE	4.8	U		4.8	U		4.7	U				
1,2-DICHLOROETHENE (TOTAL)	9.6	U		9.5	U		9.4	U				
1,2-DICHLOROPROPANE	4.8	U		4.8	U		4.7	U				
2-BUTANONE	9.6	U		7	J	P	9.4	U				
2-HEXANONE	9.6	U		9.5	U		9.4	U				
4-METHYL-2-PENTANONE	9.6	U		9.5	U		9.4	U				
ACETONE	13.3	J	P	21.8	J	P	47	U				
BENZENE	4.8	U		4.8	U		4.7	U				
BROMODICHLOROMETHANE	4.8	U		4.8	U		4.7	U				
BROMOFORM	4.8	U		4.8	U		4.7	U				
BROMOMETHANE	4.8	U		4.8	U		4.7	U				
CARBON DISULFIDE	9.6	U		9.5	U		9.4	U				
CARBON TETRACHLORIDE	4.8	U		4.8	U		4.7	U				
CHLOROBENZENE	4.8	U		4.8	U		4.7	U				
CHLOROETHANE	4.8	U		4.8	U		4.7	U				
CHLOROFORM	4.8	U		4.8	U		4.7	U				
CHLOROMETHANE	4.8	U		4.8	U		4.7	U				
CIS-1,3-DICHLOROPROPENE	4.8	U		4.8	U		4.7	U				
DIBROMOCHLOROMETHANE	4.8	U		4.8	U		4.7	U				
ETHYLBENZENE	75.2	J	Q	3.2	J	P	4.7	U				
METHYLENE CHLORIDE	9.6	U		9.5	U		9.4	U				
STYRENE	4.8	U		4.8	U		4.7	U				
TETRACHLOROETHENE	4.8	U		4.8	U		4.7	U				
TOLUENE	4.8	U		4.8	U		4.7	U				
TRANS-1,3-DICHLOROPROPENE	4.8	U		4.8	U		4.7	U				
TRICHLOROETHENE	4.8	U		4.8	U		4.7	U				
VINYL CHLORIDE	4.8	U		4.8	U		4.7	U				

SOIL DATA
Accutest, NJ
SDG: F6711

SAMPLE NUMBER:	35D01230			35D01320			35D01325					
SAMPLE DATE:	06/06/00			06/06/00			06/06/00			/ /		
LABORATORY ID:	F6711-5			F6711-6			F6711-7					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	86.3 %			88.4 %			87.1 %			100.0 %		
UNITS:	UG/KG			UG/KG			UG/KG					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
XYLENES, TOTAL	120			4.5	J	P	14	U				

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID:	35D01020		
Lab Sample ID:	F6711-1	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
Method:	SW846 8260B	**Percent Solids:**	88.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H008046.D	1	06/20/00	RAW	n/a	n/a	VH98
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q	MB	MS	MSD	RPD
67-64-1	Acetone	ND	49	ug/kg		ND	63	63	4
71-43-2	Benzene	ND	4.9	ug/kg		ND	88	100	8
75-27-4	Bromodichloromethane	ND	4.9	ug/kg		ND	88	87	4
75-25-2	Bromoform	ND	4.9	ug/kg		ND	73	72	5
108-90-7	Chlorobenzene	ND	4.9	ug/kg		ND	85	84	4
75-00-3	Chloroethane	ND	4.9	ug/kg		ND	109	108	5
67-66-3	Chloroform	ND	4.9	ug/kg		ND	85	96	8
75-15-0	Carbon disulfide	ND	9.8	ug/kg		ND	78	79	2
56-23-5	Carbon tetrachloride	ND	4.9	ug/kg		ND	89	101	8
75-34-3	1,1-Dichloroethane	ND	4.9	ug/kg		ND	87	98	8
75-35-4	1,1-Dichloroethylene	ND	4.9	ug/kg		ND	99	98	5
106-93-4	1,2-Dibromoethane	ND	4.9	ug/kg		ND	80	80	4
107-06-2	1,2-Dichloroethane	ND	4.9	ug/kg		ND	78	87	7
78-87-5	1,2-Dichloropropane	ND	4.9	ug/kg		ND	94	96	2
124-48-1	Dibromochloromethane	ND	4.9	ug/kg		ND	84	83	4
10061-01-5	cis-1,3-Dichloropropene	ND	4.9	ug/kg		ND	84	86	2
540-59-0	1,2-Dichloroethene (total)	ND	9.8	ug/kg		ND	95	102	3
10061-02-6	trans-1,3-Dichloropropene	ND	4.9	ug/kg		ND	80	79	6
100-41-4	Ethylbenzene	ND	4.9	ug/kg		ND	82	82	4
591-78-6	2-Hexanone	ND	9.8	ug/kg		ND	72	70	7
108-10-1	4-Methyl-2-pentanone	ND	9.8	ug/kg		ND	78	80	2
74-83-9	Methyl bromide	ND	4.9	ug/kg		ND	108	111	1
74-87-3	Methyl chloride	ND	4.9	ug/kg		ND	91	90	5
75-09-2	Methylene chloride	ND	9.8	ug/kg		ND	103	100	6
78-93-3	Methyl ethyl ketone	ND	9.8	ug/kg		ND	68	78	10
100-42-5	Styrene	ND	4.9	ug/kg		ND	96	92	7
71-55-6	1,1,1-Trichloroethane	ND	4.9	ug/kg		ND	85	96	8
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.9	ug/kg		ND	64	63	6
79-00-5	1,1,2-Trichloroethane	ND	4.9	ug/kg		ND	80	78	6
127-18-4	Tetrachloroethylene	ND	4.9	ug/kg		ND	79	79	4
108-88-3	Toluene	ND	4.9	ug/kg		ND	85	85	4
79-01-6	Trichloroethylene	ND	4.9	ug/kg		ND	92	94	2
75-01-4	Vinyl chloride	ND	4.9	ug/kg		ND	103	103	4
1330-20-7	Xylene (total)	ND	15	ug/kg		ND	84	84	4

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	35D01020		
Lab Sample ID:	F6711-1	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
Method:	SW846 8260B	**Percent Solids:**	88.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		71-122%
2037-26-5	Toluene-D8	98%		73-128%
460-00-4	4-Bromofluorobenzene	102%		53-158%
17060-07-0	1,2-Dichloroethane-D4	100%		71-122%

ND = Not detected
RL = Reporting 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

ACCUTEST.

Report of Analysis

Client Sample ID:	35D01115		
Lab Sample ID:	F6711-2	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
Method:	SW846 8260B	**Percent Solids:**	87.7
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H008047.D	1000	06/20/00	RAW	n/a	n/a	VH98
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	46000	ug/kg	
71-43-2	Benzene	ND	4600	ug/kg	
75-27-4	Bromodichloromethane	ND	4600	ug/kg	
75-25-2	Bromoform	ND	4600	ug/kg	
108-90-7	Chlorobenzene	ND	4600	ug/kg	
75-00-3	Chloroethane	ND	4600	ug/kg	
67-66-3	Chloroform	ND	4600	ug/kg	
75-15-0	Carbon disulfide	ND	9100	ug/kg	
56-23-5	Carbon tetrachloride	ND	4600	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4600	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4600	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4600	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4600	ug/kg	
124-48-1	Dibromochloromethane	ND	4600	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4600	ug/kg	
540-59-0	1,2-Dichloroethene (total)	ND	9100	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4600	ug/kg	
100-41-4	Ethylbenzene	41000	4600	ug/kg	
591-78-6	2-Hexanone	ND	9100	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	9100	ug/kg	
74-83-9	Methyl bromide	ND	4600	ug/kg	
74-87-3	Methyl chloride	ND	4600	ug/kg	
75-09-2	Methylene chloride [a]	9450	9100	ug/kg	
78-93-3	Methyl ethyl ketone	ND	9100	ug/kg	
100-42-5	Styrene	ND	4600	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4600	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4600	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4600	ug/kg	
127-18-4	Tetrachloroethylene	ND	4600	ug/kg	
108-88-3	Toluene	ND	4600	ug/kg	
79-01-6	Trichloroethylene	ND	4600	ug/kg	
75-01-4	Vinyl chloride	ND	4600	ug/kg	
1330-20-7	Xylene (total)	42500	14000	ug/kg	

ND = Not detected
RL = Reporting 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

ACCUTEST.

Report of Analysis

Client Sample ID:	35D01115		
Lab Sample ID:	F6711-2	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
Method:	SW846 8260B	**Percent Solids:**	87.7
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		71-122%
2037-26-5	Toluene-D8	101%		73-128%
460-00-4	4-Bromofluorobenzene	111%		53-158%
17060-07-0	1,2-Dichloroethane-D4	97%		71-122%

(a) Suspected laboratory contaminant.

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	35D01115		
Lab Sample ID:	F6711-2	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
Method:	SW846 8260B	**Percent Solids:**	87.7
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H008047.D	1000	06/20/00	RAW	n/a	n/a	VH98
Run #2							

VOA TCL List

See Sample Calc. DF SO reporting limits

CAS No.	Compound	Result	RL	Units	Q	MB	MS	MSD	RPD
67-64-1	Acetone	ND	2300	ug/kg		ND	63	63	4
71-43-2	Benzene	ND	230	ug/kg		ND	88	100	8
75-27-4	Bromodichloromethane	ND	230	ug/kg		ND	88	87	4
75-25-2	Bromoform	ND	230	ug/kg		ND	73	72	5
108-90-7	Chlorobenzene	ND	230	ug/kg		ND	85	84	4
75-00-3	Chloroethane	ND	230	ug/kg		ND	109	108	5
67-66-3	Chloroform	ND	230	ug/kg		ND	85	96	8
75-15-0	Carbon disulfide	ND	460	ug/kg		ND	78	79	2
56-23-5	Carbon tetrachloride	ND	230	ug/kg		ND	89	101	8
75-34-3	1,1-Dichloroethane	ND	230	ug/kg		ND	87	98	8
75-35-4	1,1-Dichloroethylene	ND	230	ug/kg		ND	99	98	5
106-93-4	1,2-Dibromoethane	ND	230	ug/kg		ND	80	80	4
107-06-2	1,2-Dichloroethane	ND	230	ug/kg		ND	78	87	7
78-87-5	1,2-Dichloropropane	ND	230	ug/kg		ND	94	96	2
124-48-1	Dibromochloromethane	ND	230	ug/kg		ND	84	83	4
10061-01-5	cis-1,3-Dichloropropene	ND	230	ug/kg		ND	84	86	2
540-59-0	1,2-Dichloroethene (total)	ND	460	ug/kg		ND	95	102	3
10061-02-6	trans-1,3-Dichloropropene	ND	230	ug/kg		ND	80	79	6
100-41-4	Ethylbenzene	2050	230	ug/kg		ND	82	82	4
591-78-6	2-Hexanone	ND	460	ug/kg		ND	72	70	7
108-10-1	4-Methyl-2-pentanone	ND	460	ug/kg		ND	78	80	2
74-83-9	Methyl bromide	ND	230	ug/kg		ND	108	111	1
74-87-3	Methyl chloride	ND	230	ug/kg		ND	91	90	5
75-09-2	Methylene chloride [a]	472	460	ug/kg		ND	103	100	6
78-93-3	Methyl ethyl ketone	ND	460	ug/kg		ND	68	78	10
100-42-5	Styrene	ND	230	ug/kg		ND	96	92	7
71-55-6	1,1,1-Trichloroethane	ND	230	ug/kg		ND	85	96	8
79-34-5	1,1,2,2-Tetrachloroethane	ND	230	ug/kg		ND	64	63	6
79-00-5	1,1,2-Trichloroethane	ND	230	ug/kg		ND	80	78	6
127-18-4	Tetrachloroethylene	ND	230	ug/kg		ND	79	79	4
108-88-3	Toluene	ND	230	ug/kg		ND	85	85	4
79-01-6	Trichloroethylene	ND	230	ug/kg		ND	92	94	2
75-01-4	Vinyl chloride	ND	230	ug/kg		ND	103	103	4
1330-20-7	Xylene (total)	2130	680	ug/kg		ND	84	84	4

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	35D01115		
Lab Sample ID:	F6711-2	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
Method:	SW846 8260B	**Percent Solids:**	87.7
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		71-122%
2037-26-5	Toluene-D8	101%		73-128%
460-00-4	4-Bromofluorobenzene	111%		53-158%
17060-07-0	1,2-Dichloroethane-D4	97%		71-122%

(a) Suspected laboratory contaminant.

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	35D01132		
Lab Sample ID:	F6711-3	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
Method:	SW846 8260B	**Percent Solids:**	86.8
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H008048.D	1	06/20/00	RAW	n/a	n/a	VH98
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q	MB	MS	MSD	RPD
67-64-1	Acetone	9.5	48	ug/kg	J	ND	63	63	4
71-43-2	Benzene	1.9	4.8	ug/kg	J	ND	88	100	8
75-27-4	Bromodichloromethane	ND	4.8	ug/kg		ND	88	87	4
75-25-2	Bromoform	ND	4.8	ug/kg		ND	73	72	5
108-90-7	Chlorobenzene	ND	4.8	ug/kg		ND	85	84	4
75-00-3	Chloroethane	ND	4.8	ug/kg		ND	109	108	5
67-66-3	Chloroform	ND	4.8	ug/kg		ND	85	96	8
75-15-0	Carbon disulfide	ND	9.6	ug/kg		ND	78	79	2
56-23-5	Carbon tetrachloride	ND	4.8	ug/kg		ND	89	101	8
75-34-3	1,1-Dichloroethane	ND	4.8	ug/kg		ND	87	98	8
75-35-4	1,1-Dichloroethylene	ND	4.8	ug/kg		ND	99	98	5
106-93-4	1,2-Dibromoethane	ND	4.8	ug/kg		ND	80	80	4
107-06-2	1,2-Dichloroethane	ND	4.8	ug/kg		ND	78	87	7
78-87-5	1,2-Dichloropropane	ND	4.8	ug/kg		ND	94	96	2
124-48-1	Dibromochloromethane	ND	4.8	ug/kg		ND	84	83	4
10061-01-5	cis-1,3-Dichloropropene	ND	4.8	ug/kg		ND	84	86	2
540-59-0	1,2-Dichloroethene (total)	ND	9.6	ug/kg		ND	95	102	3
10061-02-6	trans-1,3-Dichloropropene	ND	4.8	ug/kg		ND	80	79	6
100-41-4	Ethylbenzene	51.4	4.8	ug/kg		ND	82	82	4
591-78-6	2-Hexanone	ND	9.6	ug/kg		ND	72	70	7
108-10-1	4-Methyl-2-pentanone	ND	9.6	ug/kg		ND	78	80	2
74-83-9	Methyl bromide	ND	4.8	ug/kg		ND	108	111	1
74-87-3	Methyl chloride	ND	4.8	ug/kg		ND	91	90	5
75-09-2	Methylene chloride	ND	9.6	ug/kg		ND	103	100	6
78-93-3	Methyl ethyl ketone	ND	9.6	ug/kg		ND	68	78	10
100-42-5	Styrene	ND	4.8	ug/kg		ND	96	92	7
71-55-6	1,1,1-Trichloroethane	ND	4.8	ug/kg		ND	85	96	8
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.8	ug/kg		ND	64	63	6
79-00-5	1,1,2-Trichloroethane	ND	4.8	ug/kg		ND	80	78	6
127-18-4	Tetrachloroethylene	ND	4.8	ug/kg		ND	79	79	4
108-88-3	Toluene	ND	4.8	ug/kg		ND	85	85	4
79-01-6	Trichloroethylene	ND	4.8	ug/kg		ND	92	94	2
75-01-4	Vinyl chloride	ND	4.8	ug/kg		ND	103	103	4
1330-20-7	Xylene (total)	55.8	14	ug/kg		ND	84	84	4

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	35D01132		
Lab Sample ID:	F6711-3	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
Method:	SW846 8260B	**Percent Solids:**	86.8
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		71-122%
2037-26-5	Toluene-D8	100%		73-128%
460-00-4	4-Bromofluorobenzene	108%		53-158%
17060-07-0	1,2-Dichloroethane-D4	94%		71-122%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	35D01215		
Lab Sample ID:	F6711-4	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
Method:	SW846 8260B	**Percent Solids:**	87.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H008058.D	50	06/20/00	RAW	n/a	n/a	VH98
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q	MB	MS	MSD	RPD
67-64-1	Acetone	ND	2300	ug/kg		ND	63	63	4
71-43-2	Benzene	ND	230	ug/kg		ND	88	100	8
75-27-4	Bromodichloromethane	ND	230	ug/kg		ND	88	87	4
75-25-2	Bromoform	ND	230	ug/kg		ND	73	72	5
108-90-7	Chlorobenzene	ND	230	ug/kg		ND	85	84	4
75-00-3	Chloroethane	ND	230	ug/kg		ND	109	108	5
67-66-3	Chloroform	ND	230	ug/kg		ND	85	96	8
75-15-0	Carbon disulfide	ND	450	ug/kg		ND	78	79	2
56-23-5	Carbon tetrachloride	ND	230	ug/kg		ND	89	101	8
75-34-3	1,1-Dichloroethane	ND	230	ug/kg		ND	87	98	8
75-35-4	1,1-Dichloroethylene	ND	230	ug/kg		ND	99	98	5
106-93-4	1,2-Dibromoethane	ND	230	ug/kg		ND	80	80	4
107-06-2	1,2-Dichloroethane	ND	230	ug/kg		ND	78	87	7
78-87-5	1,2-Dichloropropane	ND	230	ug/kg		ND	94	96	2
124-48-1	Dibromochloromethane	ND	230	ug/kg		ND	84	83	4
10061-01-5	cis-1,3-Dichloropropene	ND	230	ug/kg		ND	84	86	2
540-59-0	1,2-Dichloroethene (total)	ND	450	ug/kg		ND	95	102	3
10061-02-6	trans-1,3-Dichloropropene	ND	230	ug/kg		ND	80	79	6
100-41-4	Ethylbenzene	5950	230	ug/kg	E	ND	82	82	4
591-78-6	2-Hexanone	ND	450	ug/kg		ND	72	70	7
108-10-1	4-Methyl-2-pentanone	ND	450	ug/kg		ND	78	80	2
74-83-9	Methyl bromide	ND	230	ug/kg		ND	108	111	1
74-87-3	Methyl chloride	ND	230	ug/kg		ND	91	90	5
75-09-2	Methylene chloride [a]	666	450	ug/kg		ND	103	100	6
78-93-3	Methyl ethyl ketone	ND	450	ug/kg		ND	68	78	10
100-42-5	Styrene	ND	230	ug/kg		ND	96	92	7
71-55-6	1,1,1-Trichloroethane	ND	230	ug/kg		ND	85	96	8
79-34-5	1,1,2,2-Tetrachloroethane	ND	230	ug/kg		ND	64	63	6
79-00-5	1,1,2-Trichloroethane	ND	230	ug/kg		ND	80	78	6
127-18-4	Tetrachloroethylene	ND	230	ug/kg		ND	79	79	4
108-88-3	Toluene	ND	230	ug/kg		ND	85	85	4
79-01-6	Trichloroethylene	ND	230	ug/kg		ND	92	94	2
75-01-4	Vinyl chloride	ND	230	ug/kg		ND	103	103	4
1330-20-7	Xylene (total)	8900	680	ug/kg		ND	84	84	4

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	35D01215		
Lab Sample ID:	F6711-4	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
Method:	SW846 8260B	**Percent Solids:**	87.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	88%		71-122%
2037-26-5	Toluene-D8	120%		73-128%
460-00-4	4-Bromofluorobenzene	135%		53-158%
17060-07-0	1,2-Dichloroethane-D4	89%		71-122%

(a) Suspected laboratory contaminant.

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	35D01230		
Lab Sample ID:	F6711-5	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
Method:	SW846 8260B	**Percent Solids:**	86.3
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H008059.D	1	06/20/00	RAW	n/a	n/a	VH98
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q	MB	MS	MSD	RPD
67-64-1	Acetone	13.3	48	ug/kg	J	ND	63	63	4
71-43-2	Benzene	ND	4.8	ug/kg		ND	88	100	8
75-27-4	Bromodichloromethane	ND	4.8	ug/kg		ND	88	87	4
75-25-2	Bromoform	ND	4.8	ug/kg		ND	73	72	5
108-90-7	Chlorobenzene	ND	4.8	ug/kg		ND	85	84	4
75-00-3	Chloroethane	ND	4.8	ug/kg		ND	109	108	5
67-66-3	Chloroform	ND	4.8	ug/kg		ND	85	96	8
75-15-0	Carbon disulfide	ND	9.6	ug/kg		ND	78	79	2
56-23-5	Carbon tetrachloride	ND	4.8	ug/kg		ND	89	101	8
75-34-3	1,1-Dichloroethane	ND	4.8	ug/kg		ND	87	98	8
75-35-4	1,1-Dichloroethylene	ND	4.8	ug/kg		ND	99	98	5
106-93-4	1,2-Dibromoethane	ND	4.8	ug/kg		ND	80	80	4
107-06-2	1,2-Dichloroethane	ND	4.8	ug/kg		ND	78	87	7
78-87-5	1,2-Dichloropropane	ND	4.8	ug/kg		ND	94	96	2
124-48-1	Dibromochloromethane	ND	4.8	ug/kg		ND	84	83	4
10061-01-5	cis-1,3-Dichloropropene	ND	4.8	ug/kg		ND	84	86	2
540-59-0	1,2-Dichloroethene (total)	ND	9.6	ug/kg		ND	95	102	3
10061-02-6	trans-1,3-Dichloropropene	ND	4.8	ug/kg		ND	80	79	6
100-41-4	Ethylbenzene	75.2	4.8	ug/kg		ND	82	82	4
591-78-6	2-Hexanone	ND	9.6	ug/kg		ND	72	70	7
108-10-1	4-Methyl-2-pentanone	ND	9.6	ug/kg		ND	78	80	2
74-83-9	Methyl bromide	ND	4.8	ug/kg		ND	108	111	1
74-87-3	Methyl chloride	ND	4.8	ug/kg		ND	91	90	5
75-09-2	Methylene chloride	ND	9.6	ug/kg		ND	103	100	6
78-93-3	Methyl ethyl ketone	ND	9.6	ug/kg		ND	68	78	10
100-42-5	Styrene	ND	4.8	ug/kg		ND	96	92	7
71-55-6	1,1,1-Trichloroethane	ND	4.8	ug/kg		ND	85	96	8
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.8	ug/kg		ND	64	63	6
79-00-5	1,1,2-Trichloroethane	ND	4.8	ug/kg		ND	80	78	6
127-18-4	Tetrachloroethylene	ND	4.8	ug/kg		ND	79	79	4
108-88-3	Toluene	ND	4.8	ug/kg		ND	85	85	4
79-01-6	Trichloroethylene	ND	4.8	ug/kg		ND	92	94	2
75-01-4	Vinyl chloride	ND	4.8	ug/kg		ND	103	103	4
1330-20-7	Xylene (total)	120	14	ug/kg		ND	84	84	4

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	35D01230		
Lab Sample ID:	F6711-5	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
Method:	SW846 8260B	**Percent Solids:**	86.3
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		71-122%
2037-26-5	Toluene-D8	96%		73-128%
460-00-4	4-Bromofluorobenzene	101%		53-158%
17060-07-0	1,2-Dichloroethane-D4	89%		71-122%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	35D01320		
Lab Sample ID:	F6711-6	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
Method:	SW846 8260B	**Percent Solids:**	88.4
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H008051.D	1	06/20/00	RAW	n/a	n/a	VH98
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q	MB	MS	MSD	RPD
67-64-1	Acetone	21.8	48	ug/kg	J	ND	63	63	4
71-43-2	Benzene	ND	4.8	ug/kg		ND	88	100	8
75-27-4	Bromodichloromethane	ND	4.8	ug/kg		ND	88	87	4
75-25-2	Bromoform	ND	4.8	ug/kg		ND	73	72	5
108-90-7	Chlorobenzene	ND	4.8	ug/kg		ND	85	84	4
75-00-3	Chloroethane	ND	4.8	ug/kg		ND	109	108	5
67-66-3	Chloroform	ND	4.8	ug/kg		ND	85	96	8
75-15-0	Carbon disulfide	ND	9.5	ug/kg		ND	78	79	2
56-23-5	Carbon tetrachloride	ND	4.8	ug/kg		ND	89	101	8
75-34-3	1,1-Dichloroethane	ND	4.8	ug/kg		ND	87	98	8
75-35-4	1,1-Dichloroethylene	ND	4.8	ug/kg		ND	99	98	5
106-93-4	1,2-Dibromoethane	ND	4.8	ug/kg		ND	80	80	4
107-06-2	1,2-Dichloroethane	ND	4.8	ug/kg		ND	78	87	7
78-87-5	1,2-Dichloropropane	ND	4.8	ug/kg		ND	94	96	2
124-48-1	Dibromochloromethane	ND	4.8	ug/kg		ND	84	83	4
10061-01-5	cis-1,3-Dichloropropene	ND	4.8	ug/kg		ND	84	86	2
540-59-0	1,2-Dichloroethene (total)	ND	9.5	ug/kg		ND	95	102	3
10061-02-6	trans-1,3-Dichloropropene	ND	4.8	ug/kg		ND	80	79	6
100-41-4	Ethylbenzene	3.2	4.8	ug/kg	J	ND	82	82	4
591-78-6	2-Hexanone	ND	9.5	ug/kg		ND	72	70	7
108-10-1	4-Methyl-2-pentanone	ND	9.5	ug/kg		ND	78	80	2
74-83-9	Methyl bromide	ND	4.8	ug/kg		ND	108	111	1
74-87-3	Methyl chloride	ND	4.8	ug/kg		ND	91	90	5
75-09-2	Methylene chloride	ND	9.5	ug/kg		ND	103	100	6
78-93-3	Methyl ethyl ketone	7.0	9.5	ug/kg	J	ND	68	78	10
100-42-5	Styrene	ND	4.8	ug/kg		ND	96	92	7
71-55-6	1,1,1-Trichloroethane	ND	4.8	ug/kg		ND	85	96	8
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.8	ug/kg		ND	64	63	6
79-00-5	1,1,2-Trichloroethane	ND	4.8	ug/kg		ND	80	78	6
127-18-4	Tetrachloroethylene	ND	4.8	ug/kg		ND	79	79	4
108-88-3	Toluene	ND	4.8	ug/kg		ND	85	85	4
79-01-6	Trichloroethylene	ND	4.8	ug/kg		ND	92	94	2
75-01-4	Vinyl chloride	ND	4.8	ug/kg		ND	103	103	4
1330-20-7	Xylene (total)	4.5	14	ug/kg	J	ND	84	84	4

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	35D01320		
Lab Sample ID:	F6711-6	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
Method:	SW846 8260B	**Percent Solids:**	88.4
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	87%		71-122%
2037-26-5	Toluene-D8	102%		73-128%
460-00-4	4-Bromofluorobenzene	107%		53-158%
17060-07-0	1,2-Dichloroethane-D4	86%		71-122%

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	35D01325		
Lab Sample ID:	F6711-7	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
Method:	SW846 8260B	**Percent Solids:**	87.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H008052.D	1	06/20/00	RAW	n/a	n/a	VH98
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q	MB	MS	MSD	RPD
67-64-1	Acetone	ND	47	ug/kg		ND	63	63	4
71-43-2	Benzene	ND	4.7	ug/kg		ND	88	100	8
75-27-4	Bromodichloromethane	ND	4.7	ug/kg		ND	88	87	4
75-25-2	Bromoform	ND	4.7	ug/kg		ND	73	72	5
108-90-7	Chlorobenzene	ND	4.7	ug/kg		ND	85	84	4
75-00-3	Chloroethane	ND	4.7	ug/kg		ND	109	108	5
67-66-3	Chloroform	ND	4.7	ug/kg		ND	85	96	8
75-15-0	Carbon disulfide	ND	9.4	ug/kg		ND	78	79	2
56-23-5	Carbon tetrachloride	ND	4.7	ug/kg		ND	89	101	8
75-34-3	1,1-Dichloroethane	ND	4.7	ug/kg		ND	87	98	8
75-35-4	1,1-Dichloroethylene	ND	4.7	ug/kg		ND	99	98	5
106-93-4	1,2-Dibromoethane	ND	4.7	ug/kg		ND	80	80	4
107-06-2	1,2-Dichloroethane	ND	4.7	ug/kg		ND	78	87	7
78-87-5	1,2-Dichloropropane	ND	4.7	ug/kg		ND	94	96	2
124-48-1	Dibromochloromethane	ND	4.7	ug/kg		ND	84	83	4
10061-01-5	cis-1,3-Dichloropropene	ND	4.7	ug/kg		ND	84	86	2
540-59-0	1,2-Dichloroethene (total)	ND	9.4	ug/kg		ND	95	102	3
10061-02-6	trans-1,3-Dichloropropene	ND	4.7	ug/kg		ND	80	79	6
100-41-4	Ethylbenzene	ND	4.7	ug/kg		ND	82	82	4
591-78-6	2-Hexanone	ND	9.4	ug/kg		ND	72	70	7
108-10-1	4-Methyl-2-pentanone	ND	9.4	ug/kg		ND	78	80	2
74-83-9	Methyl bromide	ND	4.7	ug/kg		ND	108	111	1
74-87-3	Methyl chloride	ND	4.7	ug/kg		ND	91	90	5
75-09-2	Methylene chloride	ND	9.4	ug/kg		ND	103	100	6
78-93-3	Methyl ethyl ketone	ND	9.4	ug/kg		ND	68	78	10
100-42-5	Styrene	ND	4.7	ug/kg		ND	96	92	7
71-55-6	1,1,1-Trichloroethane	ND	4.7	ug/kg		ND	85	96	8
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.7	ug/kg		ND	64	63	6
79-00-5	1,1,2-Trichloroethane	ND	4.7	ug/kg		ND	80	78	6
127-18-4	Tetrachloroethylene	ND	4.7	ug/kg		ND	79	79	4
108-88-3	Toluene	ND	4.7	ug/kg		ND	85	85	4
79-01-6	Trichloroethylene	ND	4.7	ug/kg		ND	92	94	2
75-01-4	Vinyl chloride	ND	4.7	ug/kg		ND	103	103	4
1330-20-7	Xylene (total)	ND	14	ug/kg		ND	84	84	4

ND = Not detected
RL = Reporting 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

Report of Analysis

Client Sample ID:	35D01325		
Lab Sample ID:	F6711-7	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
Method:	SW846 8260B	**Percent Solids:**	87.1
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	86%		71-122%
2037-26-5	Toluene-D8	100%		73-128%
460-00-4	4-Bromofluorobenzene	105%		53-158%
17060-07-0	1,2-Dichloroethane-D4	85%		71-122%

ND = Not detected
RL = Reporting 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

APPENDIX C

SUPPORT DOCUMENTATION

F6711

HOLDING TIME
07/20/00

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/KG	35D01020	F6711-1	NORMAL	F6711	HG	06/06/00	06/12/00	06/14/00	6	2	8
MG/KG	35D01115	F6711-2	NORMAL	F6711	HG	06/06/00	06/12/00	06/14/00	6	2	8
MG/KG	35D01132	F6711-3	NORMAL	F6711	HG	06/06/00	06/12/00	06/14/00	6	2	8
MG/KG	35D01215	F6711-4	NORMAL	F6711	HG	06/06/00	06/12/00	06/14/00	6	2	8
MG/KG	35D01230	F6711-5	NORMAL	F6711	HG	06/06/00	06/12/00	06/14/00	6	2	8
MG/KG	35D01320	F6711-6	NORMAL	F6711	HG	06/06/00	06/12/00	06/14/00	6	2	8
MG/KG	35D01325	F6711-7	NORMAL	F6711	HG	06/06/00	06/26/00	06/27/00	20	1	21
MG/KG	35D01020	F6711-1	NORMAL	F6711	M	06/06/00	06/16/00	06/22/00	10	6	16
MG/KG	35D01115	F6711-2	NORMAL	F6711	M	06/06/00	06/16/00	06/22/00	10	6	16
MG/KG	35D01132	F6711-3	NORMAL	F6711	M	06/06/00	06/16/00	06/22/00	10	6	16
MG/KG	35D01215	F6711-4	NORMAL	F6711	M	06/06/00	06/16/00	06/22/00	10	6	16
MG/KG	35D01230	F6711-5	NORMAL	F6711	M	06/06/00	06/16/00	06/22/00	10	6	16
MG/KG	35D01320	F6711-6	NORMAL	F6711	M	06/06/00	06/16/00	06/22/00	10	6	16
MG/KG	35D01325	F6711-7	NORMAL	F6711	M	06/06/00	06/16/00	06/22/00	10	6	16
UG/KG	35D01020	F6711-1	NORMAL	F6711	OV	06/06/00	/ /	06/20/00	0	0	14
UG/KG	35D01115	F6711-2	NORMAL	F6711	OV	06/06/00	/ /	06/20/00	0	0	14
UG/KG	35D01132	F6711-3	NORMAL	F6711	OV	06/06/00	/ /	06/20/00	0	0	14
UG/KG	35D01215	F6711-4	NORMAL	F6711	OV	06/06/00	/ /	06/20/00	0	0	14
UG/KG	35D01230	F6711-5	NORMAL	F6711	OV	06/06/00	/ /	06/20/00	0	0	14
UG/KG	35D01320	F6711-6	NORMAL	F6711	OV	06/06/00	/ /	06/20/00	0	0	14
UG/KG	35D01325	F6711-7	NORMAL	F6711	OV	06/06/00	/ /	06/20/00	0	0	14
UG/L	35D01020	F6711-1A	NORMAL	F6711	TCLPM	06/06/00	06/25/00	06/25/00	19	0	19
UG/L	35D01115	F6711-2A	NORMAL	F6711	TCLPM	06/06/00	06/25/00	06/25/00	19	0	19
UG/L	35D01132	F6711-3A	NORMAL	F6711	TCLPM	06/06/00	06/25/00	06/25/00	19	0	19
UG/L	35D01215	F6711-4A	NORMAL	F6711	TCLPM	06/06/00	06/25/00	06/25/00	19	0	19

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	35D01230	F6711-5A	NORMAL	F6711	TCLPM	06/06/00	06/25/00	06/25/00	19	0	19
UG/L	35D01320	F6711-6A	NORMAL	F6711	TCLPM	06/06/00	06/25/00	06/25/00	19	0	19
UG/L	35D01325	F6711-7A	NORMAL	F6711	TCLPM	06/06/00	06/25/00	06/25/00	19	0	19

Accutest Laboratories Southeast
Case Narrative

Job (SDG) No.: F16711

Samples: 8260, Metals

Analysis Performed: 1-7

1) **Sample Receipt Conformance / Non-Conformance Summary**

Custody Seals on Coolers?	Yes (✓)	No ( )
Custody Seals in Tact?	Yes (✓)	No ( )
Chain of Custody Sealed in Plastic?	Yes (✓)	No ( )
Chain of Custody Filled out Properly?	Yes (✓)	No ( )
Enough ice and Packing material?	Yes (✓)	No ( )
All Bottles Sealed?	Yes (✓)	No ( )
Any Bottles Broken?	Yes ( )	No (✓)
Labels in good condition?	Yes (✓)	No ( )
Labels agree with chain of custody?	Yes (✓)	No ( )
Correct Containers Used?	Yes (✓)	No ( )
Preserved Properly?	Yes (✓)	No ( )
Sufficient Sample?	Yes (✓)	No ( )

Comments: _____

Memo to File

From: JRWilliams
CC: File
Date: 10/8/00
Re: TCLP analysis

Per conversation w/ Howard Engle please run TCLP-Metals and only run TCLP VOCs for the samples were hits are reported for total VOC.

JRW

035

CHAIN OF CUSTODY

ACCUTEST

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #:

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: Tetra Tech NUS Inc
ADDRESS: 1401 Oven Park Dr Suite 102
CITY, STATE, ZIP: Tallahassee FL 32312
SEND REPORT TO:
PHONE #: 850-385-9899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting Field
LOCATION: Milton FL
PROJECT NO.: N0052 site 35
FAX #: 850-385-9860

ANALYTICAL INFORMATION

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	TCL VOCs	TAL Inorganics	TCLP									LAB USE ONLY
F6711-1	35D01020	6/6/00	0845	RDM	SO	3					X	X											
-1-2	35D01020	6/6/00	0845	RDM	SO	2					X		X	X									
-2-3	35D01115	6/6/00	0945	RDM	SO	3					X	X								FID 27,097			
-2-4	35D01115	6/6/00	0945	RDM	SO	2					X		X	X						"			
-3-5	35D01132	6/6/00	1055	RDM	SO	3					X	X											
-3-6	35D01132	6/6/00	1055	RDM	SO	2					X		X	X									
-4-7	35D01215	6/6/00	1310	RDM	SO	3					X	X								FID 1739			
-4-8	35D01215	6/6/00	1310	RDM	SO	2					X		X	X						"			
-5-9	35D01230	6/6/00	1355	RDM	SO	3					X	X											
-5-10	35D01230	6/6/00	1355	RDM	SO	2					X		X	X									

RDM 6-7-00

DATA TURNAROUND INFORMATION

- [x] STANDARD
- [ ] 48 HOUR RUSH
- [ ] 24 HOUR EMERGENCY
- [ ] OTHER

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- [x] STANDARD
- [ ] COMMERCIAL "B"
- [x] DISK DELIVERABLE
- [ ] STATE FORMS
- [ ] OTHER (SPECIFY)

COMMENTS/REMARKS

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
RDM	6/6/00 1700	1. Mike Lenell 6/7/00 0900	2.		2.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
		3.	4.		4.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY:	SEAL #	PRESERVE WHERE APPLICABLE ☐	ON ICE ☐ TEMPERATURE 2.8 C
		5.			

CHAIN OF CUSTODY

ACCUTEST

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: Tetratech NUS, Inc
ADDRESS: 1401 Oven Park Dr Suite 102
CITY, STATE, ZIP: Tallahassee FL 32312
SEND REPORT TO:
PHONE #: 850-385-9899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting Field
LOCATION: Milton FL
PROJECT NO.: N0052 Site 35
FAX #: 850-385-~~9899~~ 9860

ANALYTICAL INFORMATION

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	TCL VOCs	TAL Inorganics	TCLP								LAB USE ONLY
F6711-11	35SD01320	6/6/00	1453	RDM	SO	3					X	X				FID	254.0					
-12	35D01320	6/6/00	1453	RDM	SO	2					X		X	X			"					
-7 -13	35D01325	6/6/00	1510	RDM	SO	3					X	X										
-7 -14	35D01325	6/6/00	1510	RDM	SO	2					X		X	X								
MF 6/7/00																						

DATA TURNAROUND INFORMATION

- [x] STANDARD
- [ ] 48 HOUR RUSH
- [ ] 24 HOUR EMERGENCY
- [ ] OTHER

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- [x] STANDARD
- [ ] COMMERCIAL "B"
- [x] DISK DELIVERABLE
- [ ] STATE FORMS
- [ ] OTHER (SPECIFY)

COMMENTS/REMARKS

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1. RDMunson	6/6/00 1700	1. Mike Jones 6/7/00 0900	2.		2.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY: 3.	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY: 5.	SEAL #	PRESERVE WHERE APPLICABLE ☐	ON ICE ☐ TEMPERATURE 7.6 C

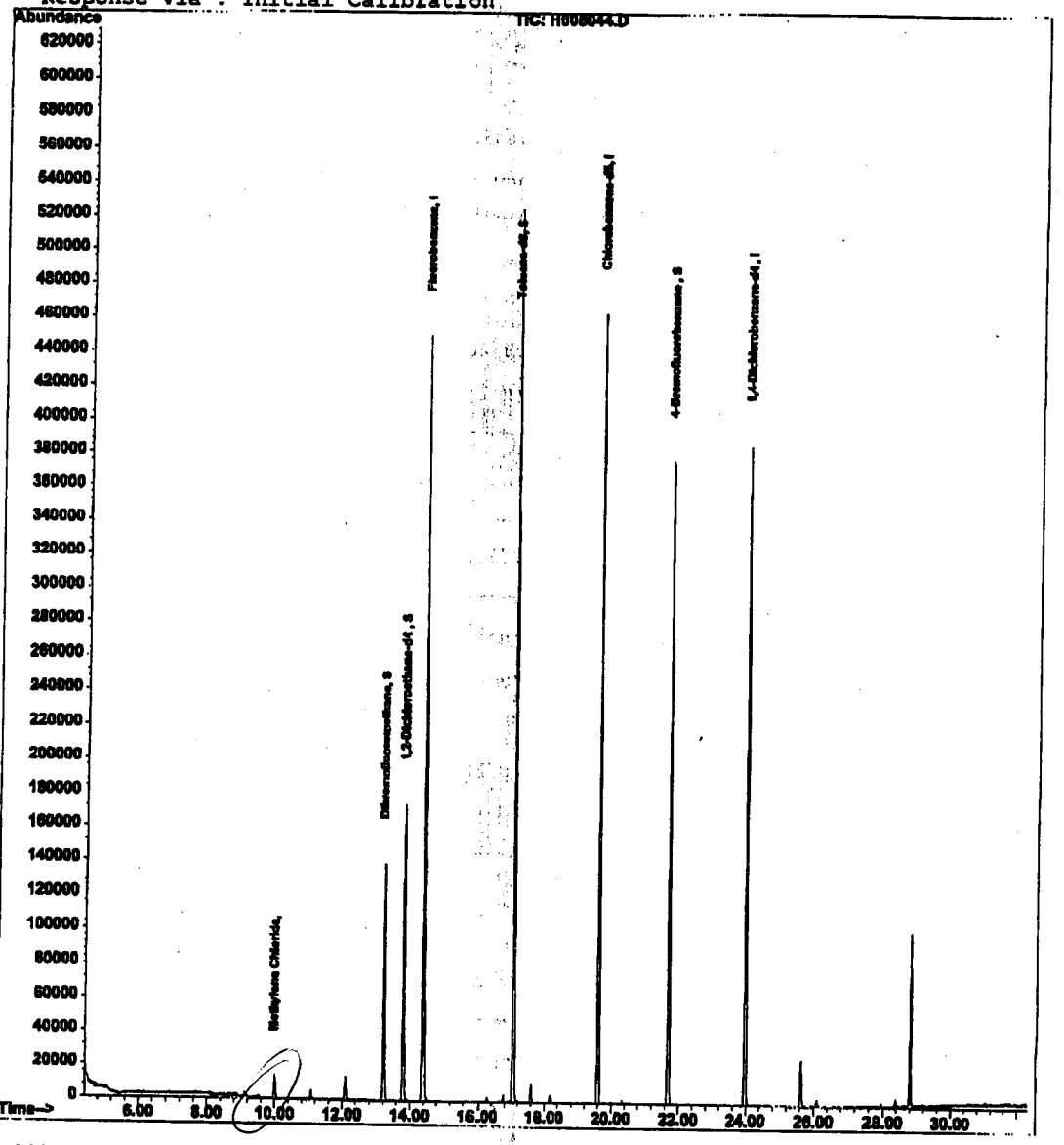
Quantitation Report

Data File : C:\HPCHEM\1\OLDDATA\062000\H008044.D
Acq On : 20 Jun 2000 10:14 am
Sample : MB
Misc : ms599,vh96,,,,,
MS Integration Params: RTEINT.P
Quant Time: Oct 17 14:04 2000

Vial: 3
Operator: RickW
Inst : MSVOA3
Multiplr: 1.00

Quant Results File: 8260S.RES

Method : C:\HPCHEM\1\METHODS\8260S.M (RTE Integrator)
Title : SWA 5035/8260B
Last Update : Wed Oct 11 16:40:44 2000
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\OLDDATA\062000\H008044.D Vial: 3
Acq On : 20 Jun 2000 10:14 am Operator: RickW
Sample : MB Inst : MSVOA3
Misc : ms599,vh96,,,,, Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 17 14:04 2000 Quant Results File: 8260S.RES

Quant Method : C:\HPCHEM\1\METHODS\8260S.M (RTE Integrator)
Title : SWA 5035/8260B
Last Update : Mon Jun 19 14:18:51 2000
Response via : Initial Calibration
DataAcq Meth : 8260S

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	14.38	96	493804	50.00	ug/Kg	0.00
41) Chlorobenzene-d5	19.61	117	329221	50.00	ug/Kg	0.00
59) 1,4-Dichlorobenzene-d4	23.97	152	160128	50.00	ug/Kg	0.00
System Monitoring Compounds						
26) Dibromofluoromethane	13.21	113	118396	47.12	ug/Kg	0.02
Spiked Amount 50.000	Range 71 - 122		Recovery = 94.24%			
29) 1,2-Dichloroethane-d4	13.81	65	188257	44.92	ug/Kg	0.00
Spiked Amount 50.000	Range 71 - 122		Recovery = 89.84%			
42) Toluene-d8	17.06	98	474053	51.00	ug/Kg	0.00
Spiked Amount 50.000	Range 73 - 128		Recovery = 102.00%			
61) 4-Bromofluorobenzene	21.69	95	196984	51.87	ug/Kg	0.00
Spiked Amount 50.000	Range 53 - 158		Recovery = 103.74%			
Target Compounds						Qvalue
13) Methylene Chloride	10.00	49	15214m	2.51	ug/Kg	

(#) = qualifier out of range (m) = manual integration

Response Factor Report MSVOA3

Method : C:\HPCHEM\1\METHODS\8260S.M (RTE Integrator)
Title : SWA 5035/8260B
Last Update : Mon Jun 19 14:18:51 2000
Response via : Initial Calibration

%RSD >15 QUAN BY CURVE RAW

Calibration Files
1 =H008018.D 2 =H008019.D 3 =H008020.D
4 =H008021.D 5 =H008022.D 6 =H008023.D

		Compound	1	2	3	4	5	6	Avg	%RSD
1)	I	Fluorobenzene	----------	----------	----------	ISTD	----------	----------	----------	
2)		Dichlorodifluoromet	0.284	0.286	0.287	0.268	0.272	0.309	0.284	5.05
3)	P	Chloromethane		0.456	0.460	0.443	0.454	0.521	0.467	6.59
4)	C	Vinyl Chloride	0.395	0.408	0.412	0.383	0.394	0.466	0.410	7.20
5)		Bromomethane	0.178	0.150	0.152	0.159	0.163	0.196	0.166	10.53
6)		Chloroethane	0.236	0.240	0.240	0.232	0.231	0.266	0.241	5.44
7)		Trichlorofluorometh	0.494	0.497	0.499	0.481	0.458	0.535	0.494	5.11
8)		Acrolein	0.050	0.037	0.039	0.032	0.040	0.043	0.040	14.83
9)	C	1,1-Dichloroethene	0.664	0.638	0.613	0.586	0.577	0.662	0.623	6.05
10)		Freon 113		0.346	0.317	0.307	0.307	0.345	0.325	6.17
11)		Acetone		0.203	0.178	0.176	0.176	0.182	0.183	6.27
12)		Carbon Disulfide	0.888	0.858	0.855	0.832	0.832	0.946	0.869	4.98
13)		Methylene Chloride		0.659	0.615	0.581	0.572	0.637	0.613	5.97
14)		trans-1,2-Dichloroe	0.698	0.658	0.661	0.632	0.641	0.700	0.665	4.25
15)		Acrylonitrile	0.197	0.160	0.148	0.153	0.166	0.178	0.167	10.90
16)		Methyl Tert Butyl E	0.835	0.784	0.771	0.798	0.870	0.882	0.823	5.62
17)	P	1,1-Dichloroethane	0.740	0.710	0.695	0.683	0.683	0.687	0.700	3.21
18)		Vinyl acetate		0.979	0.955	0.976	0.996	0.978	0.977	1.50
19)		Di-isopropyl ether		2.382	1.708	1.550	1.524	1.480	1.729	21.70
20)		2,2-Dichloropropane	0.224	0.247	0.257	0.277	0.320	0.321	0.274	14.38
21)		cis-1,2-Dichloroeth	0.304	0.309	0.305	0.312	0.307	0.313	0.308	1.23
22)		2-Butanone	0.227	0.178	0.168	0.182	0.207	0.200	0.194	11.34
23)		Bromochloromethane	0.133	0.154	0.140	0.146	0.154	0.149	0.146	5.64
24)	C	Chloroform		0.671	0.661	0.645	0.644	0.645	0.653	1.90
25)		1,1,1-Trichloroetha	0.525	0.503	0.499	0.493	0.493	0.498	0.502	2.39
26)	S	Dibromofluoromethan	0.251	0.257	0.258	0.254	0.254	0.253	0.254	1.06
27)		1,1-Dichloropropene	0.490	0.474	0.473	0.478	0.483	0.495	0.482	1.86
28)		Carbon Tetrachlorid	0.313	0.318	0.354	0.356	0.371	0.372	0.347	7.44
29)	S	1,2-Dichloroethane-	0.439	0.443	0.432	0.415	0.412	0.405	0.424	3.65
30)		Benzene	1.448	1.323	1.305	1.256	1.266	1.277	1.312	5.40
31)		1,2-Dichloroethane		0.661	0.623	0.592	0.598	0.569	0.609	5.77
32)		Trichloroethene	0.412	0.349	0.359	0.343	0.344	0.354	0.360	7.29
33)	C	1,2-Dichloropropane	0.388	0.367	0.376	0.322	0.369	0.380	0.367	6.30
34)		Dibromomethane	0.180	0.186	0.188	0.164	0.190	0.187	0.182	5.33
35)		1,4-Dioxane		0.002	0.003	0.003	0.004	0.004	0.003	21.11
36)		Bromodichloromethan	0.417	0.429	0.435	0.397	0.455	0.460	0.432	5.40
37)		2-Nitropropane	0.074	0.072	0.075	0.080	0.108	0.113	0.087	21.34
38)		2-Chloroethyl vinyl	0.116	0.135	0.135	0.131	0.165	0.160	0.140	13.25
39)		4-Methyl-2-pentanon		0.447	0.421	0.405	0.418	0.468	0.432	5.86
40)		cis-1,3-Dichloropro	0.413	0.451	0.447	0.424	0.490	0.497	0.454	7.49
41)	I	Chlorobenzene-d5	----------	----------	----------	ISTD	----------	----------	----------	
42)	S	Toluene-d8	1.385	1.605	1.352	1.380	1.372	1.378	1.412	6.75

0.0709 / 1.3125 = 0.5406 = 5.40

) = Out of Range

Response Factor Report MSVOA3

Method : C:\HPCHEM\1\METHODS\8260S.M (RTE Integrator)
Title : SWA 5035/8260B
Last Update : Mon Jun 19 14:18:51 2000
Response via : Initial Calibration

Calibration Files
1 =H008018.D 2 =H008019.D 3 =H008020.D
4 =H008021.D 5 =H008022.D 6 =H008023.D

		Compound	1	2	3	4	5	6	Avg	%RSD
3)	C	Toluene	2.160	2.149	1.798	1.810	1.772	1.777	1.911	9.90
4)		trans-1,3-Dichlorop		0.533	0.504	0.577	0.618	0.606	0.568	8.49
5)		1,1,2-Trichloroetha	0.377	0.396	0.341	0.350	0.354	0.342	0.360	6.11
6)		Tetrachloroethene	0.503	0.528	0.463	0.456	0.435	0.436	0.470	7.99
7)		2-hexanone		0.496	0.420	0.451	0.485	0.462	0.463	6.46
8)		1,3-Dichloropropane	0.750	0.800	0.679	0.697	0.693	0.670	0.715	7.01
9)		Dibromochloromethan	0.347	0.371	0.350	0.382	0.394	0.397	0.374	5.75
0)		1,2-Dibromoethane	0.324	0.339	0.337	0.347	0.348	0.342	0.340	2.62
1)		1-Chlorohexane	0.533	0.577	0.577	0.580	0.589	0.610	0.578	4.40
2)	P	Chlorobenzene		1.178	1.150	1.119	1.100	1.114	1.132	2.76
3)		1,1,1,2-Tetrachloro	0.346	0.360	0.369	0.393	0.391	0.393	0.376	5.34
4)	C	Ethylbenzene	2.320	2.142	2.127	2.099	2.040	2.084	2.135	4.56
5)		m,p-Xylene	1.582	1.787	1.776	1.738	1.665	1.682	1.705	4.55
6)		o-Xylene	1.871	1.852	1.796	1.780	1.732	1.754	1.798	3.02
7)		Styrene	1.108	1.084	0.854	1.048	1.155	1.187	1.073	11.02
8)	P	Bromoform	0.153	0.186	0.200	0.241	0.275	0.275	0.222	22.55
9)	I	1,4-Dichlorobenzene-d	----------ISTD----------							
0)		Isopropylbenzene	3.879	3.590	3.682	3.559	3.556	3.674	3.657	3.33
1)	S	4-Bromofluorobenzen	1.197	1.187	1.172	1.161	1.192	1.205	1.186	1.38
2)		Bromobenzene	1.059	0.920	0.883	0.869	0.881	0.868	0.913	8.09
3)	P	1,1,2,2-Tetrachloro	1.257	1.049	1.055	1.038	1.100	1.077	1.096	7.46
)		1,2,3-Trichloroprop	0.335	0.294	0.277	0.290	0.303	0.281	0.297	7.00
)		n-Propylbenzene	5.026	4.667	4.722	4.547	4.579	4.669	4.702	3.65
5)		2-Chlorotoluene	3.624	3.117	3.156	3.004	3.037	3.049	3.165	7.33
)		4-Chlorotoluene	3.699	3.248	3.310	3.104	3.137	3.150	3.274	6.77
)		1,3,5-Trimethylbenz	3.515	3.256	3.362	3.201	3.204	3.227	3.294	3.75
)		sec-Butylbenzene	3.969	3.813	3.879	3.706	3.794	3.829	3.831	2.29
)		1,3-Dichlorobenzene	2.092	1.789	1.761	1.666	1.657	1.646	1.768	9.58
)		4-Isopropyltoluene	2.919	2.935	3.009	2.870	2.903	2.934	2.928	1.58
)		1,4-Dichlorobenzene		1.794	1.767	1.703	1.687	1.665	1.723	3.19
)		tert-Butylbenzene	2.282	2.255	2.312	2.204	2.240	2.253	2.258	1.63
)		n-Butylbenzene	3.350	3.146	3.286	3.165	3.209	3.188	3.224	2.44
)		1,2-Dichlorobenzene	1.909	1.586	1.593	1.573	1.586	1.560	1.635	8.26
)		1,2,4-Trimethylbenz	3.465	3.232	3.328	3.177	3.247	3.215	3.277	3.20
)		1,2-Dibromo-3-Chlor		0.182	0.175	0.209	0.233	0.218	0.204	11.97
)		1,2,4-Trichlorobenz	1.248	1.112	1.111	1.101	1.083	1.046	1.117	6.15
)		Hexachlorobutadiene	0.727	0.685	0.716	0.708	0.685	0.669	0.698	3.14
)		Naphthalene		2.316	2.323	2.452	2.530	2.439	2.412	3.79
)		1,2,3-Trichlorobenz	1.300	1.069	1.040	1.057	1.024	1.005	1.083	10.06

= Out of Range

Instrument Performance Check (BFB)

Job Number: F6711
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: VH97-BFB
Lab File ID: H008041.D
Instrument ID: GCMSH
Injection Date: 06/20/00
Injection Time: 08:35

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	19920	24.0		Pass
75	30.0 - 60.0% of mass 95	43075	51.8		Pass
95	Base peak, 100% relative abundance	83152	100.0		Pass
96	5.0 - 9.0% of mass 95	5625	6.8		Pass
173	Less than 2.0% of mass 174	168	0.2	(0.32) [a]	Pass
174	50.0 - 100.0% of mass 95	52283	62.9		Pass
175	5.0 - 9.0% of mass 174	4031	4.8	(7.7) [a]	Pass
176	95.0 - 101.0% of mass 174	50336	60.5	(96.3) [a]	Pass
177	5.0 - 9.0% of mass 176	3539	4.3	(7.0) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VH97-CC97	H008042.D	06/20/00	08:52	00:17	Continuing cal 40
VH97-BS4	H008043.D	06/20/00	09:33	00:58	Blank Spike
VH99-BS	H008043.D	06/20/00	09:33	00:58	Blank Spike
VH98-BS2	H008043.D	06/20/00	09:33	00:58	Blank Spike
VH97-MB4	H008044.D	06/20/00	10:14	01:39	Method Blank
VH99-MB	H008044.D	06/20/00	10:14	01:39	Method Blank
VH98-MB2	H008044.D	06/20/00	10:14	01:39	Method Blank
ZZZZZZ	H008045.D	06/20/00	10:55	02:20	(unrelated sample)
F6711-1	H008046.D	06/20/00	11:36	03:01	35D01020
F6711-2	H008047.D	06/20/00	12:17	03:42	35D01115
F6711-3	H008048.D	06/20/00	12:59	04:24	35D01132
F6711-6	H008051.D	06/20/00	15:03	06:28	35D01320
F6711-7	H008052.D	06/20/00	15:44	07:09	35D01325
ZZZZZZ	H008054.D	06/20/00	17:06	08:31	(unrelated sample)
ZZZZZZ	H008055.D	06/20/00	17:48	09:13	(unrelated sample)
ZZZZZZ	H008056.D	06/20/00	18:29	09:54	(unrelated sample)
ZZZZZZ	H008057.D	06/20/00	19:10	10:35	(unrelated sample)
F6711-4	H008058.D	06/20/00	19:51	11:16	35D01215
F6711-5	H008059.D	06/20/00	20:32	11:57	35D01230

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\062000\H008042.D Vial: 1
Acq On : 20 Jun 2000 8:52 am Operator: RickW
Sample : CC97-40 Inst : MSVOA3
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\HPCHEM\1\METHODS\8260S.M (RTE Integrator)
Title : SWA 5035/8260B
Last Update : Mon Jun 19 14:18:51 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
I	Fluorobenzene	1.000	1.000	0.0	111	0.00
	Dichlorodifluoromethane	0.284	0.239	15.8	99	0.00
P	Chloromethane	0.467	0.438	6.2	110	0.00
C	Vinyl Chloride	0.410	0.372	9.3	108	0.00
	Bromomethane	0.166	0.144	13.3	101	0.00
	Chloroethane	0.241	0.227	5.8	109	0.00
	Trichlorofluoromethane	0.494	0.406	17.8	94	0.00
	Acrolein	0.040	0.052	-30.0#	177	0.00
C	1,1-Dichloroethene	0.623	0.580	6.9	110	0.00
	Freon 113	0.325	0.296	8.9	108	0.00
	Acetone	0.183	0.193	-5.5	122	0.00
	Carbon Disulfide	0.869	0.856	1.5	114	0.00
	Methylene Chloride	0.613	0.591	3.6	113	0.00
	trans-1,2-Dichloroethene	0.665	0.639	3.9	112	0.00
	Acrylonitrile	0.167	0.190	-13.8	138	0.00
	Methyl Tert Butyl Ether	0.823	0.822	0.1	115	0.00
P	1,1-Dichloroethane	0.700	0.674	3.7	110	0.00
	Vinyl acetate	0.977	1.041	-6.6	119	0.00
	Di-isopropyl ether	1.729	1.509	12.7	108	0.00
	2,2-Dichloropropane	0.274	0.247	9.9	99	0.00
	cis-1,2-Dichloroethene	0.308	0.313	-1.6	112	0.00
	2-Butanone	0.194	0.203	-4.6	124	0.00
	Bromochloromethane	0.146	0.149	-2.1	114	0.00
C	Chloroform	0.653	0.615	5.8	106	0.01
	1,1,1-Trichloroethane	0.502	0.474	5.6	107	0.00
S	Dibromofluoromethane	0.254	0.240	5.5	105	0.00
	1,1-Dichloropropene	0.482	0.490	-1.7	114	0.00
	Carbon Tetrachloride	0.347	0.335	3.5	105	0.00
S	1,2-Dichloroethane-d4	0.424	0.369	13.0	99	0.00
	Benzene	1.312	1.309	0.2	116	0.00
	1,2-Dichloroethane	0.609	0.556	8.7	105	0.00
	Trichloroethene	0.360	0.355	1.4	115	0.00
C	1,2-Dichloropropane	0.367	0.374	-1.9	129	0.00
	Dibromomethane	0.182	0.180	1.1	122	0.00
	1,4-Dioxane	0.003	0.004	-33.3#	157	0.00
	Bromodichloromethane	0.432	0.432	0.0	121	0.00
	2-Nitropropane	0.087	0.093	-6.9	129	0.00
	2-Chloroethyl vinyl ether	0.140	0.155	-10.7	132	0.00
	4-Methyl-2-pentanone	0.432	0.511	-18.3	140	0.00
	cis-1,3-Dichloropropene	0.454	0.484	-6.6	127	0.00

#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\062000\H008042.D
Acq On : 20 Jun 2000 8:52 am
Sample : CC97-40
Misc :
MS Integration Params: RTEINT.P

Vial: 1
Operator: RickW
Inst : MSVOA3
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\8260S.M (RTE Integrator)
Title : SWA 5035/8260B
Last Update : Mon Jun 19 14:18:51 2000
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
S	Toluene-d8	1.412	1.350	4.4	123	0.00
C	Toluene	1.911	1.853	3.0	128	0.00
	trans-1,3-Dichloropropene	0.568	0.582	-2.5	127	0.00
	1,1,2-Trichloroethane	0.360	0.361	-0.3	129	0.00
	Tetrachloroethene	0.470	0.475	-1.1	131	0.00
	2-hexanone	0.463	0.514	-11.0	143	0.00
	1,3-Dichloropropane	0.715	0.709	0.8	127	0.00
	Dibromochloromethane	0.374	0.382	-2.1	125	0.00
	1,2-Dibromoethane	0.340	0.345	-1.5	125	0.00
	1-Chlorohexane	0.578	0.657	-13.7	142	0.00
P	Chlorobenzene	1.132	1.148	-1.4	129	0.00
	1,1,1,2-Tetrachloroethane	0.376	0.381	-1.3	122	0.00
C	Ethylbenzene	2.135	2.158	-1.1	129	0.00
	m,p-Xylene	1.705	1.753	-2.8	126	0.00
	o-Xylene	1.798	1.754	2.4	123	0.00
	Styrene	1.073	1.228	-14.4	147	0.00
P	Bromoform	0.222	0.248	-11.7	129	0.00
I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	122	0.00
	Isopropylbenzene	3.657	3.727	-1.9	127	0.00
S	4-Bromofluorobenzene	1.186	1.171	1.3	123	0.00
	Bromobenzene	0.913	0.903	1.1	126	0.00
P	1,1,2,2-Tetrachloroethane	1.096	1.155	-5.4	135	0.00
	1,2,3-Trichloropropane	0.297	0.313	-5.4	131	0.00
	n-Propylbenzene	4.702	4.858	-3.3	130	0.00
	2-Chlorotoluene	3.165	3.174	-0.3	129	0.00
	4-Chlorotoluene	3.274	3.273	0.0	128	0.00
	1,3,5-Trimethylbenzene	3.294	3.384	-2.7	129	0.00
	sec-Butylbenzene	3.831	3.954	-3.2	130	0.00
	1,3-Dichlorobenzene	1.768	1.743	1.4	127	0.00
	4-Isopropyltoluene	2.928	3.153	-7.7	134	0.00
	1,4-Dichlorobenzene	1.723	1.765	-2.4	126	0.00
	tert-Butylbenzene	2.258	2.248	0.4	124	0.00
	n-Butylbenzene	3.224	3.382	-4.9	130	0.01
	1,2-Dichlorobenzene	1.635	1.641	-0.4	127	0.00
	1,2,4-Trimethylbenzene	3.277	3.403	-3.8	130	0.00
	1,2-Dibromo-3-Chloropropane	0.204	0.218	-6.9	127	0.00
	1,2,4-Trichlorobenzene	1.117	1.195	-7.0	132	0.00
	Hexachlorobutadiene	0.698	0.718	-2.9	123	0.00
	Naphthalene	2.412	2.627	-8.9	130	0.00
	1,2,3-Trichlorobenzene	1.083	1.096	-1.2	126	0.00

) = Out of Range SPCC's out = 0 CCC's out = 0

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Volatile Internal Standard Area Summary

Job Number: F6711
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Check Std: VH97-CC97 **Injection Date:** 06/20/00
Lab File ID: H008042.D **Injection Time:** 08:52
Instrument ID: GCMSH

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Check Std	552541	14.38	395110	19.60	201357	23.97
Upper Limit [a]	1105082	14.88	790220	20.10	402714	24.47
Lower Limit [b]	276271	13.88	197555	19.10	100679	23.47

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
VH97-BS4	559883	14.38	388155	19.60	173587	23.98
VH98-BS2	559883	14.38	388155	19.60	173587	23.98
VH99-BS	559883	14.38	388155	19.60	173587	23.98
VH97-MB4	493804	14.38	329221	19.61	160128	23.97
VH99-MB	493804	14.38	329221	19.61	160128	23.97
VH98-MB2	493804	14.38	329221	19.61	160128	23.97
ZZZZZZ	466605	14.38	201953	19.60	47662*	23.98
F6711-1	500853	14.38	355638	19.61	183423	23.98
F6711-2	519642	14.39	380282	19.61	195715	23.98
F6711-3	542812	14.39	386748	19.61	201058	23.99
F6711-6	627287	14.40	433729	19.61	220372	23.99
F6711-7	569744	14.40	396495	19.62	202979	23.99
ZZZZZZ	499427	14.39	247106	19.62	59674*	23.99
ZZZZZZ	506692	14.40	282706	19.62	88476*	23.99
ZZZZZZ	542275	14.39	360171	19.62	173972	23.99
ZZZZZZ	527538	14.40	282527	19.62	91716*	23.99
F6711-4	545971	14.39	380076	19.62	196210	24.00
F6711-5	634797	14.39	399861	19.62	208228	23.99

IS 1 = Fluorobenzene
IS 2 = Chlorobenzene-D5
IS 3 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of internal standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of internal standard area; Retention time -0.5 minutes.

Volatile Surrogate Recovery Summary

Job Number: F6711
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Method: SW846 8260B **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
F6711-1	H008046.D	98.0	98.0	102.0	100.0
F6711-2	H008047.D	95.0	101.0	111.0	97.0
F6711-3	H008048.D	92.0	100.0	108.0	94.0
F6711-4	H008058.D	88.0	120.0	135.0	89.0
F6711-5	H008059.D	90.0	96.0	101.0	89.0
F6711-6	H008051.D	87.0	102.0	107.0	86.0
F6711-7	H008052.D	86.0	100.0	105.0	85.0
F6718-1MS	H008039.D	94.0	101.0	99.0	87.0
F6718-1MSD	H008040.D	109.0	101.0	104.0	98.0
VH98-BS2	H008043.D	96.0	99.0	100.0	89.0
VH98-MB2	H008044.D	94.0	102.0	104.0	90.0
VH98-MB	H008026.D	96.0	97.0	101.0	96.0

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	71-122%
S2 = Toluene-D8	73-128%
S3 = 4-Bromofluorobenzene	53-158%
S4 = 1,2-Dichloroethane-D4	71-122%

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE ____ OF ____

CLIENT NAS Whiting Field		JOB NUMBER	
SUBJECT Sample Calc.			
BASED ON 35D0~~1020~~ 1115 (F6711-2)		DRAWING NUMBER	
BY DSS	CHECKED BY	APPROVED BY 10-17-00 JAJ	DATE 10/15/00

Fraction: Volatile
Matrix: Soil
Compound: Ethylbenzene
Form I: 2050 ug/kg

$$ug/kg = \frac{A_x (I_s)(DF)}{A_{is}(\overline{RRF})(W_s)(D)}$$

$$= \frac{729344 \text{ Area } (250.0 \text{ ng})(50)(1000)}{380282 \text{ Area } (2.135)(6.24 \text{ g})(0.877)}$$

$= 2051.8$ ng/g or ug/kg

$= 41037$ ng/g or ug/kg

$A_x = 729344$ Area

$I_s = 250$ ng

$DF = 1000 \; 50$

$A_{is} = 380282$ Area

$\overline{RRF} = 2.135$

$W_s = 6.24$ g

$D = 0.877$

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\062000\H008047.D
Acq On : 20 Jun 2000 ~~12:17 pm~~
Sample : F6711-2,6.24g/5mL-5uL
Misc : ms603,vh98,,,,,1000
MS Integration Params: RTEINT.P
Quant Time: Jun 21 10:29 2000

5ml-100ul
DF 50

Vial: 6
Operator: RickW
Inst : MSVOA3
Multiplr: 1.00

Quant Results File: 8260S.RES

Quant Method : C:\HPCHEM\1\METHODS\8260S.M (RTE Integrator)
Title : SWA 5035/8260B
Last Update : Mon Jun 19 14:18:51 2000
Response via : Initial Calibration
DataAcq Meth : 8260S

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	14.39	96	519642	50.00	ug/Kg	0.02
41) Chlorobenzene-d5	19.61	117	380282	50.00	ug/Kg	0.02
59) 1,4-Dichlorobenzene-d4	23.98	152	195715	50.00	ug/Kg	0.02

System Monitoring Compounds						
26) Dibromofluoromethane	13.21	113	125635	47.52	ug/Kg	0.02
Spiked Amount 50.000	Range 71 - 122		Recovery = 95.04%			
29) 1,2-Dichloroethane-d4	13.81	65	213103	48.32	ug/Kg	0.00
Spiked Amount 50.000	Range 71 - 122		Recovery = 96.64%			
42) Toluene-d8	17.07	98	542193	50.50	ug/Kg	0.02
Spiked Amount 50.000	Range 73 - 128		Recovery = 101.00%			
61) 4-Bromofluorobenzene	21.70	95	256873	55.34	ug/Kg	0.02
Spiked Amount 50.000	Range 53 - 158		Recovery = 110.68%			

Target Compounds						Qvalue
13) Methylene Chloride	10.01	49	65833	10.34	ug/Kg	96
38) 2-Chloroethyl vinyl ether	16.23	63	5597	3.84	ug/Kg#	1
54) Ethylbenzene	19.80	91	729344	44.91	ug/Kg	98
55) m,p-Xylene	20.01	91	603491	46.54	ug/Kg	97
60) Isopropylbenzene	21.38	105	103349	7.22	ug/Kg	100
65) n-Propylbenzene	22.13	91	370424	20.13	ug/Kg	99
68) 1,3,5-Trimethylbenzene	22.43	105	40054	3.11	ug/Kg	99
69) sec-Butylbenzene	23.54	105	90101	6.01	ug/Kg	100
71) 4-Isopropyltoluene	23.82	119	108830	9.49	ug/Kg	98
74) n-Butylbenzene	24.73	91	133317	10.56	ug/Kg	97
76) 1,2,4-Trimethylbenzene	23.19	105	2187196	170.50	ug/Kg	100
80) Naphthalene	28.39	128	275621	29.19	ug/Kg	98

#) = qualifier out of range (m) = manual integration

GC/MS Analysis Log

Date: 6-20-00 Analyst Signature: [signature] Run Batch: _____

Analysis Method: 624 / 8260 Column: DB-624 Detector: HP5970MSD

Method File: 8260S Instrument ID: H Calibration Date: 6-19-00

Data File	Sample ID	Sample Amt.	Matrix	PH	ALS #	Dil.	Method	Vial #	Comments
08041	BFB								
42	CC97-40	5g	S		1	1			V1575
43	BS	↓	↓		2	↓			V1611, V1603, V1601, 994
44	MB	↓	↓		3	↓			V1600, V1609, V1597
45	F6709-34	4.73	↓		4	↓			V1610
46	F6711-1	5.77	↓		5	↓	8260		ND IS/BS MS601, V1597
47	-2	6.24	↓		6	1000	↓		ND MS603
48	-3	6.03	↓		7	1	↓		✓ V1598
49	-4	6.21	↓		8	↓	↓		✓
50	-5	5.99	↓		9	↓	↓		RUN @ 50X
51	-6	5.97	↓		10	↓	↓		✓ PP, C.C.?
52	-7	6.08	↓		11	↓	↓		✓
53	F6740-1	5.06	↓		12	↓	↓		ND
54	-2	5.46	↓		13	↓	↓		✓ IS↓ PP MS605
55	-4	5.06	↓		14	↓	↓		✓ IS↓ V1599
56	-5	5.06	↓		15	↓	↓		ND
57	-7	5.05	↓		16	↓	↓		ND
58	F6711-4	6.34	↓		17	50	↓		ND
59	-5	6.03	↓		18	1	↓		✓ E
									✓

PAIN

Matrix W for water, L for non-aqueous liquid, S for soil, SOL for solid, and TCLP or SPLP for leachates.

Method Blank Summary

Job Number: F6711
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VH98-MB2	H008044.D	1	06/20/00	RAW	n/a	n/a	VH98

The QC reported here applies to the following samples: **Method:** SW846 8260B

F6711-1, F6711-2, F6711-3, F6711-4, F6711-5, F6711-6, F6711-7

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/kg	
71-43-2	Benzene	ND	5.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.0	ug/kg	
75-25-2	Bromoform	ND	5.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.0	ug/kg	
75-00-3	Chloroethane	ND	5.0	ug/kg	
67-66-3	Chloroform	ND	5.0	ug/kg	
75-15-0	Carbon disulfide	ND	10	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.0	ug/kg	
124-48-1	Dibromochloromethane	ND	5.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.0	ug/kg	
540-59-0	1,2-Dichloroethene (total)	ND	10	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.0	ug/kg	
591-78-6	2-Hexanone	ND	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	10	ug/kg	
74-83-9	Methyl bromide	ND	5.0	ug/kg	
74-87-3	Methyl chloride	ND	5.0	ug/kg	
75-09-2	Methylene chloride	ND	10	ug/kg	
78-93-3	Methyl ethyl ketone	ND	10	ug/kg	
100-42-5	Styrene	ND	5.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.0	ug/kg	
108-88-3	Toluene	ND	5.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.0	ug/kg	
75-01-4	Vinyl chloride	ND	5.0	ug/kg	
1330-20-7	Xylene (total)	ND	15	ug/kg	

Method Blank Summary

Job Number: F6711
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VH98-MB2	H008044.D	1	06/20/00	RAW	n/a	n/a	VH98

The QC reported here applies to the following samples: **Method:** SW846 8260B

F6711-1, F6711-2, F6711-3, F6711-4, F6711-5, F6711-6, F6711-7

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	94%	71-122%
2037-26-5	Toluene-D8	102%	73-128%
460-00-4	4-Bromofluorobenzene	104%	53-158%
17060-07-0	1,2-Dichloroethane-D4	90%	71-122%

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**T. HANSEN**	**DATE:**	**OCTOBER 6, 2000**
FROM:	**JENNIFER MALLE**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION-TAL METALS AND TCLP METALS**
CTO 079 –NAS WHITING FIELD
SDG – F6711

SAMPLES: 7/Soil/Leachates/

35D01020	35D01115	35D01132	35D01215
35D01230	35D01320	35D01325	

Overview

The sample set for CTO 079, NAS Whiting Field, SDG F6711 consists of seven (7) soil/leachate environmental samples.

All samples were analyzed for Target Analyte List (TAL) metals and Toxicity Characteristic Leaching Procedure (TCLP) metals. The samples were collected by Tetra Tech NUS on June 6, and analyzed by Accutest Laboratories under Naval Facilities Engineering Service Center (NFESC) Guidance Document, "Navy Installation Restoration Chemical Data Quality Manual" (September 1999). All metal analyses, with the exception of mercury, were conducted using analytical method SW846 6010B. Mercury analyses were conducted using SW846 method 7470/7471.

The data was evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • Calibration Verification
• Laboratory Blank Analysis
• ICP Interference Check Sample Results
• Matrix Spike/Matrix Spike Duplicate Recoveries
* • Laboratory Duplicate Precision
* • Laboratory Control Sample Recoveries
• ICP Serial Dilution Recoveries
* • Sample Quanitation
* • Detection Limits

* - All quality control criteria were met for this parameter.

Laboratory Blank Analyses

The following contaminants were detected in the laboratory method/preparation blanks at the following maximum concentrations:

Affected samples : TAL metals

Analyte	Maximum Concentration	Action Level(soil)
Aluminum	51.5 ug/L	25.75 mg/kg
Arsenic	4.4 ug/L	2.2 mg/kg
Barium	1.2 ug/L	0.6 mg/kg
Beryllium	1.8 ug/L	0.9 mg/kg
Cadmium	1.1 ug/L	0.55 mg/kg
Calcium	23.5 ug/L	11.75 mg/kg
Chromium (1)	2.0 mg/kg	10 mg/kg
Cobalt	1.2 ug/L	0.6 mg/kg
Copper	0.99 ug/L	0.5 mg/kg
Iron (1)	19.4 mg/kg	97 mg/kg
Magnesium	28.3 ug/L	14.15 mg/kg
Manganese (1)	0.93 mg/kg	4.65 mg/kg
Mercury	0.20 ug/L	0.167 mg/kg
Nickel (1)	5.4 mg/kg	27 mg/kg
Selenium	4.2 ug/L	2.1 mg/kg
Silver (1)	0.16 mg/kg	0.80 mg/kg
Vanadium	1.0 ug/L	0.50 mg/kg
Zinc	1.3 ug/L	0.65 mg/kg

(1) – Maximum concentration is present in a soil preparation blank

An action level of 5X the maximum concentration was used to evaluate the sample data for blank contamination. Sample aliquot, percent solids and dilution factors were taken into consideration in evaluation for blank contamination. Positive results less than the action level for arsenic, beryllium, chromium, cobalt, mercury, nickel, potassium, selenium and silver were qualified as nondetected, "U", due to laboratory blank contamination. No validation action was required for the remaining analytes since the results reported for these analytes were either greater than the action level or nondetected.

Affected samples : TCLP metals

Analyte	Maximum Concentration	Action Level(leachate)
Arsenic	3.5 ug/L	17.5 ug/L
Barium	1.1 ug/L	5.5 ug/L
Cadmium	1.2 ug/L	6.0 ug/L
Chromium	1.3 ug/L	6.5 ug/L
Lead	2.8 ug/L	14 ug/L
Selenium	5.0 ug/L	25 ug/L
Silver	0.97 ug/L	4.85 ug/L

An action level of 5X the maximum concentration was used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken into consideration in evaluation for blank contamination. Validation action was not required for the TCLP metals since results were nondetected.

ICP Interference Results

The interfering analyte iron was present in sample 35D01020 at a concentration which was comparable to the level of iron in the Interference Check Sample (ICS) solution. Several analytes namely antimony, barium, cadmium, chromium, cobalt, lead, manganese, nickel, potassium, selenium, silver, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for antimony, cadmium, lead and thallium in the affected sample. The positive results reported for antimony and lead were qualified as estimated, "J". The nondeteced results reported for cadmium and thallium were qualified as estimated, "UJ".

The interfering analytes aluminum and iron were present in sample 35D01115 at concentrations which were comparable to the levels of aluminum and iron in the Interference Check Sample (ICS) solution. Several analytes namely antimony, barium, cadmium, chromium, cobalt, lead, manganese, nickel, potassium, selenium, silver, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for antimony, cadmium, cobalt, lead and thallium in the affected sample. The positive results reported for antimony, cobalt and lead were qualified as estimated, "J". The nondetected results reported for cadmium and thallium were qualified as estimated, "UJ".

The interfering analytes aluminum and iron were present in sample 35D01215 at concentrations which were comparable to the levels of aluminum and iron in the Interference Check Sample (ICS) solution. Several analytes namely antimony, barium, cadmium, chromium, cobalt, lead, manganese, nickel, potassium, selenium, silver, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for antimony, cadmium, cobalt and thallium in the affected sample. The positive results reported for antimony and cobalt were qualified as estimated, "J". The nondetected results reported for cadmium and thallium were qualified as estimated, "UJ".

The interfering analyte iron was present in sample 35D01320 at a concentration which was comparable to the level of iron in the Interference Check Sample (ICS) solution. Several analytes namely antimony, barium, cadmium, chromium, cobalt, lead, manganese, nickel, potassium, selenium, silver, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for antimony, cadmium, lead and thallium in the affected sample. The positive results reported for antimony and lead were qualified as estimated, "J". The nondeteced results reported for cadmium and thallium were qualified as estimated, "UJ".

Matrix Spike/Matrix Spike Duplicate Results

The Matrix Spike/Matrix Spike Duplicate (MS/MSD) Percent Recovery (%R) reported for antimony affecting the TAL metal samples was less than the 75% quality control limits. The positive and nondetected results reported for antimony in the affected samples were qualified as estimated, "J" and "UJ", respectively.

ICP Serial Dilution Results

ICP Serial Dilution Percent Recoveries (%Rs) for barium, chromium iron, manganese, vanadium and zinc affecting the TAL metal samples were greater than 10% quality control limits and 50X their respective IDL. The positive results reported for barium, chromium iron, manganese, vanadium and zinc in the affected samples were qualified as estimated, "J".

Notes

The Contract Required Detection Limit (CRDL) Percent Recovery for calcium, chromium, and zinc were greater than the 120% quality control limit. However, validation action was not required as per regional guidance.

Executive Summary

Laboratory Performance: Several contaminants were present in the laboratory method/preparation blanks.

Other Factors Affecting Data Quality: MS noncompliance was noted for antimony in the sediment matrix. Serial dilution noncompliance was noted for barium, chromium iron, manganese, vanadium and zinc.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994 and the NFESC document entitled "Navy IRCDQM" (NFESC 9/99).

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
Jennifer Malle
Environmental Scientist

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

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

APPENDIX A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

SOIL DATA
Accutest, NJ
SDG: F6711

SAMPLE NUMBER:	35D01020			35D01115			35D01132			35D01215		
SAMPLE DATE:	06/06/00			06/06/00			06/06/00			06/06/00		
LABORATORY ID:	F6711-1			F6711-2			F6711-3			F6711-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	88.5 %			87.7 %			86.8 %			87.0 %		
UNITS:	MG/KG			MG/KG			MG/KG			MG/KG		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	22400			35600			1580			34600		
ANTIMONY	0.49	J	DK	0.78	J	DK	0.30	UJ	D	0.77	J	DK
ARSENIC	5.9			7.0			1.2	U	A	6.4		
BARIUM	5.8	J	I	7.0	J	I	5.5	J	I	7.9	J	I
BERYLLIUM	0.12	U	A	0.14	U	A	0.10	U	A	0.14	U	A
CADMIUM	0.04	UJ	K	0.04	UJ	K	0.04	U		0.04	UJ	K
CALCIUM	75.8			93.1			83.3			215		
CHROMIUM	24.4	J	I	29.7	J	I	2.5	U	A	32.2	J	I
COBALT	0.52	U	A	0.80	J	K	0.13	U	A	0.75	J	K
COPPER	8.1			10.2			2.8			10.6		
IRON	20900	J	I	24800	J	I	2540	J	I	24700	J	I
LEAD	2.2	J	K	4.7	J	K	2.3			12.3		
MAGNESIUM	64.8			82.2			48.5			73.0		
MANGANESE	16.0	J	I	35.9	J	I	5.9	J	I	33.3	J	I
MERCURY	0.04	U	A	0.03	U	A	0.03	U	A	0.03	U	A
NICKEL	1.2	U	A	1.8	U	A	0.13	U	A	1.8	U	A
POTASSIUM	64.7			144			67.4			110		
SELENIUM	0.30	U	A	2.4			0.25	U		2.1	U	A
SILVER	0.11	U		0.11	U		0.13	U	A	0.11	U	
SODIUM	103			91.6			151			101		
THALLIUM	0.31	UJ	K	0.31	UJ	K	0.33	U		0.30	UJ	K
VANADIUM	61.5	J	I	65.6	J	I	14.5	J	I	62.9	J	I
ZINC	5.9	J	I	7.6	J	I	5.3	J	I	8.2	J	I

SOIL DATA
Accutest, NJ
SDG: F6711

SAMPLE NUMBER:	35D01230			35D01320			35D01325					
SAMPLE DATE:	06/06/00			06/06/00			06/06/00			/ /		
LABORATORY ID:	F6711-5			F6711-6			F6711-7					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	86.3 %			88.4 %			87.1 %			100.0 %		
UNITS:	MG/KG			MG/KG			MG/KG					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	3210			19500			2580					
ANTIMONY	0.27	J	D	0.42	J	DK	0.28	UJ	D			
ARSENIC	4.7			5.2			0.96	U	A			
BARIUM	9.6	J	I	4.7	J	I	9.1	J	I			
BERYLLIUM	0.15	U	A	0.11	U	A	0.12	U	A			
CADMIUM	0.03	U		0.04	UJ	K	0.04	U				
CALCIUM	229			163			110					
CHROMIUM	27.0	J	I	18.8	J	I	2.2	U	A			
COBALT	0.21	U	A	0.35	U	A	0.16	U	A			
COPPER	6.4			6.6			2.2					
IRON	7260	J	I	17500	J	I	1460	J	I			
LEAD	5.3			2.4	J	K	3.6					
MAGNESIUM	137			65.8			90.8					
MANGANESE	5.5	J	I	15.3	J	I	6.3	J	I			
MERCURY	0.04	U	A	0.14	U	A	0.03	U	A			
NICKEL	1.4	U	A	1.1	U	A	0.27	U	A			
POTASSIUM	135			67.3			134					
SELENIUM	0.21	U		0.34	U	A	0.70	U	A			
SILVER	0.11	U	A	0.11	U		0.14	U	A			
SODIUM	123			115			95.3					
THALLIUM	0.28	U		0.31	UJ	K	0.32	U				
VANADIUM	55.6	J	I	48.7	J	I	7.3	J	I			
ZINC	4.7	J	I	5.6	J	I	5.4	J	I			

TCLP DATA
Accutest, NJ
SDG: F6711

SAMPLE NUMBER:	35D01020			35D01115			35D01132			35D01215		
SAMPLE DATE:	06/06/00			06/06/00			06/06/00			06/06/00		
LABORATORY ID:	F6711-1A			F6711-2A			F6711-3A			F6711-4A		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ARSENIC	3.5	U		3.5	U		3.5	U		3.5	U	
BARIUM	0.39	U		0.39	U		0.39	U		0.39	U	
CADMIUM	0.33	U		0.33	U		0.33	U		0.33	U	
CHROMIUM	0.63	U		0.63	U		0.63	U		0.63	U	
LEAD	1.6	U		1.6	U		1.6	U		1.6	U	
MERCURY	0.60	U		0.60	U		0.60	U		0.60	U	
SELENIUM	2.0	U		2.0	U		2.0	U		2.0	U	
SILVER	0.96	U		0.96	U		0.96	U		0.96	U	

TCLP DATA
Accutest, NJ
SDG: F6711

SAMPLE NUMBER:	35D01230			35D01320			35D01325				
SAMPLE DATE:	06/06/00			06/06/00			06/06/00			/ /	
LABORATORY ID:	F6711-5A			F6711-6A			F6711-7A				
QC_TYPE:	NORMAL			NORMAL			NORMAL				
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %	
UNITS:	UG/L			UG/L			UG/L				
FIELD DUPLICATE OF:											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ARSENIC	3.5	U		3.5	U		3.5	U				
BARIUM	0.39	U		0.39	U		0.39	U				
CADMIUM	0.33	U		0.33	U		0.33	U				
CHROMIUM	0.63	U		0.63	U		0.63	U				
LEAD	1.6	U		1.6	U		1.6	U				
MERCURY	0.60	U		0.60	U		0.60	U				
SELENIUM	2.0	U		2.0	U		2.0	U				
SILVER	0.96	U		0.96	U		0.96	U				

APPENDIX B

Results as Reported by the Laboratory

Report of Analysis

Client Sample ID: 35D01020
Lab Sample ID: F6711-1
Matrix: SO - Soil

Project: NAS Whiting Field PO#NOO52-MSA0200-014

Date Sampled: 06/06/00
Date Received: 06/07/00
Percent Solids: 88.5

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	22400	23.3	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Antimony	0.49 B	7.0	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Arsenic	5.9	0.58	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Barium	5.8 B	23.3	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Beryllium	0.12 B	0.58	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Cadmium	0.04 U	0.47	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Calcium	75.8 B	582	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Chromium	24.4	1.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Cobalt	0.52 B	5.8	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Copper	8.1	2.9	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Iron	20900	11.6	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Lead	2.2 B	11.6	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Magnesium	64.8 B	582	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Manganese	16.0	1.7	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Mercury	0.04 B	0.19	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Nickel	1.2 B	4.7	mg/kg	1	06/12/00	06/14/00	SJL	SW846 7471A
Potassium	64.7 B	582	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Selenium	0.30 B	11.6	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Silver	0.11 U	1.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Sodium	103 B	582	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Thallium	0.31 U	1.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Vanadium	61.5	5.8	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Zinc	5.9	2.3	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	35D01115		
Lab Sample ID:	F6711-2	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
		Percent Solids:	87.7
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	35600	23.0	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Antimony	0.78 B	6.9	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Arsenic	7.0	0.58	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Barium	7.0 B	23.0	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Beryllium	0.14 B	0.58	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Cadmium	0.04 U	0.46	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Calcium	93.1 B	576	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Chromium	29.7	1.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Cobalt	0.80 B	5.8	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Copper	10.2	2.9	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Iron	24800	11.5	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Lead	4.7 B	11.5	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Magnesium	82.2 B	576	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Manganese	35.9	1.7	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Mercury	0.03 B	0.20	mg/kg	1	06/12/00	06/14/00	SJL	SW846 7471A
Nickel	1.8 B	4.6	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Potassium	144 B	576	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Selenium	2.4 B	11.5	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Silver	0.11 U	1.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Sodium	91.6 B	576	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Thallium	0.31 U	1.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Vanadium	65.6	5.8	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Zinc	7.6	2.3	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	35D01132		
Lab Sample ID:	F6711-3	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
		Percent Solids:	86.8
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	1580	24.8	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Antimony	0.30 U	7.4	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Arsenic	1.2	0.62	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Barium	5.5 B	24.8	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Beryllium	0.10 B	0.62	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Cadmium	0.04 U	0.50	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Calcium	83.3 B	619	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Chromium	2.5	1.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Cobalt	0.13 B	6.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Copper	2.8 B	3.1	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Iron	2540	12.4	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Lead	2.3 B	12.4	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Magnesium	48.5 B	619	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Manganese	5.9	1.9	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Mercury	0.03 B	0.19	mg/kg	1	06/12/00	06/14/00	SJL	SW846 7471A
Nickel	0.13 B	5.0	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Potassium	67.4 B	619	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Selenium	0.25 U	12.4	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Silver	0.13 B	1.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Sodium	151 B	619	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Thallium	0.33 U	1.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Vanadium	14.5	6.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Zinc	5.3	2.5	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	35D01215		
Lab Sample ID:	F6711-4	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
		Percent Solids:	87.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By		Method
Aluminum	34600	22.5	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Antimony	0.77 B	6.8	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Arsenic	6.4	0.56	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Barium	7.9 B	22.5	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Beryllium	0.14 B	0.56	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Cadmium	0.04 U	0.45	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Calcium	215 B	563	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Chromium	32.2	1.1	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Cobalt	0.75 B	5.6	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Copper	10.6	2.8	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Iron	24700	11.3	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Lead	12.3	11.3	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Magnesium	73.0 B	563	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Manganese	33.3	1.7	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Mercury	0.03 B	0.19	mg/kg	1	06/12/00	06/14/00	SJL	SW846 7471A
Nickel	1.8 B	4.5	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Potassium	110 B	563	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Selenium	2.1 B	11.3	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Silver	0.11 U	1.1	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Sodium	101 B	563	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Thallium	0.30 U	1.1	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Vanadium	62.9	5.6	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Zinc	8.2	2.3	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID: 35D01230
Lab Sample ID: F6711-5
Matrix: SO - Soil
Date Sampled: 06/06/00
Date Received: 06/07/00
Percent Solids: 86.3
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	3210	20.9	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Antimony	0.27 B	6.3	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Arsenic	4.7	0.52	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Barium	9.6 B	20.9	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Beryllium	0.15 B	0.52	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Cadmium	0.03 U	0.42	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Calcium	229 B	522	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Chromium	27.0	1.0	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Cobalt	0.21 B	5.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Copper	6.4	2.6	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Iron	7260	10.4	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Lead	5.3 B	10.4	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Magnesium	137 B	522	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Manganese	5.5	1.6	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Mercury	0.04 B	0.21	mg/kg	1	06/12/00	06/14/00	SJL	SW846 7471A
Nickel	1.4 B	4.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Potassium	135 B	522	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Selenium	0.21 U	10.4	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Silver	0.11 B	1.0	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Sodium	123 B	522	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Thallium	0.28 U	1.0	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Vanadium	55.6	5.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Zinc	4.7	2.1	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID: 35D01320
Lab Sample ID: F6711-6
Matrix: SO - Soil
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Date Sampled: 06/06/00
Date Received: 06/07/00
Percent Solids: 88.4

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By		Method
Aluminum	19500	23.1	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Antimony	0.42 B	6.9	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Arsenic	5.2	0.58	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Barium	4.7 B	23.1	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Beryllium	0.11 B	0.58	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Cadmium	0.04 U	0.46	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Calcium	163 B	577	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Chromium	18.8	1.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Cobalt	0.35 B	5.8	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Copper	6.6	2.9	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Iron	17500	11.5	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Lead	2.4 B	11.5	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Magnesium	65.8 B	577	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Manganese	15.3	1.7	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Mercury	0.14 B	0.18	mg/kg	1	06/12/00	06/14/00	SJL	SW846 7471A
Nickel	1.1 B	4.6	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Potassium	67.3 B	577	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Selenium	0.34 B	11.5	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Silver	0.11 U	1.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Sodium	115 B	577	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Thallium	0.31 U	1.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Vanadium	48.7	5.8	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Zinc	5.6	2.3	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID: 35D01325
Lab Sample ID: F6711-7
Matrix: SO - Soil
Date Sampled: 06/06/00
Date Received: 06/07/00
Percent Solids: 87.1
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	2580	23.7	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Antimony	0.28 U	7.1	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Arsenic	0.96	0.59	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Barium	9.1 B	23.7	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Beryllium	0.12 B	0.59	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Cadmium	0.04 U	0.47	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Calcium	110 B	592	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Chromium	2.2	1.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Cobalt	0.16 B	5.9	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Copper	2.2 B	3.0	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Iron	1460	11.8	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Lead	3.6 B	11.8	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Magnesium	90.8 B	592	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Manganese	6.3	1.8	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Mercury	0.03 B	0.18	mg/kg	1	06/26/00	06/27/00	SJL	SW846 7471A
Nickel	0.27 B	4.7	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Potassium	134 B	592	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Selenium	0.70 B	11.8	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Silver	0.14 B	1.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Sodium	95.3 B	592	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Thallium	0.32 U	1.2	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Vanadium	7.3	5.9	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A
Zinc	5.4	2.4	mg/kg	1	06/16/00	06/22/00	SJL	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	35D01020		
Lab Sample ID:	F6711-1A	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
		Percent Solids:	88.5
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis, TCLP Leachate

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method
Arsenic	<0.50	D004	5.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Barium	<1.0	D005	100	1.0	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Cadmium	<0.050	D006	1.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Chromium	<0.050	D007	5.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Lead	<0.50	D008	5.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Mercury	<0.0020	D009	0.20	0.0020	mg/l	1	06/25/00	06/26/00	SJL	SW846 7470A
Selenium	<0.50	D010	1.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Silver	<0.050	D011	5.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

Report of Analysis

Client Sample ID:	35D01115		
Lab Sample ID:	F6711-2A	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
		Percent Solids:	87.7
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis, TCLP Leachate

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method
Arsenic	<0.50	D004	5.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Barium	<1.0	D005	100	1.0	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Cadmium	<0.050	D006	1.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Chromium	<0.050	D007	5.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Lead	<0.50	D008	5.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Mercury	<0.0020	D009	0.20	0.0020	mg/l	1	06/25/00	06/26/00	SJL	SW846 7470A
Selenium	<0.50	D010	1.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Silver	<0.050	D011	5.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

Report of Analysis

Client Sample ID: 35D01132
Lab Sample ID: F6711-3A
Matrix: SO - Soil
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Date Sampled: 06/06/00
Date Received: 06/07/00
Percent Solids: 86.8

Metals Analysis, TCLP Leachate

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method
Arsenic	<0.50	D004	5.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Barium	<1.0	D005	100	1.0	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Cadmium	<0.050	D006	1.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Chromium	<0.050	D007	5.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Lead	<0.50	D008	5.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Mercury	<0.0020	D009	0.20	0.0020	mg/l	1	06/25/00	06/26/00	SJL	SW846 7470A
Selenium	<0.50	D010	1.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Silver	<0.050	D011	5.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

Report of Analysis

Client Sample ID:	35D01215		
Lab Sample ID:	F6711-4A	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
		Percent Solids:	87.0
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis, TCLP Leachate

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method
Arsenic	<0.50	D004	5.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Barium	<1.0	D005	100	1.0	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Cadmium	<0.050	D006	1.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Chromium	<0.050	D007	5.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Lead	<0.50	D008	5.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Mercury	<0.0020	D009	0.20	0.0020	mg/l	1	06/25/00	06/26/00	SJL	SW846 7470A
Selenium	<0.50	D010	1.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Silver	<0.050	D011	5.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

Report of Analysis

Client Sample ID:	35D01230		
Lab Sample ID:	F6711-5A	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
		Percent Solids:	86.3
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis, TCLP Leachate

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method
Arsenic	<0.50	D004	5.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Barium	<1.0	D005	100	1.0	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Cadmium	<0.050	D006	1.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Chromium	<0.050	D007	5.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Lead	<0.50	D008	5.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Mercury	<0.0020	D009	0.20	0.0020	mg/l	1	06/25/00	06/26/00	SJL	SW846 7470A
Selenium	<0.50	D010	1.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Silver	<0.050	D011	5.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

Report of Analysis

Client Sample ID:	35D01320		
Lab Sample ID:	F6711-6A	**Date Sampled:**	06/06/00
Matrix:	SO - Soil	**Date Received:**	06/07/00
		Percent Solids:	88.4
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis, TCLP Leachate

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method
Arsenic	<0.50	D004	5.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Barium	<1.0	D005	100	1.0	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Cadmium	<0.050	D006	1.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Chromium	<0.050	D007	5.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Lead	<0.50	D008	5.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Mercury	<0.0020	D009	0.20	0.0020	mg/l	1	06/25/00	06/26/00	SJL	SW846 7470A
Selenium	<0.50	D010	1.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Silver	<0.050	D011	5.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

Report of Analysis

Client Sample ID: 35D01325
Lab Sample ID: F6711-7A
Matrix: SO - Soil
Date Sampled: 06/06/00
Date Received: 06/07/00
Percent Solids: 87.1
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Metals Analysis, TCLP Leachate

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method
Arsenic	<0.50	D004	5.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Barium	<1.0	D005	100	1.0	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Cadmium	<0.050	D006	1.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Chromium	<0.050	D007	5.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Lead	<0.50	D008	5.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Mercury	<0.0020	D009	0.20	0.0020	mg/l	1	06/25/00	06/26/00	SJL	SW846 7470A
Selenium	<0.50	D010	1.0	0.50	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A
Silver	<0.050	D011	5.0	0.050	mg/l	1	06/25/00	06/25/00	SJL	SW846 6010A

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)

APPENDIX C

Support Documentation

ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: Tetra Tech NUS Inc
ADDRESS: 1401 Oven Park Dr Suite 102
CITY, STATE, ZIP: Tallahassee FL 32312
SEND REPORT TO:
PHONE #: 850-385-9899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting Field
LOCATION: Milton FL
PROJECT NO.: N0052 Site 35
FAX #: 850-385-9860

ANALYTICAL INFORMATION

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	TCL VOCs	TAL Inorganics	TCLP							LAB USE ONLY
F6711-1	35D01020	6/6/00	0845	RDM	SO	3					X	X									
-1-7	35D01020	6/6/00	0845	RDM	SO	2					X		X	X							
-2-8	35D01115	6/6/00	0945	RDM	SO	3					X	X						FID 27,097			
-2-9	35D01115	6/6/00	0945	RDM	SO	2					X		X	X				"			
-3-5	35D01132	6/6/00	1055	RDM	SO	3					X	X									
-3-6	35D01132	6/6/00	1055	RDM	SO	2					X		X	X							
-4-7	35D01215	6/6/00	1310	RDM	SO	3					X	X						FID 1739			
-4-8	35D01215	6/6/00	1310	RDM	SO	2					X		X	X				"			
-5-9	35D01230	6/6/00	1355	RDM	SO	3					X	X									
-5-10	35D01230	6/6/00	1355	RDM	SO	2					X		X	X							

DATA TURNAROUND INFORMATION

- [x] STANDARD
- [ ] 48 HOUR RUSH
- [ ] 24 HOUR EMERGENCY
- [ ] OTHER

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- [x] STANDARD
- [ ] COMMERCIAL "B"
- [x] DISK DELIVERABLE
- [ ] STATE FORMS
- [ ] OTHER (SPECIFY)

COMMENTS/REMARKS

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
	6/6/00 1700	1. Mike Zenell 6/7/00 0900	2.		2.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY: 3.	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
	DATE TIME:	RECEIVED BY: 5.	SEAL #	PRESERVE WHERE APPLICABLE ☐	ON ICE ☐ TEMPERATURE 2.8 C

CLIENT INFORMATION

NAME: Tetratech NUS, Inc
ADDRESS: 1401 Oven Park Dr Suite 102
CITY, STATE, ZIP: Tallahassee FL 32312
SEND REPORT TO:
PHONE #: 850-385-9899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting Field
LOCATION: Milton FL
PROJECT NO.: N0052 Site 35
FAX #: 850-385-~~9899~~ 9860

ANALYTICAL INFORMATION

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	TCL VOCS	TAL Inorganics	TCLP								LAB USE ONLY
F6711-1-35	D01320	6/6/00	1453	RDM	SO	3					X	X				FID 254.0						
-2-35	D01320	6/6/00	1453	RDM	SO	2					X		X	X		"						
-7 -3	35D01325	6/6/00	1510	RDM	SO	3					X	X										
-7 -4	35D01325	6/6/00	1510	RDM	SO	2					X		X	X								

MF 6/7/00

RDMunson

DATA TURNAROUND INFORMATION

- [x] STANDARD
- [ ] 48 HOUR RUSH
- [ ] 24 HOUR EMERGENCY
- [ ] OTHER

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- [x] STANDARD
- [ ] COMMERCIAL "B"
- [x] DISK DELIVERABLE
- [ ] STATE FORMS
- [ ] OTHER (SPECIFY)

COMMENTS/REMARKS

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1. RDMunson	6/6/00 1700	1. Mike Jones 6/7/00 0900	2.		2.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
		3.	4.		4.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY:	SEAL #	PRESERVE WHERE APPLICABLE ☐	ON ICE ☐ TEMPERATURE 7.6 C
		5.			

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0627S1.HGX
QC Limits: to % Recovery

Date Analyzed: 06/27/00
Run ID: MA1921

Methods: SW846 7471A
Units: ug/l

Metal	CRI True	CRIA True	CRI Results	% Rec
Mercury	0.50		0.58B	116.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0626W1.HGX
QC Limits: to % Recovery

Date Analyzed: 06/26/00
Run ID: MA1917

Methods: SW846 7470A
Units: ug/l

Metal	CRI True	CRIA True	CRI Results	% Rec
Mercury	0.50		0.55	110.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0625M1.ASC
QC Limits: 70 to 130 % Recovery

Date Analyzed: 06/25/00
Run ID: MA1914

Methods: SW846 6010A
Units: ug/l

Metal	CRI True	CRIA True	CRI Results	% Rec	CRI Results	% Rec	CRIA Results	% Rec
Aluminum	200							
Antimony		5.0						
Arsenic		10					11.2	112.0
Barium	200				176	88.0		
Beryllium	5.0							
Cadmium	5.0				4.5	90.0		
Calcium	1000							
Chromium	10				12.9	129.0		
Cobalt	50							
Copper	25							
Iron	300							
Lead		5.0					5.9	118.0
Magnesium	5000							
Manganese	15							
Molybdenum	50							
Nickel	40							
Potassium	5000							
Selenium		10					9.9	99.0
Silver	10				9.1	91.0		
Sodium	5000							
Thallium		10						
Tin	50							
Vanadium	50							
Zinc	20							

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0622M1.ASC Date Analyzed: 06/22/00 Methods: SW846 6010A
QC Limits: 70 to 130 % Recovery Run ID: MA1911 Units: ug/l

Metal	CRI True	CRIA True	CRI Results	% Rec	CRIA Results	% Rec
Aluminum	200		220	110.0		
Antimony		5.0			4.6	92.0
Arsenic		10			11.1	111.0
Barium	200		200	100.0		
Beryllium	5.0		5.6	112.0		
Cadmium	5.0		5.2	104.0		
Calcium	1000		1270	127.0		
Chromium	10		10.4	104.0		
Cobalt	50		50.8	101.6		
Copper	25		25.1	100.4		
Iron	400		404	101.0		
Lead		6.0			7.2	120.0
Magnesium	5000		6010	120.2		
Manganese	15		15.7	104.7		
Molybdenum	100		anr			
Nickel	40		41.8	104.5		
Potassium	5000		4410	88.2		
Selenium		10			11.9	119.0
Silver	10		10.1	101.0		
Sodium	500		408	82.0		
Thallium		10			11.9	119.0
Tin	100		anr			
Vanadium	50		52.8	105.6		
Zinc	20		24.6	123.0		

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG061481.HGX Date Analyzed: 06/14/00 Methods: SW846 7471A
QC Limits: to % Recovery Run ID: MA1903 Units: ug/l

Metal	CRI True	CRIA True	CRI Results	% Rec
Mercury	0.50		0.48B	96.0

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0625M1.ASC
QC Limits: result < RL

Date Analyzed: 06/25/00
Run ID: MA1914

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	anr							
Antimony	5.0	2.39	anr							
Arsenic	10	3.4	2.3	<10	3.0	<10	3.2	<10	2.2	<10.0
Barium	200	.39	1.0	<200	0.58	<200	0.54	<200	0.60	<200B
Beryllium	5.0	.36	anr							
Cadmium	5.0	.33	1.2	<5.0<	0.78	<5.0	0.71	<5.0	0.60	<5.0B
Calcium	1000	19.5	anr							
Chromium	10	.637	1.2	<10	0.67	<10	0.59	<10	0.50	<10.0
Cobalt	50	.797	anr							
Copper	25	.747	anr							
Iron	300	32	anr							
Lead	5.0	1.59	2.8	<5.0	2.3	<5.0	1.8	<5.0	2.0	<5.0B
Magnesium	5000	17.6	anr							
Manganese	15	.16	anr							
Molybdenum	50	.68								
Nickel	40	1	anr							
Potassium	5000	28.2	anr							
Selenium	10	2	3.5	<10	2.6	<10	3.0	<10	4.5	<10.0B
Silver	10	.96	0.040	<10	0.40	<10	0.53	<10	0.80	<10.0
Sodium	5000	153	anr							
Thallium	10	2.69	anr							
Tin	50	2.2								
Vanadium	50	.717	anr							
Zinc	20	.83	anr							

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#NO052-MSA0200-014

File ID: IR0625M1.ASC Date Analyzed: 06/25/00 Methods: SW846 6010A
QC Limits: result < RL Run ID: MA1914 Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	anr							
Antimony	5.0	2.39	anr							
Arsenic	10	3.4	1.3	<10	1.7	<10.0	1.5	<10.0	3.0	<10
Barium	200	.39	0.56	<200	0.60	<200B	0.70	<200B	0.98	<200
Beryllium	5.0	.36	anr							
Cadmium	5.0	.33	0.58	<5.0	0.60	<5.0B	0.60	<5.0B	0.64	<5.0
Calcium	1000	19.5	anr							
Chromium	10	.637	0.47	<10	0.40	<10.0	0.60	<10.0B	0.82	<10
Cobalt	50	.797	anr							
Copper	25	.747	anr							
Iron	300	32	anr							
Lead	5.0	1.59	0.12	<5.0	1.6	<5.0	0.90	<5.0	2.0	<5.0
Magnesium	5000	17.6	anr							
Manganese	15	.16	anr							
Molybdenum	50	.68								
Nickel	40	1	anr							
Potassium	5000	28.2	anr							
Selenium	10	2	1.6	<10	3.1	<10.0B	1.9	<10.0	2.4	<10
Silver	10	.96	0.18	<10	0.80	<10.0	0.90	<10.0	0.97	<10
Sodium	5000	153	anr							
Thallium	10	2.69	anr							
Tin	50	2.2								
Vanadium	50	.717	anr							
Zinc	20	.83	anr							

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0625M1.ASC
QC Limits: result < RL

Date Analyzed: 06/25/00
Run ID: MA1914

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final
Aluminum	200	30	anr			
Antimony	5.0	2.39	anr			
Arsenic	10	3.4	3.5	<10	3.3	<10
Barium	200	.39	1.1	<200	0.73	<200
Beryllium	5.0	.36	anr			
Cadmium	5.0	.33	1.2	<5.0<	0.73	<5.0
Calcium	1000	19.5	anr			
Chromium	10	.637	1.3	<10	0.59	<10
Cobalt	50	.797	anr			
Copper	25	.747	anr			
Iron	300	32	anr			
Lead	5.0	1.59	1.9	<5.0	1.8	<5.0
Magnesium	5000	17.6	anr			
Manganese	15	.16	anr			
Molybdenum	50	.68				
Nickel	40	1	anr			
Potassium	5000	28.2	anr			
Selenium	10	2	5.0	<10	2.9	<10
Silver	10	.96	0.97	<10	0.79	<10
Sodium	5000	153	anr			
Thallium	10	2.69	anr			
Tin	50	2.2				
Vanadium	50	.717	anr			
Zinc	20	.83	anr			

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0622M1.ASC Date Analyzed: 06/22/00 Methods: SW846 6010A
QC Limits: result < RL Run ID: MA1911 Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	11.9	<200	14.0	<200	24.9	<200	24.0	<200
Antimony	5.0	2.39	-0.010	<5.0	0.62	<5.0	1.3	<5.0	1.0	<5.0
Arsenic	10	3.4	2.4	<10	2.4	<10	0.38	<10	1.5	<10.0
Barium	200	.39	0.61	<200	0.74	<200	0.73	<200	0.80	<200B
Beryllium	5.0	.36	0.83	<5.0	0.98	<5.0	1.2	<5.0<	1.3	<5.0B
Cadmium	5.0	.33	0.51	<5.0	0.63	<5.0	0.67	<5.0	0.90	<5.0B
Calcium	1000	19.5	10.6	<1000	12.1	<1000	23.5	<1000	12.0	<1000
Chromium	10	.637	-0.070	<10	0.020	<10	-0.070	<10	0	<10.0
Cobalt	50	.797	0.45	<50	0.58	<50	0.62	<50	1.0	<50.0B
Copper	25	.747	-0.28	<25	0.26	<25	-0.25	<25	-0.20	<25.0
Iron	300	32	7.9	<300	11.7	<300	14.4	<300	11.7	<300
Lead	5.0	1.59	0.65	<5.0	1.3	<5.0	1.1	<5.0	1.5	<5.0
Magnesium	5000	17.6	10.1	<5000	14.4	<5000	28.3	<5000	15.6	<5000
Manganese	15	.16	0.53	<15	0.58	<15	0.57	<15	0.60	<15.0B
Molybdenum	50	.68	anr							
Nickel	40	1	-0.81	<40	-0.21	<40	-0.48	<40	-0.50	<40.0
Potassium	5000	28.2	198	<5000	199	<5000	220	<5000	235	<5000B
Selenium	10	2	2.7	<10	2.0	<10	1.4	<10	4.2	<10.0B
Silver	10	.96	0.13	<10	0.62	<10	0.32	<10	1.5	<10.0B
Sodium	5000	153	-290	<5000	-92	<5000	-240	<5000	-167	<5000B
Thallium	10	2.69	-3.4	<10	1.1	<10	0.090	<10	1.4	<10.0
Tin	50	2.2	anr							
Vanadium	50	.717	0.19	<50	0.56	<50	0.35	<50	0.50	<50.0
Zinc	20	.83	0.65	<20	0.75	<20	0.76	<20	0.90	<20.0B

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0622M1.ASC Date Analyzed: 06/22/00 Methods: SW846 6010A
QC Limits: result < RL Run ID: MA1911 Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	25.4	<200	51.5	<200B	30.8	<200B	37.3	<200
Antimony	5.0	2.39	0.60	<5.0	0.50	<5.0	0.20	<5.0	2.2	<5.0
Arsenic	10	3.4	0.70	<10.0	1.6	<10.0	1.3	<10.0	-1.3	<10
Barium	200	.39	0.80	<200B	0.50	<200B	0.90	<200B	1.2	<200
Beryllium	5.0	.36	1.4	<5.0B	1.2	<5.0B	1.2	<5.0B	1.8	<5.0<
Cadmium	5.0	.33	0.70	<5.0B	0.40	<5.0B	0.80	<5.0B	1.1	<5.0<
Calcium	1000	19.5	18.9	<1000	1.3	<1000	14.2	<1000	19.3	<1000
Chromium	10	.637	-0.10	<10.0	0.20	<10.0	0.50	<10.0	0.69	<10
Cobalt	50	.797	0.60	<50.0	0.30	<50.0	0.80	<50.0	1.2	<50
Copper	25	.747	-0.50	<25.0	-1.0	<25.0B	-0.20	<25.0	0.21	<25
Iron	300	32	6.7	<300	30.6	<300	15.7	<300	47.6	<300
Lead	5.0	1.59	0.60	<5.0	0.60	<5.0	1.4	<5.0	1.0	<5.0
Magnesium	5000	17.6	16.4	<5000	8.6	<5000	15.8	<5000	23.6	<5000
Manganese	15	.16	0.60	<15.0B	0.40	<15.0B	0.70	<15.0B	1.1	<15
Molybdenum	50	.68	anr							
Nickel	40	1	-0.90	<40.0	-0.60	<40.0	0.30	<40.0	0.52	<40
Potassium	5000	28.2	216	<5000B	220	<5000B	233	<5000B	246	<5000
Selenium	10	2	3.6	<10.0B	2.0	<10.0B	3.9	<10.0B	3.4	<10
Silver	10	.96	1.2	<10.0B	1.4	<10.0B	0.50	<10.0	1.4	<10
Sodium	5000	153	-188	<5000B	-195	<5000B	-134	<5000	-160	<5000
Thallium	10	2.69	1.2	<10.0	-0.20	<10.0	-0.10	<10.0	0.69	<10
Tin	50	2.2	anr							
Vanadium	50	.717	0.30	<50.0	0.20	<50.0	0.40	<50.0	1.0	<50
Zinc	20	.83	0.90	<20.0B	0.60	<20.0	1.0	<20.0B	1.3	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0626W1.HGX
QC Limits: result < RL

Date Analyzed: 06/26/00
Run ID: MA1917

Methods: SW846 7470A
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Mercury	0.20	.06	-0.0071	<0.20	-0.0071	<0.20	-0.0071	<0.20	-0.0071	<0.20

(*) Outside of QC limits
(anr) Analyte not requested

TCLP Hg only
JMM
10/6/00

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BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0626W1.HGX Date Analyzed: 06/26/00 Methods: SW846 7470A
QC Limits: result < RL Run ID: MA1917 Units: ug/l

Metal	RL	IDL	CCB raw	final
Mercury	0.20	.06	-0.0071	<0.20

(*) Outside of QC limits
(anr) Analyte not requested

TCLP Hg only
JMM 10/6/00

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0622M1.ASC
QC Limits: result < RL

Date Analyzed: 06/22/00
Run ID: MA1911

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	26.0	<200	14.6	<200	2.5	<200	0.23	<200
Antimony	5.0	2.39	0.78	<5.0	0.72	<5.0	0.28	<5.0	0.40	<5.0
Arsenic	10	3.4	1.1	<10	1.8	<10	2.7	<10	1.9	<10
Barium	200	.39	0.26	<200	0.39	<200	0.14	<200	0.15	<200
Beryllium	5.0	.36	0.46	<5.0	0.99	<5.0	0.80	<5.0	0.77	<5.0
Cadmium	5.0	.33	-0.040	<5.0	0.16	<5.0	0.010	<5.0	-0.15	<5.0
Calcium	1000	19.5	-0.61	<1000	3.1	<1000	-0.53	<1000	-1.0	<1000
Chromium	10	.637	-0.17	<10	0.060	<10	-0.89	<10	-0.66	<10
Cobalt	50	.797	0.050	<50	0.12	<50	-0.030	<50	0.20	<50
Copper	25	.747	3.4	<25<	0.99	<25	-0.96	<25	-0.95	<25
Iron	300	32	-7.4	<300	13.3	<300	-11	<300	-8.8	<300
Lead	5.0	1.59	0.87	<5.0	0.41	<5.0	0.92	<5.0	0.32	<5.0
Magnesium	5000	17.6	3.6	<5000	5.4	<5000	0.29	<5000	0.0	<5000
Manganese	15	.16	0.070	<15	0.17	<15	-0.060	<15	-0.040	<15
Molybdenum	50	.68	anr							
Nickel	40	1	-0.89	<40	-0.75	<40	-1.5	<40	-1.2	<40
Potassium	5000	28.2	226	<5000	223	<5000	210	<5000	210	<5000
Selenium	10	2	2.2	<10	2.5	<10	3.0	<10	2.3	<10
Silver	10	.96	1.1	<10	0.63	<10	1.1	<10	0.090	<10
Sodium	5000	153	-220	<5000	-180	<5000	-320	<5000	-370	<5000
Thallium	10	2.69	-1.2	<10	-2.0	<10	2.1	<10	0.82	<10
Tin	50	2.2	anr							
Vanadium	50	.717	-0.080	<50	0.24	<50	-0.16	<50	-0.19	<50
Zinc	20	.83	0.62	<20	0.47	<20	-0.17	<20	-0.52	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0622M1.ASC Date Analyzed: 06/22/00 Methods: SW846 6010A
QC Limits: result < RL Run ID: MA1911 Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	1.4	<200	-4.3	<200	-2.0	<200
Antimony	5.0	2.39	0.98	<5.0	-0.50	<5.0	-0.48	<5.0
Arsenic	10	3.4	4.4	<10	2.0	<10.0	1.9	<10
Barium	200	.39	0.10	<200	0	<200	0.040	<200
Beryllium	5.0	.36	0.62	<5.0	0.60	<5.0B	0.38	<5.0
Cadmium	5.0	.33	-0.10	<5.0	-0.20	<5.0	-0.16	<5.0
Calcium	1000	19.5	-2.0	<1000	-2.9	<1000	0.31	<1000
Chromium	10	.637	-0.89	<10	-1.2	<10.0B	-0.98	<10
Cobalt	50	.797	0.0	<50	-0.40	<50.0	0.030	<50
Copper	25	.747	-1.1	<25	-1.0	<25.0B	-0.74	<25
Iron	300	32	-9.5	<300	-15.4	<300	-7.5	<300
Lead	5.0	1.59	1.0	<5.0	0.80	<5.0	0.35	<5.0
Magnesium	5000	17.6	2.3	<5000	-2.7	<5000	0.16	<5000
Manganese	15	.16	-0.16	<15	-0.30	<15.0B	-0.21	<15
Molybdenum	50	.68	anr					
Nickel	40	1	-1.6	<40	-1.5	<40.0B	-1.3	<40
Potassium	5000	28.2	211	<5000	189	<5000B	225	<5000
Selenium	10	2	2.0	<10	0.70	<10.0	3.6	<10
Silver	10	.96	0.45	<10	0.60	<10.0	0.55	<10
Sodium	5000	153	-230	<5000	-356	<5000B	-200	<5000
Thallium	10	2.69	1.8	<10	2.5	<10.0	2.3	<10
Tin	50	2.2	anr					
Vanadium	50	.717	-0.37	<50	-0.30	<50.0	-0.16	<50
Zinc	20	.83	-0.27	<20	-0.1	<20.0	0.41	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0614S1.HGX Date Analyzed: 06/14/00 Methods: SW846 7471A
QC Limits: result < RL Run ID: MA1903 Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Mercury	1.0	.06	0.10	<1.0B	0.10	<1.0B	0.10	<1.0B	0.20	<1.0B

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0614S1.HGX Date Analyzed: 06/14/00 Methods: SW846 7471A
QC Limits: result < RL Run ID: MA1903 Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Mercury	1.0	.06	0.10	<1.0B	0.10	<1.0B	0.10	<1.0B	0.10	<1.0B

(*) Outside of QC limits
(anr) Analyte not requested

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BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2800
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 06/26/00

Metal	RL	IDL	MB raw	final
Mercury	0.17	.01	0.01	<0.17

Associated samples MP2800: F6711-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2796
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 06/25/00

Metal	RL	IDL	MB raw	final
Mercury	0.00020	.00006	0.000068	<0.00020

Associated samples MP2796: F6711-1A, F6711-2A, F6711-3A, F6711-4A, F6711-5A, F6711-6A, F6711-7A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

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BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2795
Matrix Type: LEACHATE

Methods: SW846 6010A
Units: mg/l

Prep Date: 06/25/00

Metal	RL	IDL	MB raw	final
Aluminum	0.20	.03	anr	
Antimony	0.20	.00239	anr	
Arsenic	0.50	.00345	0.0026	<0.50
Barium	1.0	.00039	0.00035	<1.0
Beryllium	0.0050	.000363	anr	
Cadmium	0.050	.00033	0.000060	<0.050
Calcium	5.0	.0195	anr	
Chromium	0.050	.000637	0.037	<0.050
Cobalt	0.050	.000797	anr	
Copper	0.025	.000747	anr	
Iron	0.10	.032	anr	
Lead	0.50	.00159	0.0011	<0.50
Magnesium	5.0	.0176	anr	
Manganese	0.015	.00016	anr	
Molybdenum	0.050	.00068	anr	
Nickel	0.040	.001	anr	
Potassium	5.0	.0282	anr	
Selenium	0.50	.00204	0.0020	<0.50
Silver	0.050	.000963	0.00047	<0.050
Sodium	5.0	.153	anr	
Thallium	0.50	.00269	anr	
Tin	0.050	.00223	anr	
Vanadium	0.050	.000717	anr	
Zinc	0.020	.00083	anr	

Associated samples MP2795: F6711-1A, F6711-2A, F6711-3A, F6711-4A, F6711-5A, F6711-6A, F6711-7A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2771
Matrix Type: SOLID

Methods: SW846 6010A
Units: mg/kg

Prep Date: 06/16/00

Metal	RL	IDL	MB raw	final
Aluminum	20.0	3	0.82	<20.0
Antimony	6.0	.24	-0.04	<6.0
Arsenic	0.50	.34	0.1	<0.50
Barium	20.0	.04	0.006	<20.0
Beryllium	0.50	.04	0.07	<0.50
Cadmium	0.40	.03	0	<0.40
Calcium	500	2	-0.60	<500
Chromium	2.0	.06	2.0	<2.0
Cobalt	5.0	.08	0.03	<5.0
Copper	2.5	.07	-0.12	<2.5
Iron	30.0	3.2	19.4	<30.0
Lead	10.0	.16	0.02	<10.0
Magnesium	500	1.8	0.15	<500
Manganese	1.5	.02	0.93	<1.5
Molybdenum	5.0	.07	anr	
Nickel	6.0	.1	5.4	<6.0
Potassium	500	2.8	22.3	<500
Selenium	10.0	.2	-0.09	<10.0
Silver	1.0	.1	0.16	<1.0
Sodium	500	15.3	-12.9	<500
Thallium	1.0	.27	0.16	<1.0
Tin	5.0	.22	anr	
Vanadium	5.0	.07	0	<5.0
Zinc	2.0	.08	-0.03	<2.0

Associated samples MP2771: F6711-1, F6711-2, F6711-3, F6711-4, F6711-5, F6711-6, F6711-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2762
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 06/12/00

Metal	RL	IDL	MB raw	final
Mercury	0.17	.01	0.02	<0.17

Associated samples MP2762: F6711-1, F6711-2, F6711-3, F6711-4, F6711-5, F6711-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0625M1.ASC Date Analyzed: 06/25/00 Methods: SW846 6010A
QC Limits: 80 to 120 % Recovery Run ID: MA1914 Units: ug/l

Metal	ICSA True	ICSAB True	ICSA Results	% Rec	ICSAB Results	% Rec	ICSAB Results	% Rec
Aluminum	500000	500000	462000	92.4			519000	103.8
Antimony		1000	-5.6<				1140	114.0
Arsenic		1000	-0.76				1100	110.0
Barium		500	0.41				599	119.8
Beryllium		500	-0.12				537	107.4
Cadmium		1000	-2.0				1030	103.0
Calcium	500000	500000	436000	87.2			487000	97.4
Chromium		500	-2.0				518	103.6
Cobalt		500	0.73				502	100.4
Copper		500	0.070				569	113.8
Iron	200000	200000	182000	91.0			205000	102.5
Lead		1000	2.3				1020	102.0
Magnesium	500000	500000	510000	102.0			567000	113.4
Manganese		500	-2.8				535	107.0
Molybdenum		1000	-0.34				53.5	5.4*
Nickel		1000	-8.6				981	98.1
Potassium			200				-190	
Selenium		1000	1.5				1070	107.0
Silver		1000	-0.35				1100	110.0
Sodium			-29				329	
Thallium		1000	-5.5				1030	103.0
Tin		1000	-3.8				46.4	4.6*
Vanadium		500	3.5				583	116.6
Zinc		1000	-2.0				976	97.6

(*) Outside of QC limits
(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N00052-MSA0200-014

File ID: IR0622M1.ASC Date Analyzed: 06/22/00 Methods: SW846 6010A
QC Limits: 80 to 120 % Recovery Run ID: MA1911 Units: ug/l

Metal	ICSA True	ICSAB True	ICSA Results	% Rec	ICSAB Results	% Rec
Aluminum	500000	500000	483000	96.6	482000	96.4
Antimony		1000	-4.2		1010	101.0
Arsenic		1000	1.4		1050	105.0
Barium		500	0.99		566	113.2
Beryllium		500	0.15		512	102.4
Cadmium		1000	-2.3		995	99.5
Calcium	500000	500000	480000	96.0	473000	94.6
Chromium		500	-2.7		490	98.0
Cobalt		500	0.84		476	95.2
Copper		500	0.67		526	105.2
Iron	200000	200000	197000	98.5	195000	97.5
Lead		1000	-6.7<		970	97.0
Magnesium	500000	500000	564000	112.8	554000	110.8
Manganese		500	-2.8		506	101.2
Molybdenum		1000	-0.33		49.6	
Nickel		1000	-9.4		943	94.3
Potassium			253		-200	
Selenium		1000	5.3		1030	103.0
Silver		1000	2.2		1000	100.0
Sodium			86.2		84.9	
Thallium		1000	-7.3		993	99.3
Tin		1000	-4.1		47.0	
Vanadium		500	6.4		534	106.8
Zinc		1000	4.1		955	95.5

(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N00052-MSA0200-014

QC Batch ID: MP2800
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 06/26/00 06/26/00

Metal	F6831-1 Original	DUP	RPD	QC Limits	F6831-1 Original	MS	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.03	0.02	38.1 (a)	0-20	0.03	0.60	0.59	97.0	75-125

Associated samples MP2800: F6711-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

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MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2800
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 06/26/00

Metal	F6831-1 Original	MSD	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.03	0.51	0.53	90.1	75-125

Associated samples MP2800: F6711-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2796
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 06/25/00 06/25/00

Metal	F6741-1 Original	DUP	RPD	QC Limits	F6741-1 Original	MS	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.0	0.0	NC	0-20	0.0	0.032	0.030	106.7	75-125

Associated samples MP2796: F6711-1A, F6711-2A, F6711-3A, F6711-4A, F6711-5A, F6711-6A, F6711-7A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

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MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2796
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 06/25/00

Metal	F6741-1 Original	MSD	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.0	0.033	0.030	110.0	75-125

Associated samples MP2796: F6711-1A, F6711-2A, F6711-3A, F6711-4A, F6711-5A, F6711-6A, F6711-7A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2795
Matrix Type: LEACHATE

Methods: SW846 6010A
Units: mg/l

Prep Date: 06/25/00 06/25/00

Metal	F6711-1A Original	DUP	RPD	QC Limits	F6711-1A Original	MS	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	anr								
Antimony	anr								
Arsenic	0.0054	0.020	115.0(a)	0-28	0.0054	4.1	4.0	102.4	72-110
Barium	0.088	0.10	12.8	0-14	0.088	3.7	4.0	90.3	64-116
Beryllium	anr								
Cadmium	0.0	0.0	NC	0-16	0.0	0.096	0.10	96.0	64-120
Calcium	anr								
Chromium	0.0036	0.0044	20.0	0-33	0.0036	0.37	0.40	91.6	66-119
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	0.0046	0.0072	44.1 (a)	0-44	0.0046	0.93	1.0	92.5	60-127
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Potassium	anr								
Selenium	0.0068	0.025	114.5(a)	0-28	0.0068	4.2	4.0	104.8	65-115
Silver	0.0	0.0	NC	0-21	0.0	0.093	0.10	93.0	63-123
Sodium	anr								
Thallium	anr								
Tin	anr								
Vanadium	anr								
Zinc	anr								

Associated samples MP2795: F6711-1A, F6711-2A, F6711-3A, F6711-4A, F6711-5A, F6711-6A, F6711-7A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

TCLP data
9mm
10/6/00

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MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2795
Matrix Type: LEACHATE

Methods: SW846 6010A
Units: mg/l

Prep Date: 06/25/00

Metal	F6711-1A Original	MSD	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	anr				
Antimony	anr				
Arsenic	0.0054	4.2	4.0	104.9	72-110
Barium	0.088	3.8	4.0	92.8	64-116
Beryllium	anr				
Cadmium	0.0	0.099	0.10	99.0	64-120
Calcium	anr				
Chromium	0.0036	0.38	0.40	94.1	66-119
Cobalt	anr				
Copper	anr				
Iron	anr				
Lead	0.0046	0.96	1.0	95.5	60-127
Magnesium	anr				
Manganese	anr				
Molybdenum					
Nickel	anr				
Potassium	anr				
Selenium	0.0068	4.4	4.0	109.8	65-115
Silver	0.0	0.097	0.10	97.0	63-123
Sodium	anr				
Thallium	anr				
Tin					
Vanadium	anr				
Zinc	anr				

TCLP data
10/6/00
JMM

Associated samples MP2795: F6711-1A, F6711-2A, F6711-3A, F6711-4A, F6711-5A, F6711-6A, F6711-7A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2771
Matrix Type: SOLID

Methods: SW846 6010A
Units: mg/kg

Prep Date: 06/16/00 06/16/00

Metal	F6711-1 Original	DUP	RPD	QC Limits	F6711-1 Original	MS	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	22400	22300	0.7	0-20	22400	23600	3062.46	40.0 (b)	80-120
Antimony	0.49	0.35	33.7 (a)	0-20	0.49	35.0	105.6	32.7N	80-120
Arsenic	5.9	6.3	5.5	0-28	5.9	417	422.41	97.2	72-110
Barium	5.8	5.9	0.7	0-14	5.8	421	422.41	98.2	64-116
Beryllium	0.12	0.13	1.8	0-20	0.12	10.8	10.56	101.4	80-120
Cadmium	0.0	0.0	NC	0-16	0.0	10.1	10.56	95.3	64-120
Calcium	75.8	75.0	1.0	0-20	75.8	2730	2640.05	100.5	80-120
Chromium	24.4	24.4	0.0	0-33	24.4	61.9	42.24	88.8	66-119
Cobalt	0.52	0.53	2.8	0-20	0.52	98.9	105.6	93.1	80-120
Copper	8.1	8.1	0.1	0-39	8.1	58.7	52.8	95.8	65-124
Iron	20900	20800	0.5	0-20	20900	20300	2851.26	-20.4 (b)	80-120
Lead	2.2	2.3	4.4	0-44	2.2	105	105.6	97.0	60-127
Magnesium	64.8	64.9	0.1	0-20	64.8	2770	2640.05	102.5	80-120
Manganese	16.0	16.0	0.1	0-20	16.0	115	105.6	93.9	80-120
Molybdenum	anr								
Nickel	1.2	1.4	12.8	0-30	1.2	106	105.6	99.3	71-119
Potassium	64.7	64.2	0.8	0-20	64.7	2600	2640.05	95.9	80-120
Selenium	0.30	0.29	4.9	0-28	0.30	404	422.41	95.7	65-115
Silver	0	0	NC	0-21	0	9.4	10.56	89.5	63-123
Sodium	103	95.1	7.7	0-20	103	2730	2640.05	99.5	80-120
Thallium	0.0	0.0	NC	0-20	0.0	429	422.41	101.6	80-120
Tin	anr								
Vanadium	61.5	61.2	0.5	0-20	61.5	157	105.6	90.5	80-120
Zinc	5.9	5.9	0.4	0-31	5.9	109	105.6	97.8	69-120

Associated samples MP2771: F6711-1, F6711-2, F6711-3, F6711-4, F6711-5, F6711-6, F6711-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.
(b) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2771
Matrix Type: SOLID

Methods: SW846 6010A
Units: mg/kg

Prep Date: 06/16/00

Metal	F6711-1 Original	MSD	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	22400	26800	3486	126.8(a)	80-120
Antimony	0.49	40.0	120.21	32.8N	80-120
Arsenic	5.9	473	480.83	97.1	72-110
Barium	5.8	478	480.83	98.3	64-116
Beryllium	0.12	12.3	12.02	101.4	80-120
Cadmium	0.0	11.4	12.02	95.2	64-120
Calcium	75.8	3100	3005.17	100.8	80-120
Chromium	24.4	70.4	48.08	95.5	66-119
Cobalt	0.52	112	120.21	92.8	80-120
Copper	8.1	66.7	60.1	97.5	65-124
Iron	20900	23100	3245.58	67.5 (a)	80-120
Lead	2.2	119	120.21	96.9	60-127
Magnesium	64.8	3150	3005.17	102.7	80-120
Manganese	16.0	131	120.21	95.5	80-120
Molybdenum					
Nickel	1.2	120	120.21	99.2	71-119
Potassium	64.7	2930	3005.17	95.5	80-120
Selenium	0.30	459	480.83	95.5	65-115
Silver	0	10.7	12.02	88.6	63-123
Sodium	103	3090	3005.17	99.2	80-120
Thallium	0.0	487	480.83	101.3	80-120
Tin					
Vanadium	61.5	178	120.21	97.3	80-120
Zinc	5.9	124	120.21	98.2	69-120

Associated samples MP2771: F6711-1, F6711-2, F6711-3, F6711-4, F6711-5, F6711-6, F6711-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

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MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2762
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 06/12/00 06/12/00

Metal	F6730-15 Original	DUP	RPD	QC Limits	F6730-15 Original	MS	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.03	0.06	70.9 (a)	0-20	0.03	0.63	0.52	116.4	75-125

Associated samples MP2762: F6711-1, F6711-2, F6711-3, F6711-4, F6711-5, F6711-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2762
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 06/12/00

Metal	F6730-15 Original	MSD	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.03	0.58	0.49	112.3	75-125

Associated samples MP2762: F6711-1, F6711-2, F6711-3, F6711-4, F6711-5, F6711-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2795
Matrix Type: LEACHATE

Methods: SW846 6010A
Units: ug/l

Prep Date: 06/25/00

Metal	F6711-1A Original	SDL 1:5	RPD	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	5.39	0.00	100.0(a)	0-10
Barium	88.1	92.6	5.1	0-10
Beryllium	anr			
Cadmium	0.00	0.00	NC	0-10
Calcium	anr			
Chromium	3.55	5.39	51.8 (a)	0-10
Cobalt	anr			
Copper	anr			
Iron	anr			
Lead	4.63	12.6	173.2(a)	0-10
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Potassium	anr			
Selenium	6.85	17.5	155.3(a)	0-10
Silver	0.00	0.00	NC	0-10
Sodium	anr			
Thallium	anr			
Tin	anr			
Vanadium	anr			
Zinc	anr			

Associated samples MP2795: F6711-1A, F6711-2A, F6711-3A, F6711-4A, F6711-5A, F6711-6A, F6711-7A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

SERIAL DILUTION RESULTS SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2771
Matrix Type: SOLID

Methods: SW846 6010A
Units: ug/l

Prep Date: 06/16/00

Metal	F6711-1 Original	SDL 1:5	RPD	QC Limits
Aluminum	192000	210000	9.3	0-10
Antimony	4.20	0.00	100.0(a)	0-10
Arsenic	50.9	58.5	15.0 (a)	0-10
Barium	50.0	63.2	26.4	0-10
Beryllium	1.07	4.44	315.0(a)	0-10
Cadmium	0.00	0.00	NC	0-10
Calcium	651	766	17.7 (a)	0-10
Chromium	210	234	11.5	0-10
Cobalt	4.43	7.50	69.3 (a)	0-10
Copper	69.6	70.6	1.6	0-10
Iron	179000	202000	12.4	0-10
Lead	19.1	24.6	29.0 (a)	0-10
Magnesium	556	668	20.1 (a)	0-10
Manganese	137	156	13.7	0-10
Molybdenum	anr			
Nickel	10.5	11.2	6.3	0-10
Potassium	556	1340	141.3(a)	0-10
Selenium	2.60	17.0	553.1(a)	0-10
Silver	0.00	6.86		0-10
Sodium	882	0.00	100.0(a)	0-10
Thallium	0.00	0.00	NC	0-10
Tin	anr			
Vanadium	528	590	11.8	0-10
Zinc	50.5	66.5	31.6	0-10

Associated samples MP2771: F6711-1, F6711-2, F6711-3, F6711-4, F6711-5, F6711-6, F6711-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2800
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 06/26/00

Metal	BSP Result	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.47	0.5	94.0	80-120

Associated samples MP2800: F6711-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2796
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 06/25/00

Metal	BSP Result	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.0031	0.0030	103.3	80-120

Associated samples MP2796: F6711-1A, F6711-2A, F6711-3A, F6711-4A, F6711-5A, F6711-6A, F6711-7A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2795
Matrix Type: LEACHATE

Methods: SW846 6010A
Units: mg/l

Prep Date: 06/25/00

Metal	BSP Result	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	4.1	4.0	102.5	80-120
Barium	4.1	4.0	102.5	80-120
Beryllium	anr			
Cadmium	0.10	0.10	100.0	80-120
Calcium	anr			
Chromium	0.41	0.40	102.5	80-120
Cobalt	anr			
Copper	anr			
Iron	anr			
Lead	1.0	1.0	100.0	80-120
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	anr			
Potassium	anr			
Selenium	4.0	4.0	100.0	80-120
Silver	0.094	0.10	94.0	80-120
Sodium	anr			
Thallium	anr			
Tin				
Vanadium	anr			
Zinc	anr			

Associated samples MP2795: F6711-1A, F6711-2A, F6711-3A, F6711-4A, F6711-5A, F6711-6A, F6711-7A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2771
Matrix Type: SOLID

Methods: SW846 6010A
Units: mg/kg

Prep Date: 06/16/00

Metal	BSP Result	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	2650	2900	91.4	80-120
Antimony	94.2	100	94.2	80-120
Arsenic	396	400	99.1	80-120
Barium	393	400	98.4	80-120
Beryllium	10.1	10	101.1	80-120
Cadmium	10	10	100.0	80-120
Calcium	2560	2500	102.6	80-120
Chromium	39.7	40	99.2	80-120
Cobalt	94.4	100	94.4	80-120
Copper	48.5	50	97.1	80-120
Iron	2770	2700	102.7	80-120
Lead	98.4	100	98.4	80-120
Magnesium	2580	2500	103.3	80-120
Manganese	99.9	100	99.9	80-120
Molybdenum				
Nickel	101	100	100.6	80-120
Potassium	2130	2500	85.2	80-120
Selenium	390	400	97.4	80-120
Silver	8.9	10	88.8	80-120
Sodium	2420	2500	96.7	80-120
Thallium	417	400	104.3	80-120
Tin				
Vanadium	100	100	100.5	80-120
Zinc	103	100	103.2	80-120

Associated samples MP2771: F6711-1, F6711-2, F6711-3, F6711-4, F6711-5, F6711-6, F6711-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2762
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 06/12/00

Metal	BSP Result	Spikelot HGFLWS	% Rec	QC Limits
Mercury	0.54	0.5	108.0	80-120

Associated samples MP2762: F6711-1, F6711-2, F6711-3, F6711-4, F6711-5, F6711-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

Metals Digestion Log: Soil MVLT71

Method Of Digestion: ICP 3050B Temp:_____ Thermometer ID#:_____

Added:	HNO_3	HCl	H_2O_2
Mfg:	Em Science		Fisher
Lot #:	39230	40011	983019

Sample #		Wt	Final Vol	% Solid	Digestion Factor	Date	Comments
F6	11.1 -DUP	0.98	100			6.15.00	
	.1 -MS	1.07					soaked w/ 25ml acc 194 + 10ml CN 340 + 05ml acc 162
	.1 MSD	0.94					same as MS
	.1	0.97					
	.2	0.99					
	.3	0.93					
	.4	1.02					
	.5	1.11					
	.6	0.98					
✓	.7	0.97					
F6K18	.16	0.97					
✓	.18	1.02					
F6K61	.1	1.02					
	.2	1.02					
	.3	1.08					
	.4	1.02					
	.6	1.13					
	.7	1.06					
	.9	1.04					
	.11	0.95					
✓	.13	0.95	✓				
		1.00	100				
		✓	✓			✓	same as MS

Signature: [signature] Date: 6.16.00

Date:_____

Metals Digestion Log: Water

MPLHD

Method Of Digestion: ICP 3010A **Temp:** 95 **Thermometer ID#:** 34

	HNO_3	HC1	H_2O_2
Added:			
Mfg:	EM Science		
Lot #:	39230	40011	

Sample #	Init. Vol / Wt	Final Vol / Wt	Date	Comments
F6711.1A -DUP	50	50	6.24.06	
.1A -MS				spiked at 1.0ml 2000ppm Cu 340 + 0.25ml acc 152
1- .1A MSD				same as MS
2- .1A				
3- .2A				
4- .3A				
5- .4A				
6- .5A				
7- .6A				
8- .7A				
9- F6741.1				
10- F6763.1				
11- F6765.1				
12- F6846.1				
13- .2				
14-				
15-				
16-				
17-				
18-				
19-				
20-				
21-				
22-				
23-				same as MS

Signature: Steve Lee **Date:** 6.24.06

Date:

Mercury Digestion Log: Water and Soil

MPZ162

SW846
Method Of Digestion: 7471A

Temp: 95/15-251

Analyst: SJL

Thermometer #: —

Time Started: 1800

Time Ended: 1815

Reagents Added:	HNO3	HCL	H2SO4	Pot. Perm.	Pot. Persulfate
Mfg:	EM Science		Fisher	→	
Lot#:	35230	40011	31-C604	GN:596	

Sample #	Wt(g)	Init.Vol.(ml)	Final Vol.(ml)	Date	Comments
F6B015 Dup	0.62	100	100	6.12.00	
.15 MS	0.65	SJL			
1 .15MD	0.63				30ml GN125
2 .15	0.63				same as MS
3 .16	0.60				
4 .17	0.59				
5 .18	0.64				
6 .19	0.77				
7 ✓ .20	0.62				
8 F6100.1	0.55				
9 .2	0.64				
10 .3	0.78				
11 .4	0.67				
12 .5	0.60				
13 .6	0.59				
14 .7	0.58				
15 ✓ .8	0.68				
16 F6111.1	0.60				
17 .2	0.58				
18 .3	0.61				
19 .4	0.67				
20 ✓ .5/10	0.55/0.62				
MB					
SB			✓	✓	same as MS

Analyst's Signature: [signature]

Date: 6.12.00

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0627S1.HGX
Analyst: SJL
Parameters: Hg

Date Analyzed: 06/27/00
Run ID: MA1921

Methods: SW846 7471A

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	MA1921-ICV1	1		
00:00	MA1921-ICB1	1		
00:00	MA1921-CCV1	1		
00:00	MA1921-CCB1	1		
00:00	MA1921-CRI1	1		
00:00	MP2800-MB1	1		
00:00	MP2800-B1	1		
00:00	MP2800-S1	1		
00:00	MP2800-S2	1		
00:00	MP2800-D1	1		
00:00	F6831-1	1		(sample used for QC only; not part of login F6711)
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	MA1921-CCV2	1		
00:00	MA1921-CCB2	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	20		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	MA1921-CCV3	1		
00:00	MA1921-CCB3	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0627S1.HGX
Analyst: SJL
Parameters: Hg

Date Analyzed: 06/27/00
Run ID: MA1921

Methods: SW846 7471A

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	F6711-7	1		
00:00	MA1921-CCV4	1		
00:00	MA1921-CCB4	1		

Refer to raw data for calibration curve and standards.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0626W1.HGX Date Analyzed: 06/26/00 Methods: SW846 7470A
Analyst: SJL Run ID: MA1917
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	MA1917-ICV1	1		
00:00	MA1917-ICB1	1		
00:00	MA1917-CCV1	1		
00:00	MA1917-CCB1	1		
00:00	MA1917-CRI1	1		
00:00	MP2796-MB1	1		
00:00	MP2796-B1	1		
00:00	MP2796-S1	1		
00:00	MP2796-S2	1		
00:00	MP2796-D1	1		
00:00	F6741-1	1		(sample used for QC only; not part of login F6711)
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	MA1917-CCV2	1		
00:00	MA1917-CCB2	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	F6711-1A	1		
00:00	MA1917-CCV3	1		
00:00	MA1917-CCB3	1		
00:00	F6711-2A	1		
00:00	F6711-3A	1		
00:00	F6711-4A	1		
00:00	F6711-5A	1		
00:00	F6711-6A	1		
00:00	F6711-7A	1		
00:00	MA1917-CCV4	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0626W1.HGX Date Analyzed: 06/26/00 Methods: SW846 7470A
Analyst: SJL Run ID: MA1917
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	MA1917-CCB4	1		

Refer to raw data for calibration curve and standards.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0625M1.ASC Date Analyzed: 06/25/00 Methods: SW846 6010A
Analyst: SJL Run ID: MA1914
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Dilution Factor	PS Recov	Comments
09:36	MA1914-ICV1	1		
09:41	MA1914-ICB1	1		
09:47	MA1914-CCV1	1		
09:52	MA1914-CCB1	1		
09:58	MA1914-CRI1	1		
10:26	MA1914-CRI2	1		
10:32	MA1914-CRIA1	1		
10:46	MA1914-ICSA1	1		
10:55	MA1914-ICSAB1	1		
11:02	MA1914-ICSAB2	1		
11:07	MA1914-CCV2	1		
11:13	MA1914-CCB2	1		
11:18	MP2794-MB1	1		
11:24	MP2794-B1	1		
11:30	MP2794-D1	1		
11:35	F6850-1	1		(sample used for QC only; not part of login F6711)
11:41	MP2794-S1	1		
11:46	MP2794-S2	1		
11:52	MP2794-SD1	5		
11:58	ZZZZZZ	1		
12:03	ZZZZZZ	1		
12:09	MA1914-CCV3	1		
12:14	MA1914-CCB3	1		
12:20	ZZZZZZ	1		
12:26	ZZZZZZ	1		
12:31	ZZZZZZ	1		
12:37	ZZZZZZ	1		
12:42	ZZZZZZ	1		
12:48	ZZZZZZ	1		
12:54	ZZZZZZ	1		
12:59	ZZZZZZ	1		
13:05	ZZZZZZ	1		
13:10	MA1914-CCV4	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0625M1.ASC
Analyst: SJL
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Date Analyzed: 06/25/00
Run ID: MA1914

Methods: SW846 6010A

Time	Sample Description	Dilution Factor	PS Recov	Comments
13:16	MA1914-CCB4	1		
13:22	ZZZZZZ	1		
13:27	MP2793-MB1	1		
13:33	MP2793-B1	1		
13:38	MP2793-D1	1		
13:44	F6834-4	1		(sample used for QC only; not part of login F6711)
13:50	MP2793-S1	1		
13:55	MP2793-S2	1		
14:01	MP2793-SD1	5		
14:07	ZZZZZZ	1		
14:12	MA1914-CCV5	1		
14:18	MA1914-CCB5	1		
14:23	ZZZZZZ	1		
14:29	ZZZZZZ	1		
14:35	ZZZZZZ	1		
14:40	ZZZZZZ	1		
14:46	ZZZZZZ	1		
14:51	ZZZZZZ	1		
14:57	ZZZZZZ	1		
15:03	ZZZZZZ	1		
15:08	ZZZZZZ	1		
15:14	MA1914-CCV6	1		
15:19	MA1914-CCB6	1		
15:25	ZZZZZZ	1		
15:31	ZZZZZZ	1		
15:36	ZZZZZZ	1		
15:42	ZZZZZZ	1		
15:48	ZZZZZZ	1		
15:53	ZZZZZZ	1		
15:59	ZZZZZZ	1		
16:04	ZZZZZZ	1		
16:10	ZZZZZZ	1		
16:18	MA1914-CCV7	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0625M1.ASC Date Analyzed: 06/25/00 Methods: SW846 6010A
Analyst: SJL Run ID: MA1914
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Dilution Factor	PS Recov	Comments
16:23	MA1914-CCB7	1		
16:46	MP2795-MB1	1		
16:52	MP2795-B1	1		
16:57	MP2795-D1	1		
17:03	F6711-1A	1		
17:08	MP2795-S1	1		
17:14	MP2795-S2	1		
17:20	MP2795-SD1	5		
17:25	F6711-2A	1		
17:31	F6711-3A	1		
17:41	MA1914-CCV8	1		
17:47	MA1914-CCB8	1		
17:53	F6711-4A	1		
17:58	F6711-5A	1		
18:04	F6711-6A	1		
18:09	F6711-7A	1		
18:15	ZZZZZZ	1		
18:21	ZZZZZZ	1		
18:26	ZZZZZZ	1		
18:32	ZZZZZZ	1		
18:37	ZZZZZZ	1		
18:43	MA1914-CCV9	1		
18:49	MA1914-CCB9	1		

Refer to raw data for calibration curve and standards.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0622M1.ASC Date Analyzed: 06/22/00 Methods: SW846 6010A
Analyst: SJL Run ID: MA1911
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
08:43	MA1911-ICV1	1		
08:48	MA1911-ICB1	1		
08:54	MA1911-CCV1	1		
08:59	MA1911-CCB1	1		
09:05	MA1911-CRI1	1		
09:11	MA1911-CRIA1	1		
09:16	MA1911-ICSA1	1		
09:22	MA1911-ICSAB1	1		
09:27	MA1911-CCV2	1		
09:33	MA1911-CCB2	1		
09:40	MP2777-MB1	1		
09:45	MP2777-B1	1		
09:51	MP2777-D1	1		
09:57	F6809-1	1		(sample used for QC only; not part of login F6711)
10:02	MP2777-S1	1		
10:08	MP2777-S2	1		
10:13	MP2777-SD1	5		
10:19	ZZZZZZ	1		
10:25	ZZZZZZ	1		
10:39	MA1911-CCV3	1		
10:44	MA1911-CCB3	1		
10:50	ZZZZZZ	1		
10:56	ZZZZZZ	1		
11:02	ZZZZZZ	1		
11:07	ZZZZZZ	1		
11:13	ZZZZZZ	1		
11:18	ZZZZZZ	1		
11:24	ZZZZZZ	1		
11:30	ZZZZZZ	1		
11:35	ZZZZZZ	1		
11:48	ZZZZZZ	1		
12:00	MA1911-CCV4	1		
12:05	MA1911-CCB4	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0622M1.ASC Date Analyzed: 06/22/00 Methods: SW846 6010A
Analyst: SJL Run ID: MA1911
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:17	MP2771-MB1	1		
12:22	MP2771-B1	1		
12:28	MP2771-D1	1		
12:34	F6711-1	1		
12:39	MP2771-S1	1		
12:45	MP2771-S2	1		
12:51	MP2771-SD1	5		
12:56	F6711-2	1		
13:02	F6711-3	1		
13:07	F6711-4	1		
13:14	MA1911-CCV5	1		
13:19	MA1911-CCB5	1		
13:25	F6711-5	1		
13:31	F6711-6	1		
13:36	F6711-7	1		
13:43	MP2778-MB1	1		
13:49	MP2778-B1	1		
13:54	MP2778-D1	4		
14:00	F6810-7	4		(sample used for QC only; not part of login F6711)
14:06	MP2778-S1	4		
14:12	MP2778-S2	4		
14:18	MP2778-SD1	20		
14:24	ZZZZZZ	1		
14:35	MA1911-CCV6	1		
14:40	MA1911-CCB6	1		
14:50	MP2784-MB1	1		
14:55	MP2784-B1	1		
15:01	MP2784-D1	1		
15:07	F6790-8	1		(sample used for QC only; not part of login F6711)
15:12	MP2784-S1	1		
15:18	MP2784-S2	1		
15:23	MP2784-SD1	5		
15:29	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0622M1.ASC Date Analyzed: 06/22/00 Methods: SW846 6010A
Analyst: SJL Run ID: MA1911
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
15:35	ZZZZZZ	1		
15:40	MA1911-CCV7	1		
15:46	MA1911-CCB7	1		
15:51	ZZZZZZ	1		
15:57	ZZZZZZ	1		
16:03	ZZZZZZ	1		
16:08	ZZZZZZ	1		
16:14	ZZZZZZ	1		
16:19	ZZZZZZ	1		
16:25	ZZZZZZ	1		
16:31	ZZZZZZ	1		
16:36	ZZZZZZ	1		
16:42	MA1911-CCV8	1		
16:47	MA1911-CCB8	1		
16:53	ZZZZZZ	1		
16:59	ZZZZZZ	1		
17:04	ZZZZZZ	1		
17:10	ZZZZZZ	1		
17:15	ZZZZZZ	1		
17:21	ZZZZZZ	1		
17:27	ZZZZZZ	1		
17:32	ZZZZZZ	1		
17:38	ZZZZZZ	1		
17:43	MA1911-CCV9	1		
17:49	MA1911-CCB9	1		
17:55	ZZZZZZ	1		
18:00	ZZZZZZ	1		
18:06	ZZZZZZ	1		
18:11	ZZZZZZ	1		
18:17	ZZZZZZ	1		
18:23	ZZZZZZ	1		
18:28	MA1911-CCV10	1		
18:34	MA1911-CCB10	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0622M1.ASC Date Analyzed: 06/22/00 Methods: SW846 6010A
Analyst: SJL Run ID: MA1911
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
18:40	ZZZZZZ	1		
18:45	ZZZZZZ	1		
18:51	ZZZZZZ	1		
18:56	MA1911-CCV11	1		
19:02	MA1911-CCB11	1		
19:08	ZZZZZZ	1		
19:13	ZZZZZZ	1		
19:19	ZZZZZZ	1		
19:24	ZZZZZZ	1		
19:30	ZZZZZZ	1		
19:36	ZZZZZZ	1		
19:41	ZZZZZZ	1		
19:47	ZZZZZZ	1		
19:52	MA1911-CCV12	1		
19:58	MA1911-CCB12	1		
20:04	ZZZZZZ	1		
20:09	ZZZZZZ	1		
20:15	ZZZZZZ	1		
20:20	ZZZZZZ	1		
20:26	ZZZZZZ	1		
20:32	ZZZZZZ	1		
20:37	ZZZZZZ	1		
20:43	ZZZZZZ	1		
20:49	ZZZZZZ	1		
20:54	MA1911-CCV13	1		
21:00	MA1911-CCB13	1		
21:07	ZZZZZZ	1		
21:13	ZZZZZZ	1		
21:18	ZZZZZZ	1		
21:24	ZZZZZZ	1		
21:29	ZZZZZZ	1		
21:35	MP2774-MB1	1		
21:41	MP2774-B1	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0622M1.ASC Date Analyzed: 06/22/00 Methods: SW846 6010A
Analyst: SJL Run ID: MA1911
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
21:46	MA1911-CCV14	1		
21:52	MA1911-CCB14	1		

Refer to raw data for calibration curve and standards.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0614S1.HGX
Analyst: SJL
Parameters: Hg

Date Analyzed: 06/14/00
Run ID: MA1903

Methods: SW846 7471A

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	MA1903-ICV1	1		
00:00	MA1903-ICB1	1		
00:00	MA1903-CCV1	1		
00:00	MA1903-CCB1	1		
00:00	MA1903-CRI1	1		
00:00	MP2761-MB1	1		
00:00	MP2762-MB1	1		
00:00	MP2761-B1	1		
00:00	MP2762-B1	1		
00:00	MP2761-S1	1		
00:00	MP2761-S2	1		
00:00	MP2761-D1	1		
00:00	F6730-1	1		(sample used for QC only; not part of login F6711)
00:00	ZZZZZZ	1		
00:00	MA1903-CCV2	1		
00:00	MA1903-CCB2	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	MA1903-CCV3	1		
00:00	MA1903-CCB3	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0614S1.HGX Date Analyzed: 06/14/00 Methods: SW846 7471A
Analyst: SJL Run ID: MA1903
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	MA1903-CCV4	1		
00:00	MA1903-CCB4	1		
00:00	MP2762-S1	1		
00:00	MP2762-S2	1		
00:00	MP2762-D1	1		
00:00	F6730-15	1		(sample used for QC only; not part of login F6711)
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	MA1903-CCV5	1		
00:00	MA1903-CCB5	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	MA1903-CCV6	1		
00:00	MA1903-CCB6	1		
00:00	F6711-1	1		
00:00	F6711-2	1		
00:00	F6711-3	1		
00:00	F6711-4	1		
00:00	F6711-5	1		
00:00	F6711-6	1		
00:00	MA1903-CCV7	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F6711
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N00052-MSA0200-014

File ID: HG0614S1.HGX Date Analyzed: 06/14/00 Methods: SW846 7471A
Analyst: SJL Run ID: MA1903
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	MA1903-CCB7	1		

Refer to raw data for calibration curve and standards.

35D01215

Method: TRACE6 Sample Name: F6711-4 Operator: JK
Run Time: 06/22/00 13:07 Filename: R0622M1
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.:

Elems	Ag3280	Al3082	As1890	Ba4934	Be3130	Ca3179
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0001	306.7	.0571	.0698	.0013	1.910
SDev	.0004	.3274	.0022	.0001	0	.0042
%RSD	520.7	.1068	3.804	.1182	2.346	.2201

Elems	Cd2265	Co2286	Cr2677	Cu3247	Fe2714	K_7664
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0049	.0067	.2861	.0940	219.6	.9723
SDev	.0001	.0004	.0003	.0005	.4107	.0148
%RSD	1.256	5.601	.1204	.5759	.187	1.517

Elems	Mg2790	Mn2576	Mo2020	Na3302	Ni2316	2203/1
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.6480	.2958	.0128	.8925	.0161	.1248
SDev	.0029	.0005	.0008	.0611	.0006	.0023
%RSD	.4433	.1736	5.866	6.845	3.947	1.816

Elems	2203/2	Pb2203	Se1960	Sb2068	1960/1	1960/2
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0993	.1087	.0191	.0068	-.0067	.0309
SDev	.0033	.0016	.0029	.0005	.0013	.0049
%RSD	3.362	1.431	15.2	7.403	19.64	15.87

Elems	Sn1899	Tl1908	V 2924	Zn2062
Units	ppm	ppm	ppm	ppm
Avge	-.0064	L-.0897	.5585	.0731
SDev	.0007	.0023	.0008	.0008
%RSD	10.41	2.573	.1448	1.049

$0.1087 \text{ mg/L} \left(\frac{1 \text{ L}}{1000 \text{ mL}}\right)\left(\frac{100 \text{ mL}}{1.02 \text{ g}}\right)\left(\frac{1000 \text{ g}}{1 \text{ kg}}\right)\left(\frac{1}{.87}\right) = 12.3 \text{ mg/kg}$

gmm
10/6/00

TETRA TECH NUS, INC.

INTERNAL CORRESPONDENCE

EPC-00-022

TO: **T. HANSEN** **DATE: NOVEMBER 09, 2000**

FROM: **D. OLSON** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – VOC(MTBE)/EDB/PAH/TPH**
CTO 079 – NAS WHITING FIELD, MILTON, FLORIDA
SDG F7253

SAMPLES: 2 Aqueous

PDFGWMW015001
13TB080201

OVERVIEW

The sample set for CTO 079, NAS Whiting Field SDG F7253 consists of one (1) groundwater environmental sample and one (1) trip blank. A field duplicate pair was not included with this SDG. The environmental sample was analyzed for Target Compound List (TCL) volatile and polynuclear aromatic hydrocarbon (PAH) compounds, as well as the volatile compound 1,2-dibromoethane (EDB) and total petroleum hydrocarbon (TPH). The laboratory was instructed to include the compound methyl tert butyl ether (MTBE) with the TCL volatile compounds results. The trip blank was analyzed for TCL volatile (and MTBE) compounds only. The field crew did not designate a sample for Matrix Spike/Matrix Spike Duplicate (MS/MSD) analyses. The laboratory assigned samples for MS/MSD analysis for the EDB, PAH, and TPH analytical fractions. A MS/MSD analysis for the TCL volatiles (and MTBE) was not included in this SDG.

The samples were collected by Tetra Tech NUS, Inc. on August 03, 2000 and analyzed by Accutest Laboratories-Orlando, Florida under Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Volatile (including MTBE) and PAH analyses were conducted using the "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, methods 8260B and 8310 respectively. EDB was analyzed using EPA Drinking Water Method 504.1 (EPA/600/R-94/173). TPH analysis was conducted using method FLORIDA-PRO. The data contained in this SDG were validated with regard to the following parameters:

* Data completeness
* Holding times
* GC/MS tuning and system performance
  Initial/continuing calibrations
* Laboratory method and field quality control blank results
* Surrogate spike recoveries
* Blank spike/blank spike duplicate results
* MS/MSD results
* Internal standard performance
* Compound identification
* Compound quantitation
* Detection limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below and documentation supporting these findings are presented in Appendix C. Qualified analytical results are presented in Appendix A and the results as reported by the laboratory are presented in appendix B.

Volatiles

The laboratory detected benzene (2.10 ug/L), bromodichloromethane (0.53 ug/L), and 2-hexanone (9.2 ug/L) in sample PDFGWMW015001 but reported the results for these compounds as non-detected on their Report of Analysis because the values were below the respective reporting limits. The reported values were changed to the detected values and qualified as estimated, J.

Initial and continuing calibration standard Relative Response Factors (RRFs) for acetone and 2-butanone were less than the 0.05 quality control limit affecting both samples. The non-detected results reported for these compounds were qualified as rejected, UR.

The continuing calibration %D for bromomethane was greater than the 25% quality control limit affecting both samples. The non-detected results for this compound were qualified as estimated, UJ.

EDB

The EDB result as reported by the laboratory is acceptable without qualification.

PAH

All PAH results as reported by the laboratory are acceptable without qualification.

TPH

The TPH result as reported by the laboratory is acceptable without qualification.

Additional Comments: Positive results reported less than the Contract Required Quantitation Limit (CRQL) were qualified as estimated, J.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Benzene, 2-hexanone, and bromodichloromethane were detected in the environmental sample but not reported on the form 1. Non-detected results for acetone and 2-butanone were qualified as rejected, UR, due to initial and continuing calibration non-compliances. Non-detected results for bromomethane were qualified as estimated due to continuing calibration non-compliance.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), and the NFESC guidelines "Navy IRCDQM" (September, 1999). 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, Inc.
David G. Olson
Environmental Scientist

Tetra Tech NUS, Inc.
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

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

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

WATER DATA
Accutest, NJ
SDG: F7253

SAMPLE NUMBER:	13TB080201			PDFGWMW015001								
SAMPLE DATE:	08/03/00			08/03/00			/ /			/ /		
LABORATORY ID:	F7253-2			F7253-1								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U		1	U							
1,1,2,2-TETRACHLOROETHANE	1	U		1	U							
1,1,2-TRICHLOROETHANE	1	U		1	U							
1,1-DICHLOROETHANE	1	U		1	U							
1,1-DICHLOROETHENE	1	U		1	U							
1,2-DIBROMOETHANE	1	U		0.02	U							
1,2-DICHLOROETHANE	1	U		1	U							
1,2-DICHLOROETHENE (TOTAL)	2	U		2	U							
1,2-DICHLOROPROPANE	1	U		1	U							
2-BUTANONE	5	UR	C	5	UR	C						
2-HEXANONE	5	U		9.2	J	P						
4-METHYL-2-PENTANONE	5	U		5	U							
ACETONE	5	UR	C	5	UR	C						
BENZENE	1	U		2.1	J	P						
BROMODICHLOROMETHANE	1	U		0.53	J	P						
BROMOFORM	1	U		1	U							
BROMOMETHANE	1	UJ	C	1	UJ	C						
CARBON DISULFIDE	5	U		5	U							
CARBON TETRACHLORIDE	1	U		1	U							
CHLOROBENZENE	1	U		1	U							
CHLOROETHANE	1	U		1	U							
CHLOROFORM	1	U		1	U							
CHLOROMETHANE	1	U		1	U							
CIS-1,3-DICHLOROPROPENE	1	U		1	U							
DIBROMOCHLOROMETHANE	1	U		1	U							
ETHYLBENZENE	1	U		1	U							
METHYLENE CHLORIDE	5	U		5	U							
STYRENE	1	U		1	U							
TETRACHLOROETHENE	1	U		1	U							
TOLUENE	1	U		1	U							
TRANS-1,3-DICHLOROPROPENE	1	U		1	U							
TRICHLOROETHENE	1	U		1.8								
VINYL CHLORIDE	1	U		1	U							

WATER DATA
Accutest, NJ
SDG: F7253

SAMPLE NUMBER:	13TB080201			PDFGWMW015001								
SAMPLE DATE:	08/03/00			08/03/00			/ /			/ /		
LABORATORY ID:	F7253-2			F7253-1								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
XYLENES, TOTAL	3	U		3	U							

WATER DATA
Accutest, NJ
SDG: F7253

SAMPLE NUMBER:	PDFGWMW015001											
SAMPLE DATE:	08/03/00			/ /			/ /			/ /		
LABORATORY ID:	F7253-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2.2	U										
2-METHYLNAPHTHALENE	2.2	U										
ACENAPHTHENE	4.4	U										
ACENAPHTHYLENE	4.4	U										
ANTHRACENE	2.2	U										
BENZO(A)ANTHRACENE	0.22	U										
BENZO(A)PYRENE	0.22	U										
BENZO(B)FLUORANTHENE	0.22	U										
BENZO(G,H,I)PERYLENE	0.22	U										
BENZO(K)FLUORANTHENE	0.22	U										
CHRYSENE	2.2	U										
DIBENZO(A,H)ANTHRACENE	0.22	U										
FLUORANTHENE	2.2	U										
FLUORENE	2.2	U										
INDENO(1,2,3-CD)PYRENE	0.22	U										
NAPHTHALENE	2.2	U										
PHENANTHRENE	2.2	U										
PYRENE	2.2	U										

WATER DATA
Accutest, NJ
SDG: F7253

SAMPLE NUMBER:	PDFGWMW015001											
SAMPLE DATE:	08/03/00			/ /			/ /			/ /		
LABORATORY ID:	F7253-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	MG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PETROLEUM HYDROCARBONS												
TPH (C8-C40)	0.827											

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

ACCUTEST.

Report of Analysis

Client Sample ID:	PDFGWMW015001		
Lab Sample ID:	F7253-1	**Date Sampled:**	08/03/00
Matrix:	AQ - Ground Water	**Date Received:**	08/04/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0014092.D	1	08/17/00	RAW	n/a	n/a	VG392
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene [a]	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone [a]	ND	10	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
1634-04-4	**Methyl Tert Butyl Ether**	ND	1.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	1.8	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	ug/l	

ND = Not detected
RL = Reporting 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

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ACCUTEST.

Report of Analysis

Client Sample ID:	PDFGWMW015001		
Lab Sample ID:	F7253-1	**Date Sampled:**	08/03/00
Matrix:	AQ - Ground Water	**Date Received:**	08/04/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	88%		80-120%
17060-07-0	1,2-Dichloroethane-D4	97%		69-128%
2037-26-5	Toluene-D8	87%		80-120%
460-00-4	4-Bromofluorobenzene	105%		80-120%

(a) Elevated reporting limit due to coeluting non-target compounds.

ND = Not detected
RL = Reporting 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

ACCUTEST.

Report of Analysis

Client Sample ID:	13TB080201		
Lab Sample ID:	F7253-2	**Date Sampled:**	08/03/00
Matrix:	AQ - Trip Blank Water	**Date Received:**	08/04/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	G0014093.D	1	08/17/00	RAW	n/a	n/a	VG392
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
1634-04-4	**Methyl Tert Butyl Ether**	ND	1.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	ug/l	

ND = Not detected
RL = Reporting 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

ACCUTEST.

Report of Analysis

Client Sample ID:	13TB080201		
Lab Sample ID:	F7253-2	**Date Sampled:**	08/03/00
Matrix:	AQ - Trip Blank Water	**Date Received:**	08/04/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

VOA TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		80-120%
17060-07-0	1,2-Dichloroethane-D4	100%		69-128%
2037-26-5	Toluene-D8	91%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

(a) Sample vial(s) contained significant headspace; reported results are considered minimum values.

ND = Not detected
RL = Reporting 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

ACCUTEST

Report of Analysis

Client Sample ID:	PDFGWMW015001		
Lab Sample ID:	F7253-1	**Date Sampled:**	08/03/00
Matrix:	AQ - Ground Water	**Date Received:**	08/04/00
Method:	EPA 504.1	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	MN08836.D	1	08/15/00	SKW	n/a	n/a	GMN341
Run #2							

CAS No.	Compound	Result	RL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	ug/l	

ND = Not detected
RL = Reporting 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

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ACCUTEST.

Report of Analysis

Client Sample ID:	PDFGWMW015001		
Lab Sample ID:	F7253-1	**Date Sampled:**	08/03/00
Matrix:	AQ - Ground Water	**Date Received:**	08/04/00
Method:	EPA 8310	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA003625.D	1	08/10/00	NF	08/07/00	OP1921	GAA116
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	76%		29-133%
92-94-4	p-Terphenyl	82%		33-133%

ND = Not detected
RL = Reporting 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

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ACCUTEST.

Report of Analysis

Client Sample ID:	PDFGWMW015001		
Lab Sample ID:	F7253-1	**Date Sampled:**	08/03/00
Matrix:	AQ - Ground Water	**Date Received:**	08/04/00
Method:	FLORIDA-PRO	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP10241.D	1	08/14/00	ME	08/09/00	OP1928	GOP425
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	0.827	0.28	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	98%		40-140%

ND = Not detected
RL = Reporting 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

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APPENDIX C

SUPPORT DOCUMENTATION

F7253

HOLDING TIME
08/23/00

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	PDFGWMW015001	F7253-1	NORMAL	F7253	M	08/03/00	08/10/00	08/17/00	7	7	14
UG/L	13TB080201	F7253-2	NORMAL	F7253	OV	08/03/00	/ /	08/17/00	0	0	14
UG/L	PDFGWMW015001	F7253-1	NORMAL	F7253	OV	08/03/00	/ /	08/17/00	0	0	14
UG/L	PDFGWMW015001	F7253-1	NORMAL	F7253	PAH	08/03/00	08/07/00	08/10/00	4	3	7
MG/L	PDFGWMW015001	F7253-1	NORMAL	F7253	TPH	08/03/00	08/09/00	08/14/00	6	5	11

ACCUTEST

CHAIN OF CUSTODY

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #: F7253

ACCUTEST QUOTE #:

012

CLIENT INFORMATION

NAME: Tetra Tech NUS, Inc
ADDRESS: 1401 Oven Park Dr. Suite 102
CITY, STATE, ZIP: Tallahassee FL 32312
SEND REPORT TO: Paul Galligan
PHONE #: 850-385-4899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting - PDF
LOCATION: Milton FL
PROJECT NO.: 7648.00.00.BW00601
FAX #: 850-385-9860

ANALYTICAL INFORMATION

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	VOA/VOH+MTBE (8260)	EDB (504.1)	PAH (8310)	TRPH (FL-PRO)	Total Pb (6010B)	LAB USE ONLY
1	PDFGWMW015001	8-3-00	1245	JA	GW	11	✓		✓	✓	✓	3	3	2	2	1	
2	13TB080 3201											2					

DATA TURNAROUND INFORMATION

- ☑ STANDARD
- ☐ 48 HOUR RUSH
- ☐ 24 HOUR EMERGENCY
- ☐ OTHER _____

APPROVED BY: _____

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- ☐ STANDARD
- ☐ COMMERCIAL "B"
- ☐ DISK DELIVERABLE
- ☐ STATE FORMS
- ☐ OTHER (SPECIFY) _____

COMMENTS/REMARKS

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME: 1700 8-3-00	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1.		1.	2.		2.
RELINQUISHED BY: 3.	DATE TIME:	RECEIVED BY: 3.	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
RELINQUISHED BY: 5.	DATE TIME:	RECEIVED BY: 5.	SEAL #	PRESERVE WHERE APPLICABLE ☐	ON ICE ☐ TEMPERATURE C

Evaluate Continuing Calibration Report

ata File : C:\HPCHEM\1\DATA\081600\G0014086.D
cq On : 16 Aug 2000 8:15 pm
ample : CC390-20,10ml
isc : ms673,vg391,,,,,
S Integration Params: LSCINT.P

Vial: 19
Operator: RickW
Inst : MSVOA1
Multiplr: 1.00

ethod : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
itle : SW-846 Method 8260B & EPA 624 (low level)
ast Update : Mon Aug 14 09:07:45 2000
esponse via : Multiple Level Calibration

Raw

in. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
ax. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
I	Fluorobenzene	1.000	1.000	0.0	88	0.00
	Dichlorodifluoromethane	0.432	0.512	-18.5	96	0.00
P	Chloromethane	0.247	0.249	-0.8	84	-0.01
C	Vinyl Chloride	0.248	0.270	-8.9	86	0.00
	Bromomethane	0.204	0.100	51.0#	39#	-0.02
	Chloroethane	0.183	0.179	2.2	82	0.00
	Trichlorofluoromethane	0.847	0.798	5.8	79	0.01
	Acrolein	0.010	0.009	10.0	74	0.00
C	1,1-Dichloroethene	0.490	0.516	-5.3	83	-0.02
	Freon 113	0.428	0.391	8.6	69	0.00
	Acetone	0.027	0.028	-3.7	93	-0.01
	Carbon Disulfide	0.630	0.597	5.2	75	0.00
	Methylene Chloride	0.393	0.375	4.6	80	-0.01
	trans-1,2-Dichloroethene	0.451	0.393	12.9	71	0.00
	Acrylonitrile	0.026	0.027	-3.8	98	0.00
	Methyl Tert Butyl Ether	0.582	0.501	13.9	76	-0.02
P	1,1-Dichloroethane	0.535	0.495	7.5	77	-0.02
	Vinyl acetate	0.506	0.478	5.5	78	0.00
	Di-isopropyl ether	1.178	1.108	5.9	82	0.00
	2,2-Dichloropropane	0.513	0.481	6.2	75	0.00
	cis-1,2-Dichloroethene	0.230	0.206	10.4	72	0.00
	2-Butanone	0.046	0.042	8.7	80	0.01
	Bromochloromethane	0.140	0.142	-1.4	82	0.00
C	Chloroform	0.570	0.559	1.9	85	0.00
	1,1,1-Trichloroethane	0.590	0.566	4.1	82	-0.01
S	Dibromofluoromethane	0.223	0.198	11.2	78	0.01
	1,1-Dichloropropene	0.441	0.447	-1.4	84	0.00
	Carbon Tetrachloride	0.554	0.530	4.3	82	0.00
S	1,2-Dichloroethane-d4	0.171	0.153	10.5	77	0.00
	Benzene	0.802	0.787	1.9	86	0.00
	1,2-Dichloroethane	0.348	0.326	6.3	81	0.00
	Trichloroethene	0.386	0.386	0.0	89	0.00
C	1,2-Dichloropropane	0.305	0.315	-3.3	87	0.00
	Dibromomethane	0.181	0.172	5.0	82	0.00
	1,4-Dioxane	0.001	0.001#	0.0	114	-0.02
	Bromodichloromethane	0.498	0.467	6.2	84	0.00
	2-Nitropropane	0.052	0.054	-3.8	92	0.01
	2-Chloroethyl vinyl ether	0.128	0.114	10.9	80	-0.02
	4-Methyl-2-pentanone	0.202	0.202	0.0	94	0.00
	cis-1,3-Dichloropropene	0.417	0.355	14.9	73	-0.02
	Chlorobenzene-d5	1.000	1.000	0.0	97	0.00
S	Toluene-d8	0.647	0.626	3.2	96	0.00
C	Toluene	1.174	1.203	-2.5	96	0.00
	trans-1,3-Dichloropropene	0.455	0.350	23.1#	73	0.00

Response Factor Report MSVOA1

Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : SW-846 Method 8260B & EPA 624 (low level)
Last Update : Mon Aug 14 08:57:33 2000
Response via : Initial Calibration

Raw

Calibration Files
1 =G0013987.D 2 =G0013988.D 3 =G0013989.D
4 =G0013990.D 5 =G0013991.D 6 =G0013992.D

		Compound	1	2	3	4	5	6	Avg	%RSD
1)	I	Fluorobenzene	----------ISTD----------							
2)		Dichlorodifluoromet		0.388	0.489	0.470	0.421	0.393	0.432	10.50
3)	P	Chloromethane		0.232	0.259	0.262	0.248	0.233	0.247	5.74
4)	C	Vinyl Chloride	0.210	0.232	0.268	0.274	0.263	0.243	0.248	9.96
5)		Bromomethane	0.191	0.171	0.205	0.224	0.218	0.216	0.204	9.85
6)		Chloroethane		0.177	0.182	0.191	0.183	0.181	0.183	2.72
7)		Trichlorofluorometh	0.872	0.780	0.858	0.886	0.829	0.856	0.847	4.51
8)		Acrolein	0.010	0.012	0.010	0.010	0.009	0.011	0.010	9.05
9)	C	1,1-Dichloroethene	0.481	0.470	0.469	0.547	0.471	0.499	0.490	6.19
10)		Freon 113		0.416	0.391	0.498	0.403	0.433	0.428	9.79
11)		Acetone		0.033	0.025	0.027	0.024	0.026	0.027	13.03
12)		Carbon Disulfide	0.638	0.546	0.584	0.705	0.642	0.663	0.630	8.98
13)		Methylene Chloride		0.462	0.374	0.413	0.348	0.368	0.393	11.49
14)		trans-1,2-Dichloroe	0.451	0.425	0.414	0.490	0.441	0.483	0.451	6.83
15)		Acrylonitrile	0.028	0.029	0.024	0.024	0.023	0.027	0.026	9.61
16)		Methyl Tert Butyl E	0.651	0.636	0.534	0.583	0.494	0.594	0.582	10.21
17)	P	1,1-Dichloroethane	0.538	0.546	0.507	0.566	0.510	0.545	0.535	4.26
18)		Vinyl acetate	0.484	0.539	0.456	0.537	0.485	0.537	0.506	7.06
19)		Di-isopropyl ether	1.262	1.194	1.099	1.193	1.121	1.198	1.178	4.99
20)		2,2-Dichloropropane		0.500	0.502	0.564	0.471	0.526	0.513	6.76
21)		cis-1,2-Dichloroeth	0.220	0.232	0.214	0.252	0.233	0.230	0.230	5.75
22)		2-Butanone	0.050	0.052	0.043	0.047	0.039	0.044	0.046	10.66
23)		Bromochloromethane	0.132	0.141	0.130	0.152	0.139	0.146	0.140	5.99
24)	C	Chloroform	0.609	0.552	0.530	0.582	0.546	0.600	0.570	5.62
25)		1,1,1-Trichloroetha	0.621	0.558	0.560	0.607	0.572	0.625	0.590	5.25
26)	S	Dibromofluoromethan	0.218	0.232	0.216	0.225	0.215	0.234	0.223	3.75
27)		1,1-Dichloropropene	0.488	0.408	0.427	0.470	0.417	0.438	0.441	7.10
28)		Carbon Tetrachlorid	0.569	0.492	0.533	0.571	0.567	0.591	0.554	6.41
29)	S	1,2-Dichloroethane-	0.169	0.176	0.160	0.174	0.167	0.181	0.171	4.21
30)		Benzene	0.838	0.778	0.789	0.810	0.796	0.805	0.802	2.60
31)		1,2-Dichloroethane	0.388	0.345	0.328	0.353	0.320	0.352	0.348	6.86
32)		Trichloroethene	0.528	0.347	0.351	0.381	0.345	0.362	0.386	18.44
33)	C	1,2-Dichloropropane	0.310	0.308	0.302	0.318	0.296	0.299	0.305	2.63
34)		Dibromomethane	0.197	0.177	0.168	0.185	0.179	0.178	0.181	5.45
35)		1,4-Dioxane		0.000	0.001	0.001	0.001	0.001	0.001#	19.85
36)		Bromodichloromethan	0.474	0.470	0.485	0.491	0.510	0.556	0.498	6.39
37)		2-Nitropropane	0.059	0.051	0.048	0.052	0.048	0.052	0.052	7.40
38)		2-Chloroethyl vinyl	0.121	0.129	0.124	0.126	0.128	0.137	0.128	4.42
39)		4-Methyl-2-pentanon	0.235	0.205	0.185	0.189	0.190	0.206	0.202	9.21
40)		cis-1,3-Dichloropro	0.399	0.392	0.418	0.425	0.416	0.451	0.417	5.03
41)	I	Chlorobenzene-d5	----------ISTD----------							
42)	S	Toluene-d8	0.728	0.619	0.613	0.632	0.657	0.629	0.647	6.63

#) = Out of Range

Check Calculation Volatiles SDG 7253

Sample PDFGWMW015001

10/24/00
DGO

- Trichloroethene

$$C = \frac{(\text{Area, TCE})(250\text{ng})}{(\text{Area IS})(\text{AVGRF})(10\text{mL})}$$

$$C = \frac{(53009)(250\text{ng})}{(1914387)(0.386)(10\text{mL})} = 1.79 \frac{\text{ng}}{\text{mL}} = 1.8 \frac{\text{ug}}{\text{L}}$$

Report of Analysis

Client Sample ID:	PDFGWMW015001		
Lab Sample ID:	F7253-1	**Date Sampled:**	08/03/00
Matrix:	AQ - Ground Water	**Date Received:**	08/04/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0014092.D	1	08/17/00	RAW	n/a	n/a	VG392
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene [a]	ND	5.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone [a]	ND	10	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
1634-04-4	**Methyl Tert Butyl Ether**	ND	1.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	1.8	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	ug/l	

ND = Not detected
RL = Reporting 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

Evaluate Continuing Calibration Report

ata File : C:\HPCHEM\1\DATA\081600\G0014086.D
cq On : 16 Aug 2000 8:15 pm
ample : CC390-20,10ml
isc : ms673,vg391,,,,,
S Integration Params: LSCINT.P

Vial: 19
Operator: RickW
Inst : MSVOA1
Multiplr: 1.00

ethod : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
itle : SW-846 Method 8260B & EPA 624 (low level)
ast Update : Mon Aug 14 09:07:45 2000
esponse via : Multiple Level Calibration

Raw

in. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
ax. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
I	Fluorobenzene	1.000	1.000	0.0	88	0.00
	Dichlorodifluoromethane	0.432	0.512	-18.5	96	0.00
P	Chloromethane	0.247	0.249	-0.8	84	-0.01
C	Vinyl Chloride	0.248	0.270	-8.9	86	0.00
	Bromomethane	0.204	0.100	51.0#	39#	-0.02
	Chloroethane	0.183	0.179	2.2	82	0.00
	Trichlorofluoromethane	0.847	0.798	5.8	79	0.01
	Acrolein	0.010	0.009	10.0	74	0.00
C	1,1-Dichloroethene	0.490	0.516	-5.3	83	-0.02
	Freon 113	0.428	0.391	8.6	69	0.00
	Acetone	0.027	0.028	-3.7	93	-0.01
	Carbon Disulfide	0.630	0.597	5.2	75	0.00
	Methylene Chloride	0.393	0.375	4.6	80	-0.01
	trans-1,2-Dichloroethene	0.451	0.393	12.9	71	0.00
	Acrylonitrile	0.026	0.027	-3.8	98	0.00
	Methyl Tert Butyl Ether	0.582	0.501	13.9	76	-0.02
P	1,1-Dichloroethane	0.535	0.495	7.5	77	-0.02
	Vinyl acetate	0.506	0.478	5.5	78	0.00
	Di-isopropyl ether	1.178	1.108	5.9	82	0.00
	2,2-Dichloropropane	0.513	0.481	6.2	75	0.00
	cis-1,2-Dichloroethene	0.230	0.206	10.4	72	0.00
	2-Butanone	0.046	0.042	8.7	80	0.01
	Bromochloromethane	0.140	0.142	-1.4	82	0.00
C	Chloroform	0.570	0.559	1.9	85	0.00
	1,1,1-Trichloroethane	0.590	0.566	4.1	82	-0.01
S	Dibromofluoromethane	0.223	0.198	11.2	78	0.01
	1,1-Dichloropropene	0.441	0.447	-1.4	84	0.00
	Carbon Tetrachloride	0.554	0.530	4.3	82	0.00
S	1,2-Dichloroethane-d4	0.171	0.153	10.5	77	0.00
	Benzene	0.802	0.787	1.9	86	0.00
	1,2-Dichloroethane	0.348	0.326	6.3	81	0.00
	Trichloroethene	0.386	0.386	0.0	89	0.00
C	1,2-Dichloropropane	0.305	0.315	-3.3	87	0.00
	Dibromomethane	0.181	0.172	5.0	82	0.00
	1,4-Dioxane	0.001	0.001#	0.0	114	-0.02
	Bromodichloromethane	0.498	0.467	6.2	84	0.00
	2-Nitropropane	0.052	0.054	-3.8	92	0.01
	2-Chloroethyl vinyl ether	0.128	0.114	10.9	80	-0.02
	4-Methyl-2-pentanone	0.202	0.202	0.0	94	0.00
	cis-1,3-Dichloropropene	0.417	0.355	14.9	73	-0.02
	Chlorobenzene-d5	1.000	1.000	0.0	97	0.00
	Toluene-d8	0.647	0.626	3.2	96	0.00
	Toluene	1.174	1.203	-2.5	96	0.00
	trans-1,3-Dichloropropene	0.455	0.350	23.1#	73	0.00

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\081600\G0014092.D
Acq On : 17 Aug 2000 12:11 am
Sample : F7253-1,10ml
Misc : ms678,vg392,,,,,
MS Integration Params: LSCINT.P
Quant Time: Aug 17 10:05 2000

Vial: 24
Operator: RickW
Inst : MSVOA1
Multiplr: 1.00

Quant Results File: 8260LL.RES

Quant Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : SW-846 Method 8260B & EPA 624 (low level)
Last Update : Mon Aug 14 08:57:33 2000
Response via : Initial Calibration
DataAcq Meth : 8260LL

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	10.79	96	1914387	25.00 ug/L	0.00
41) Chlorobenzene-d5	15.85	117	1730312	25.00 ug/L	0.00
59) 1,4-Dichlorobenzene-d4	19.97	152	1116986	25.00 ug/L	-0.01

System Monitoring Compounds					
26) Dibromofluoromethane	9.75	113	750381	43.88	0.03
Spiked Amount 50.000	Range 80 - 120		Recovery =	87.76%	
29) 1,2-Dichloroethane-d4	10.33	65	635061	48.47	0.00
Spiked Amount 50.000	Range 69 - 128		Recovery =	96.94%	
42) Toluene-d8	13.35	98	1954672	43.68	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery =	87.36%	
61) 4-Bromofluorobenzene	17.92	95	1459467	52.44	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery =	104.88%	

Target Compounds					Qvalue
8) Acrolein	5.68	56	11906m	14.81 ug/L	
30) Benzene	10.29	78	129016	2.10 ug/L #	1
32) Trichloroethene	11.36	95	53009	1.79 ug/L	87
36) Bromodichloromethane	12.23	83	20051	0.53 ug/L #	24
47) 2-hexanone	14.66	43	109037	9.20 ug/L #	1

/2

<LPDL

NOT

#) = qualifier out of range (m) = manual integration

Check Calculation TPH SDG 7253

10/23/00
DGO

Sample PDFGWHW01 5001

• TPH

$$C = \frac{(\text{Area, TPH})(\text{Concentrated Extract Volume})}{(\text{Initial Calibration Avg RF})(\text{Sample Volume})}$$

$$C = \frac{(27418797)(1\text{mL})}{(36480)\ (910\text{mL})} = 0.826 \text{ mg/L}$$

Report of Analysis

Client Sample ID:	PDFGWMW015001		
Lab Sample ID:	F7253-1	**Date Sampled:**	08/03/00
Matrix:	AQ - Ground Water	**Date Received:**	08/04/00
Method:	FLORIDA-PRO	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP10241.D	1	08/14/00	ME	08/09/00	OP1928	GOP425
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	0.827	0.28	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	98%		40-140%

ND = Not detected
RL = Reporting 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

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\0814PRO\OP10241.D Vial: 6
Acq On : 14 Aug 2000 5:50 pm Operator: marke
Sample : F7253-1 Inst : FID 2
Misc : op1928,gop425,water,,,1, Multiplr: 1.00
IntFile : events.e
Quant Time: Aug 15 8:49 2000 Quant Results File: FL_PRO.RES

Quant Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Tue Aug 01 16:09:45 2000
Response via : Initial Calibration
DataAcq Meth : FL_PRO.M

Volume Inj. : 2uL
Signal Phase : DB-5
Signal Info : 0.32mm ID

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
1) S O-TERPHENYL	10.35	1849086	49.017 PPM
Spiked Amount 50.000 Range 40 - 140		Recovery =	98.03%
Target Compounds			
2) H TPH (C8-C40)	13.00	27418797	751.703 PPM
			910m

TPH = 0.83

f)=RT Delta > 1/2 Window (m)=manual int.

LIQUID SAMPLE PREP REPORT

ate: 08-09-00 Method*: 7l PRO Batch#: 1928.

tch Started On: 08-09-00 Prior Number Of Samples In Batch: Ø Analyst: BG

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount	Spike Amount	Final Volume (ml)	Comments
P 1928 MB	X	1000mL	6	<2	0.5mL	—	1.0mL	
P 1928 BS	X	↓	6	↓		0.5mL		
F7257-1	11	950mL	<2	NA				
-2	11	880mL						
F7253-1	11	910mL						
F7264-1	10	900mL						
-2	11	940mL						
-3	11	960mL						
-4	10	960mL						
-5	11	960mL						May have Bubble Surf
F72606-1	12	920	↓	↓	↓		↓	
P 1928 MS	10	930mL			0.5mL	0.5mL	1.0mL	F7257-1
P 1928 MSD	10	930mL			↓	↓	↓	↓
DUP								

KP

rogate ID: E700A Conc: 100 ppm Exp. Date: 1/31/01 Bath Temp.: 75°C

ke ID: E693 Conc: 100 ppm Exp. Date: 1/20/01 Bath Temp2.:

2CL2 Lot # 003216 Hexane Lot # Na2SO4 Lot#

agent # E7-048 Reagent # Sigma-995185 Reagent #

mments:

inquished By: Marcia Hiers Date: 8-9-00

cepted By: Date: 8-9-00

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en method for SW846 methods is 3510C for waters and 3580A for non-aqueous liquids

Response Factor Report FID 2

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Sat Jul 29 12:12:38 2000

Calibration Files
1 =OP09782.D 2 =OP09783.D 3 =OP09784.D
4 =OP09785.D 5 =OP09786.D

	Compound	1	2	3	4	5	Avg	%RSD
S	O-TERPHENYL	3.745	3.670	3.980	3.576	3.890	3.772 E4	4.33
H	TPH (C8-C40)	3.910	3.596	3.758	3.364	3.610	3.648 E4	5.58

186

Check Calculation PAH SDG 7253.

Sample GP1921-BS

- Anthracene

$$C = \frac{(\text{Area, Anthracene})(\text{Concentrated extract Volume})}{(\text{Initial Calibration AV \& RF})(\text{Sample Volume})}$$

$$C = \frac{(991690)(1\,mL)}{(53260)(1000\,mL)} = 18.6\ \frac{ug}{L}$$

Quantitation Report (QT Reviewed)

Signal #1 : D:\HPCHEM\1\DATA\0810PAH\AA003618.D\DAD1B.CH Vial: 15
Signal #2 : D:\HPCHEM\1\DATA\0810PAH\AA003618.D\DAD1A.CH
Acq On : 10-Aug-2000, 19:33:23 Operator: NormF
Sample : op1921-bs Inst : DAD
Misc : op1921,gaa116,water,,,1, Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e
Quant Time: Aug 11 9:03 2000 Quant Results File: 8310_46.RES

Quant Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Fri Aug 11 08:32:37 2000
Response via : Initial Calibration
DataAcq Meth : 8310_46.M

Volume Inj. : 10ul
Signal #1 Phase : Pinnacle PAH Signal #2 Phase: Pinnacle PAH
Signal #1 Info : DAD 270nm Signal #2 Info : DAD 254nm

Compound	RT#1	RT#2	Resp#1	Resp#2	ppm	ppm
System Monitoring Compounds						
S O-Terphenyl	8.25	8.25	6695662	11693394	17.436	17.109
Spiked Amount	20.000	Range	29 - 133	Recovery	= 87.18%	85.55%
S P-Terphenyl	10.41	10.41	26793463	12842920	20.044	19.936
Spiked Amount	20.000	Range	33 - 133	Recovery	= 100.22%	99.68%
Target Compounds						
Naphthalene	5.86	5.86	8282324	4984043	18.122	18.842
Acenaphthylene	6.41	6.41	3104065	3140910	18.611	18.620
1-Methyl Naphtha	6.76	6.76	7095405	3014963	18.786	18.627
2-Methyl Naphtha	6.98	6.98	6936050	4061789	18.147	18.154
Acenaphthene	7.17	7.18	5405989	1980059	18.117	17.792
Fluorene	7.38	7.38	18317934	20597912	18.491	18.396
Phenanthrene	7.97	7.97	15430649	48996392	19.299	18.783
Anthracene	8.58	8.58	991690	64496055	18.618	17.413
Fluoranthene	9.12	9.12	13889249	14538703	19.015	19.021
Pyrene	9.60	9.60	27649089	15094832	19.005	19.280
Benzo(a)Anthrace	10.95	10.95	20349596	14481537	9.714	9.601
Chrysene	11.35	11.35	27193325	21705149	9.589	9.636
Benzo(b)Fluorant	12.32	12.32	9888596	14995762	9.813	9.692
Benzo(k)Fluorant	12.94	12.94	6373457	12307998	9.596	9.563
Benzo(a) Pyrene	13.58	13.58	10885432	12508136	9.835	9.778
Dibenzo(a,h)anth	14.48	14.48	9933690	3191056	9.335	9.359
Benzo(g,h,i) Per	15.27	15.27	6845359	4818413	9.630	9.602
Indeno(1,2,3-cd)	15.93	15.93	5251369	10917847	9.804	9.360

LIQUID SAMPLE PREP REPORT

ate: 8-7-00 Method*: 8310 Batch#: OP1921

atch Started On: 8-7-00 Prior Number Of Samples in Batch : Ø Analyst: RL / KP

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount	Spike Amount	Final Volume (ml)	Comments
P 1921 MB	X	1000ml	6	N/A	0.5ml		1.0ml	
P 1921 BS	X	↓				0.5ml		
F7234 -1	4	980ml						
-2	4	980ml						
-3	5	970ml						
F7236 -1	4	990ml						
-2	4	970ml						
-3	4	980ml						
-4	4	970ml						
-5	4	990ml						
-6	4	980ml						
F7241 -1	5	960ml						
-2	4	980ml						
-3	4	980ml						
F7259 -1	5	910ml						
-2	4	980ml						
-3	4	980ml						
-4	4	980ml						
F7253-1	9	910ml						
F7266 -1	9	890ml						
P 1921 MS	4	490ml				0.5ml	1.0ml	F7234-3
P 1921 MSD	4	490ml	↓	↓	↓	↓	↓	↓
P DUP								

urrogate ID: E699 Conc: 40ppm Exp. Date: 1/31/01 Bath Temp.: 70°

pike ID: E688 Conc: 40/20 ppm Exp. Date: 1/06/01 Bath Temp2.: 70°

H2CL2 Lot # 003216 Hexane Lot #_____ Na2SO4 Lot# 004858

eagent #_____ Reagent #_____ Reagent #_____

Acetonitrile : 000931

omments:_____

elinquished By: M Yoganand Date: 8/7/00

ccepted By: [signature] Date: 8/8/00

Prep method for SW846 methods is 3510C for waters and 3580A for non-aqueous liquids.

Blank Spike Summary

Job Number: F7253
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1921-BS	AA003618.D	1	08/10/00	NF	08/07/00	OP1921	GAA116

The QC reported here applies to the following samples: **Method:** EPA 8310

F7253-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
83-32-9	Acenaphthene	20	18.1	90	40-130
208-96-8	Acenaphthylene	20	18.6	93	28-130
120-12-7	Anthracene	20	18.6	93	62-130
56-55-3	Benzo(a)anthracene	10	9.7	97	67-130
50-32-8	Benzo(a)pyrene	10	9.8	98	59-130
205-99-2	Benzo(b)fluoranthene	10	9.8	98	61-130
191-24-2	Benzo(g,h,i)perylene	10	9.6	96	50-130
207-08-9	Benzo(k)fluoranthene	10	9.6	96	59-130
218-01-9	Chrysene	10	9.6	96	64-130
53-70-3	Dibenzo(a,h)anthracene	10	9.3	93	17-130
206-44-0	Fluoranthene	20	19.0	95	71-130
86-73-7	Fluorene	20	18.5	92	55-130
193-39-5	Indeno(1,2,3-cd)pyrene	10	9.8	98	50-130
91-20-3	Naphthalene	20	18.1	90	38-130
90-12-0	1-Methylnaphthalene	20	18.8	94	35-130
91-57-6	2-Methylnaphthalene	20	18.1	90	33-130
85-01-8	Phenanthrene	20	19.3	96	58-130
129-00-0	Pyrene	20	19.0	95	61-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	87%	29-133%
92-94-4	p-Terphenyl	100%	33-133%

Response Factor Report DAD

ethod : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
itle : PAH's BY EPA 8310
ast Update : Fri Jul 28 07:53:49 2000

alibration Files
1 =AA003250.D L2 =AA003251.D L3 =AA003252.D
4 =AA003256.D L5 =AA003254.D L6 =AA003255.D

		Compound	L1	L2	L3	L4	L5	L6	Avg		%RSD
)		Naphthalene	4.669	4.540	4.582	4.303	4.755	4.572	4.570	E5	3.34
)		Acenaphthylene	1.702	1.604	1.671	1.581	1.764	1.685	1.668	E5	4.00
)		1-Methyl Naphthalen	3.886	3.712	3.789	3.549	3.954	3.772	3.777	E5	3.74
)		2-Methyl Naphthalen	4.064	3.754	3.800	3.565	3.962	3.788	3.822	E5	4.53
)		Acenaphthene	3.096	2.967	2.984	2.788	3.099	2.971	2.984	E5	3.81
)		Fluorene	0.983	0.992	0.997	0.940	1.039	0.992	0.991	E6	3.20
)		Phenanthrene	7.729	7.987	8.078	7.618	8.485	8.075	7.995	E5	3.82
)	S	O-Terphenyl	3.851	3.868	3.838	3.600	4.038	3.845	3.840	E5	3.64
)		Anthracene		5.205	5.568	5.147	5.445	5.268	5.326	E4	3.29
)		Fluoranthene	7.063	7.324	7.410	6.955	7.733	7.342	7.305	E5	3.76
)		Pyrene	1.516	1.486	1.476	1.369	1.486	1.396	1.455	E6	4.02
)	S	P-Terphenyl	1.396	1.341	1.323	1.246	1.396	1.319	1.337	E6	4.21
)		Benzo(a)Anthracene	2.108	2.098	2.104	1.979	2.199	2.081	2.095	E6	3.36
)		Chrysene	3.048	3.029	2.924	2.658	2.790	2.567	2.836	E6	6.98
)		Benzo(b)Fluoranthen	0.987	1.002	1.015	0.958	1.066	1.019	1.008	E6	3.57
)		Benzo(k)Fluoranthen	6.706	6.217	6.670	6.470	7.044	6.742	6.642	E5	4.19
)		Benzo(a) Pyrene	1.033	1.077	1.121	1.065	1.200	1.145	1.107	E6	5.47
)		Dibenzo(a,h)anthrac	1.055	1.033	1.087	1.004	1.125	1.082	1.064	E6	4.03
)		Benzo(g,h,i) Peryle	6.870	6.954	7.187	6.800	7.588	7.252	7.108	E5	4.14
)		Indeno(1,2,3-cd)pyr	5.449	5.173	5.372	5.071	5.678	5.396	5.356	E5	3.99

nal #2 Calibration Files
1 =AA003250.D L2 =AA003251.D L3 =AA003252.D
4 =AA003256.D L5 =AA003254.D L6 =AA003255.D

		Compound	L1	L2	L3	L4	L5	L6	Avg		%RSD
)		Naphthalene	2.655	2.630	2.670	2.500	2.768	2.649	2.645	E5	3.26
)		Acenaphthylene	1.706	1.680	1.686	1.586	1.771	1.692	1.687	E5	3.53
)		1-Methyl Naphthalen	1.731	1.595	1.610	1.503	1.674	1.599	1.619	E5	4.79
)		2-Methyl Naphthalen	2.445	2.197	2.211	2.071	2.299	2.202	2.237	E5	5.58
)		Acenaphthene	1.132	1.124	1.116	1.042	1.151	1.112	1.113	E5	3.37
)		Fluorene	1.147	1.116	1.122	1.054	1.166	1.113	1.120	E6	3.42
)		Phenanthrene	2.775	2.701	2.662	2.448	2.624	2.441	2.608	E6	5.24
)	S	O-Terphenyl	6.818	6.984	6.842	6.387	7.157	6.821	6.835	E5	3.74
)		Anthracene	5.417	5.186	4.404	3.447	3.125	2.658	4.040	E6	28.09
)		Fluoranthene	7.439	7.581	7.713	7.270	8.118	7.740	7.643	E5	3.81
)		Pyrene	7.783	7.836	7.896	7.416	8.218	7.827	7.829	E5	3.27
)	S	P-Terphenyl	6.615	6.506	6.438	6.024	6.745	6.324	6.442	E5	3.89
)		Benzo(a)Anthracene	1.611	1.473	1.491	1.408	1.575	1.493	1.508	E6	4.86
)		Chrysene	2.373	2.277	2.264	2.111	2.308	2.181	2.252	E6	4.15
)		Benzo(b)Fluoranthen	1.596	1.529	1.531	1.458	1.622	1.548	1.547	E6	3.72
)		Benzo(k)Fluoranthen	1.334	1.274	1.288	1.221	1.336	1.270	1.287	E6	3.39
)		Benzo(a) Pyrene	1.230	1.236	1.289	1.223	1.380	1.317	1.279	E6	4.83
)		Dibenzo(a,h)anthrac	3.620	3.253	3.333	3.135	3.622	3.494	3.410	E5	5.91
)		Benzo(g,h,i) Peryle	4.971	4.619	5.076	4.853	5.399	5.192	5.018	E5	5.40
)		Indeno(1,2,3-cd)pyr	1.155	1.113	1.181	1.125	1.238	1.185	1.166	E6	3.91

) = Out of Range

Check Calculation EDB SDG 7253

Sample GHN341 - BS

• EDB

$$C = \frac{(\text{Area EDB})}{(\text{Initial Calibration AVG RF})} = \frac{(5690)}{(25390)} = 0.224 \text{ ppb}$$

Blank Spike Summary

Job Number: F7253
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GMN341-BS	MN08832.D	1	08/15/00	SKW	n/a	n/a	GMN341

The QC reported here applies to the following samples: **Method:** EPA 504.1

F7253-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
106-93-4	1,2-Dibromoethane	0.25	0.22	88	70-130

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\0815EDB\MN08832.D\ECD1B.CH Vial: 11
Signal #2 : C:\HPCHEM\2\DATA\0815EDB\MN08832.D\ECD2A.CH
Acq On : 15 Aug 2000 3:19 pm Operator: stephw
Sample : bs Inst : ECD 2
Misc : gc1031,gmn341,water,,,10, Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e
Quant Time: Aug 15 16:04 2000 Quant Results File: 504_1.RES

Quant Method : C:\HPCHEM\2\METHODS\504_1.M (Chemstation Integrator)
Title : EDB/DBCP by EPA 504.1 or SW846 8011
Last Update : Tue Aug 15 14:04:05 2000
Response via : Initial Calibration
DataAcq Meth : 504_1.M

Volume Inj. : 4uL
Signal #1 Phase : DB-5 Signal #2 Phase: DB-17
Signal #1 Info : 0.32mm ID Signal #2 Info : 0.32mm ID

Compound	RT#1	RT#2	Resp#1	Resp#2	ppb	ppb
Target Compounds						
1,2-Dibromoethan	3.13	4.08	7133	5690	0.228	0.224
1,2-Dibromo-3-ch	7.97	9.05	16266	17560	0.234	0.235

Response Factor Report ECD 2

Method : C:\HPCHEM\2\METHODS\504_1.M (Chemstation Integrator)
Title : EDB/DBCP by EPA 504.1 or SW846 8011
Last Update : Tue Aug 15 14:06:01 2000

RSD < 20%

Calibration Files
.125 =MN08823.D 0.25 =MN08824.D 0.50 =MN08825.D
0.75 =MN08826.D 1.0 =MN08827.D

	Compound	.125	0.25	0.50	0.75	1.0	Avg	%RSD
)	1,2-Dibromoethane	3.234	3.484	3.139	2.914	2.874	3.129 E4	7.97
)	1,2-Dibromo-3-chlorop	7.417	7.327	6.921	6.511	6.517	6.939 E4	6.20

ignal #2 Calibration Files
.125 =MN08823.D 0.25 =MN08824.D 0.50 =MN08825.D
0.75 =MN08826.D 1.0 =MN08827.D

	Compound	.125	0.25	0.50	0.75	1.0	Avg	%RSD
)	1,2-Dibromoethane	2.626	2.745	2.535	2.396	2.393	2.539 E4	5.96
)	1,2-Dibromo-3-chlorop	7.799	7.859	7.522	7.036	7.154	7.474 E4	4.96

= Out of Range

LIQUID SAMPLE PREP REPORT

ate: 8-11-00 Method*: 504.1 Batch#: GC1031

atch Started On: 8-11-00 Prior Number Of Samples In Batch : Ø Analyst: KP

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount	Spike Amount	Final Volume (ml)	Comments
#1031 MB	X	35.0mL	N/A	N/A	N/A	~~25~~ KP	2.0mL	
#1031 BS	X	↓	↓	↓	↓	25µl	↓	
F7289-15	6	↓	↓	↓	↓		↓	
-16	5	↓	↓	↓	↓		↓	
-17	4	↓	↓	↓	↓		↓	
F7253-1	5	↓	↓	↓	↓		↓	
F7266-1	6	↓	↓	↓	↓		↓	
F7300-3	6	↓	↓	↓	↓		↓	
F7300-3MS	5	↓	↓	↓	↓	25µl	↓	
F7300-3MSD	4	↓	↓	↓	↓	25µl	↓	
1.0 ppb std	NA	35ml	NA	NA	NA	100ul	2.0ml	p528 350ppb Exp 2/2/01
0.75 ppb std	↓	↓	↓	↓	↓	75ul	↓	↓
0.50 ppb std	↓	↓	↓	↓	↓	50ul	↓	↓
0.25 ppb std	↓	↓	↓	↓	↓	25ul	↓	↓
0.125 ppb std	↓	↓	↓	↓	↓	12.5ul	↓	↓
MDL Std	↓	↓	↓	↓	↓	20ul	↓	p529 35ppb Exp 2/2/01
QC check	↓	↓	↓	↓	↓	25ul	↓	p530 350ppb Exp 2/2/01
P MS								
P MSD								
P DUP								

urrogate ID: — Conc: — Exp. Date: — Bath Temp.: —

pike ID: P528 Conc: 350ppb Exp. Date: 2/2/01 Bath Temp2.: —

H2CL2 Lot #: — Hexane Lot #: 996811 Na2SO4 Lot#: —

eagent #: — Reagent #: — Reagent #: NaCl 996000

omments:

elinquished By: Kendra L. Portada Date: 8-11-00

ccepted By: [illegible] Date: 8-11-00

Prep method for SW846 methods is 3510C for waters and 3580A for non-aqueous liquids

TETRA TECH NUS, INC.

INTERNAL CORRESPONDENCE

EPC-00-023

TO: **T. HANSEN** **DATE: OCTOBER 24, 2000**

FROM: **D. OLSON** **COPIES: DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – LEAD**
CTO 079 – NAS WHITING FIELD, MILTON, FLORIDA
SDG F7253

SAMPLES: 1 Aqueous

PDFGWMW015001

OVERVIEW

The sample set for CTO 079, NAS Whiting Field, SDG F7253 consists of one (1) groundwater environmental sample. A field duplicate pair was not included with this SDG. The environmental sample was analyzed for lead. The field crew did not designate the environmental sample for Matrix Spike (MS) Matrix Spike Duplicate (MSD) analysis however the laboratory assigned a sample for MS/MSD analysis.

The sample was collected by Tetra Tech NUS, Inc. on August 3, 2000 and analyzed by Accutest Laboratories-Orlando, Florida under Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. The lead analysis was conducted using the "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, method 6010B. The data contained in this SDG were validated with regard to the following parameters:

* Data completeness
* Holding times
* Calibration verification
* Field blank analysis
* Laboratory blank analysis
* MS/MSD results
* Laboratory duplicate precision
* Laboratory control sample recovery
* Field duplicate precision
* Sample quantitation
* Detection limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below and documentation supporting these findings are presented in Appendix C. Qualified analytical results are presented in Appendix A and the results as reported by the laboratory are presented in appendix B.

Lead

Lead was detected at a maximum concentration of 2.7 ug/L in a continuing calibration blank however, no validation action was required since lead in the environmental sample was reported as non-detected.

Additional Comments: None.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Lead was detected at a maximum concentration of 2.7 ug/L in a continuing calibration blank.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Inorganic Data Validation (02/94), and the NFESC guidelines "Navy ~~Installation Restoration Program Laboratory Quality Assurance Guide" (February, 1996)~~. The text of this report has been formulated to address only those problem areas affecting data quality. IRCDQM

"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)."

-2-00
JAO

Tetra Tech NUS, Inc.
For David G. Olson
Environmental Scientist

Tetra Tech NUS, Inc.
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

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

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

WATER DATA
Accutest, NJ
SDG: F7253

SAMPLE NUMBER:	PDFGWMW015001											
SAMPLE DATE:	08/03/00			/ /			/ /			/ /		
LABORATORY ID:	F7253-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
LEAD	1.6	U										

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

ACCUTEST.

Report of Analysis

Client Sample ID:	PDFGWMW015001		
Lab Sample ID:	F7253-1	**Date Sampled:**	08/03/00
Matrix:	AQ - Ground Water	**Date Received:**	08/04/00
		Percent Solids:	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Lead	1.6 U	5.0	ug/l	1	08/10/00	08/17/00	JK	SW846 6010A

RL = Reporting Limit

C09

APPENDIX C

SUPPORT DOCUMENTATION

CHAIN OF CUSTODY

ACCUTEST

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #: F7253
ACCUTEST QUOTE #: 012

CLIENT INFORMATION

NAME: Tetra Tech NUS, Inc
ADDRESS: 1401 Oven Park Dr. Suite 102
CITY, STATE, ZIP: Tallahassee FL 32312
SEND REPORT TO: Paul Galligan
PHONE #: 850-385-4899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting - PDF
LOCATION: Milton FL
PROJECT NO.: 7648.00 00.BW00601
FAX #: 850-385-9860

ANALYTICAL INFORMATION

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	DATE	TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	HCl	NaOH	HNO3	H2SO4	NONE	VOA/VOH+MTBE (8260)	EDB (504.1)	PAH (8310)	TRPH (FL-PRO)	Total Pb (6010B)
1	PDFGWMW015001	8-3-00	1245	JA	GW	11	✓		✓	✓	✓	3	3	2	2	1
2	13TB080 3201											2				

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

LAB USE ONLY

DATA TURNAROUND INFORMATION

☑ STANDARD
☐ 48 HOUR RUSH
☐ 24 HOUR EMERGENCY
☐ OTHER

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

☐ STANDARD
☐ COMMERCIAL "B"
☐ DISK DELIVERABLE
☐ STATE FORMS
☐ OTHER (SPECIFY)

COMMENTS/REMARKS

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME: 1700 8-3-00	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
RELINQUISHED BY: 3.	DATE TIME:	RECEIVED BY: 3.	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
RELINQUISHED BY: 5.	DATE TIME:	RECEIVED BY:	SEAL #		

8/4 0900

F7253

HOLDING TIME
08/23/00

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	PDFGWMW015001	F7253-1	NORMAL	F7253	M	08/03/00	08/10/00	08/17/00	7	7	14
UG/L	13TB080201	F7253-2	NORMAL	F7253	OV	08/03/00	/ /	08/17/00	0	0	14
UG/L	PDFGWMW015001	F7253-1	NORMAL	F7253	OV	08/03/00	/ /	08/17/00	0	0	14
UG/L	PDFGWMW015001	F7253-1	NORMAL	F7253	PAH	08/03/00	08/07/00	08/10/00	4	3	7
MG/L	PDFGWMW015001	F7253-1	NORMAL	F7253	TPH	08/03/00	08/09/00	08/14/00	6	5	11

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F7253
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0817M1.ASC Date Analyzed: 08/17/00 Methods: SW846 6010A
QC Limits: result < RL Run ID: MA1994 Units: ug/l

Metal	RL	IDL	CCB raw	final
Aluminum	200	30	anr	
Antimony	5.0	2.39	anr	
Arsenic	10	3.4	anr	
Barium	200	.39	anr	
Beryllium	5.0	.36	anr	
Cadmium	5.0	.33	anr	
Calcium	1000	19.5	anr	
Chromium	10	.637	anr	
Cobalt	50	.797	anr	
Copper	25	.747	anr	
Iron	300	32	anr	
Lead	5.0	1.59	2.7	<5.0B
Magnesium	5000	17.6	anr	
Manganese	15	.16	anr	
Molybdenum	50	.68		
Nickel	40	1	anr	
Potassium	5000	28.2	anr	
Selenium	10	2	anr	
Silver	10	.96	anr	
Sodium	5000	153	anr	
Thallium	10	2.69	anr	
Tin	50	2.2		
Vanadium	50	.717	anr	
Zinc	20	.83	anr	

(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F7253
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2941
Matrix Type: AQUEOUS

Methods: SW846 6010A
Units: ug/l

Prep Date: 08/10/00

Metal	BSP Result	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	anr			
Antimony				
Arsenic				
Barium				
Beryllium				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron	anr			
Lead	952	1000	95.2	80-120
Magnesium				
Manganese	anr			
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Thallium				
Tin				
Vanadium	anr			
Zinc				

Associated samples MP2941: F7253-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**T. HANSEN**	**DATE:**	**NOVEMBER 13, 2000**
FROM:	**DOUGLAS S. SCHLOER**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – VOA / PAH / TPH**
CTO 079, NAS WHITING FIELD
SDG F7266

SAMPLES: 1/ Aqueous / VOA

OWSTB080400

1/ Aqueous / VOA / PAH / TPH

OWSGWMW01S001

OVERVIEW

The sample set for CTO 079, NAS Whiting Field; SDG F7266 consists of one (1) aqueous trip blank, one (1) aqueous environmental sample. The samples were analyzed for volatile organic compounds, MTBE, 1,2-dibromoethane, polynuclear aromatic hydrocarbons and total petroleum hydrocarbons. No field duplicate pairs were included in SDG F7266.

The samples were collected by TetraTech NUS on August 4, 2000 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using SW-846 Methods 8260B, 8310, and Florida State Petroleum Residual Organics (FL-PRO) analytical and reporting protocols. The data contained in this SDG were validated with regard to the following parameters:

* • Data completeness
* • Holding times
* • GC/MS Tuning
• Initial and continuing calibration
* • Blank results
* • Surrogate spike recoveries
* • Blank Spike / Blank Spike Duplicate results
* • Detection Limits
* • Compound Quantitation
* • Compound Identification

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

VOA

On 8/14/00, on instrument MSVOA1, initial calibration mean Relative Response Factors (RRF) fell below the 0.05 quality control limit for acetone and 2-butanone. For samples OWSGWMW01S001 and OWSTB080400 nondetected results for acetone and 2-butanone were rejected (UR).

On 8/17/00, on instrument MSVOA1, continuing calibration verification RRFs fell below the 0.05 quality control limit for acetone and 2-butanone. For samples OWSGWMW01S001 and OWSTB080400 nondetected results for acetone and 2-butanone were rejected (UR).

On 8/17/00, on instrument MSVOA1, continuing calibration verification % Differences (%D) exceeded the 25% quality control limit for bromomethane and cis-1,3-dichloropropene. For samples OWSGWMW01S001 and OWSTB080400 nondetected results for bromomethane and cis-1,3-dichloropropene were qualified as estimated (UJ).

PAH

On 7/28/00, on instrument DAD, an initial calibration %Relative Standard Deviation (RSD) exceeded the 20% quality control limit on one analytical column for Anthracene. In order to meet quality control criteria, the laboratory used a quadratic type curve fit for Anthracene. No qualifiers were required on this basis.

TPH

All data quality parameters were met for this fraction.

Additional Comments

Positive results below the reporting limit were qualified as estimated, J, due to uncertainty near the detection limit.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Several volatile and polynuclear aromatic hydrocarbon compounds did not meet acceptance criteria for initial and continuing calibrations.

Other Factors Affecting Data Quality: None

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99) and the NFESC guidelines "Navy IRCDQM" (Sept 1999). 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

Douglas Schloer
Chemist/Data Validator

TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

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

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

Accutest, NJ
SDG: F7266

SAMPLE NUMBER:	OWSGWMW01S001			OWSTB080400								
SAMPLE DATE:	08/04/00			08/04/00			/ /			/ /		
LABORATORY ID:	F7266-1			F7266-2								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U		1	U							
1,1,2,2-TETRACHLOROETHANE	1	U		1	U							
1,1,2-TRICHLOROETHANE	1	U		1	U							
1,1-DICHLOROETHANE	1	U		1	U							
1,1-DICHLOROETHENE	1	U		1	U							
1,2-DIBROMOETHANE	0.04			1	U							
1,2-DICHLOROETHANE	1	U		1	U							
1,2-DICHLOROETHENE (TOTAL)	2	U		2	U							
1,2-DICHLOROPROPANE	1	U		1	U							
2-BUTANONE	5	UR	C	5	UR	C						
2-HEXANONE	5	U		5	U							
4-METHYL-2-PENTANONE	5	U		5	U							
ACETONE	5	UR	C	5	UR	C						
BENZENE	1	U		1	U							
BROMODICHLOROMETHANE	1	U		1	U							
BROMOFORM	1	U		1	U							
BROMOMETHANE	1	UJ	C	1	UJ	C						
CARBON DISULFIDE	5	U		5	U							
CARBON TETRACHLORIDE	1	U		1	U							
CHLOROBENZENE	1	U		1	U							
CHLOROETHANE	1	U		1	U							
CHLOROFORM	0.54	J	P	1	U							
CHLOROMETHANE	1	U		1	U							
CIS-1,3-DICHLOROPROPENE	1	UJ	C	1	UJ	C						
DIBROMOCHLOROMETHANE	1	U		1	U							
ETHYLBENZENE	1	U		1	U							
METHYLENE CHLORIDE	5	U		5	U							
STYRENE	1	U		1	U							
TETRACHLOROETHENE	1	U		1	U							
TOLUENE	1	U		1	U							
TRANS-1,3-DICHLOROPROPENE	1	U		1	U							
TRICHLOROETHENE	1	U		1	U							
VINYL CHLORIDE	1	U		1	U							

SAMPLE NUMBER:	OWSGWMW01S001			OWSTB080400								
SAMPLE DATE:	08/04/00			08/04/00			/ /			/ /		
LABORATORY ID:	F7266-1			F7266-2								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
XYLENES, TOTAL	3	U		3	U							

SAMPLE NUMBER:	OWSGWMW01S001			
SAMPLE DATE:	08/04/00	/ /	/ /	/ /
LABORATORY ID:	F7266-1			
QC_TYPE:	NORMAL			
% SOLIDS:	0.0 %	100.0 %	100.0 %	100.0 %
UNITS:	UG/L			
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2.2	U										
2-METHYLNAPHTHALENE	2.2	U										
ACENAPHTHENE	4.4	U										
ACENAPHTHYLENE	4.4	U										
ANTHRACENE	2.2	U										
BENZO(A)ANTHRACENE	0.22	U										
BENZO(A)PYRENE	0.22	U										
BENZO(B)FLUORANTHENE	0.22	U										
BENZO(G,H,I)PERYLENE	0.22	U										
BENZO(K)FLUORANTHENE	0.22	U										
CHRYSENE	2.2	U										
DIBENZO(A,H)ANTHRACENE	0.22	U										
FLUORANTHENE	2.2	U										
FLUORENE	2.2	U										
INDENO(1,2,3-CD)PYRENE	0.22	U										
NAPHTHALENE	0.7	J	P									
PHENANTHRENE	2.2	U										
PYRENE	2.2	U										

Accutest, NJ
SDG: F7266

SAMPLE NUMBER:	OWSGWMW01S001			
SAMPLE DATE:	08/04/00	/ /	/ /	/ /
LABORATORY ID:	F7266-1			
QC_TYPE:	NORMAL			
% SOLIDS:	0.0 %	100.0 %	100.0 %	100.0 %
UNITS:	MG/L			
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PETROLEUM HYDROCARBONS												
TPH (C8-C40)	0.392											

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

ACCUTEST

Report of Analysis

Client Sample ID:	OWSTB080400		
Lab Sample ID:	F7266-2	**Date Sampled:**	08/04/00
Matrix:	AQ - Trip Blank Water	**Date Received:**	08/05/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	G0014140.D	1	08/18/00	RAW	n/a	n/a	VG392
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	2.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	ug/l	
74-83-9	Methyl bromide	ND	1.0	ug/l	
74-87-3	Methyl chloride	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	ug/l	
1634-04-4	**Methyl Tert Butyl Ether**	ND	1.0	ug/l	
100-42-5	Styrene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	ug/l	

1, 2 - Dibromoethane missing
Run by 8011

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

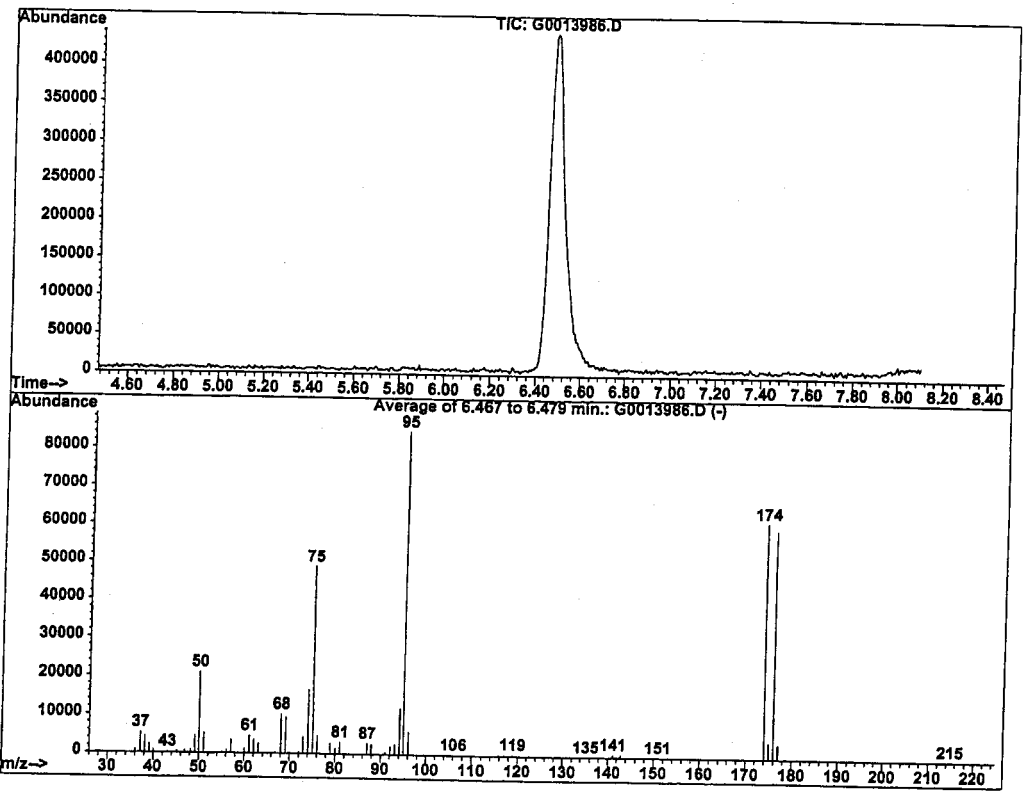
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Florida • 4405 Vineland Road • Suite C-15 • Orlando, FL 32811 • tel: 407-425-6700 • fax: 407-425-0707 • http://www.accutest.com

Methods: SW-846 8260B

Data File : C:\HPCHEM\1\DATA\081300\G0013986.D
Acq On : 13 Aug 2000 11:53 am
Sample : BFB tune
Misc :
MS Integration Params: LSCINT.P
Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : SW-846 Method 8260B & EPA 624 (low level)

Vial: 100
Operator: JuanG
Inst : MSVOA1
Multiplr: 1.00



Spectrum Information: Average of 6.467 to 6.479 min.

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	24.8	21032	PASS
75	95	30	60	57.8	48901	PASS
95	95	100	100	100.0	84675	PASS
96	95	5	9	7.1	6022	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	72.9	61688	PASS
175	174	5	9	7.1	4357	PASS
176	174	95	101	96.9	59789	PASS
177	176	5	9	6.5	3869	PASS

013986.D 8260LL.M Mon Aug 14 17:02:12 2000 MSVOA1

Response Factor Report MSVOA1

Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : SW-846 Method 8260B & EPA 624 (low level)
Last Update : Mon Aug 14 08:57:33 2000
Response via : Initial Calibration

Raw

Calibration Files
1 =G0013987.D 2 =G0013988.D 3 =G0013989.D
4 =G0013990.D 5 =G0013991.D 6 =G0013992.D

		Compound	1	2	3	4	5	6	Avg	%RSD
1)	I	Fluorobenzene	----------ISTD----------							
2)		Dichlorodifluoromet		0.388	0.489	0.470	0.421	0.393	0.432	10.50
3)	P	Chloromethane		0.232	0.259	0.262	0.248	0.233	0.247	5.74
4)	C	Vinyl Chloride	0.210	0.232	0.268	0.274	0.263	0.243	0.248	9.96
5)		Bromomethane	0.191	0.171	0.205	0.224	0.218	0.216	0.204	9.85
6)		Chloroethane		0.177	0.182	0.191	0.183	0.181	0.183	2.72
7)		Trichlorofluorometh	0.872	0.780	0.858	0.886	0.829	0.856	0.847	4.51
8)		Acrolein	0.010	0.012	0.010	0.010	0.009	0.011	0.010	9.05
9)	C	1,1-Dichloroethene	0.481	0.470	0.469	0.547	0.471	0.499	0.490	6.19
0)		Freon 113		0.416	0.391	0.498	0.403	0.433	0.428	9.79
1)		Acetone		0.033	0.025	0.027	0.024	0.026	0.027	13.03
2)		Carbon Disulfide	0.638	0.546	0.584	0.705	0.642	0.663	0.630	8.98
3)		Methylene Chloride		0.462	0.374	0.413	0.348	0.368	0.393	11.49
4)		trans-1,2-Dichloroe	0.451	0.425	0.414	0.490	0.441	0.483	0.451	6.83
5)		Acrylonitrile	0.028	0.029	0.024	0.024	0.023	0.027	0.026	9.61
6)		Methyl Tert Butyl E	0.651	0.636	0.534	0.583	0.494	0.594	0.582	10.21
7)	P	1,1-Dichloroethane	0.538	0.546	0.507	0.566	0.510	0.545	0.535	4.26
)		Vinyl acetate	0.484	0.539	0.456	0.537	0.485	0.537	0.506	7.06
)		Di-isopropyl ether	1.262	1.194	1.099	1.193	1.121	1.198	1.178	4.99
)		2,2-Dichloropropane		0.500	0.502	0.564	0.471	0.526	0.513	6.76
)		cis-1,2-Dichloroeth	0.220	0.232	0.214	0.252	0.233	0.230	0.230	5.75
)		2-Butanone	0.050	0.052	0.043	0.047	0.039	0.044	0.046	10.66
)		Bromochloromethane	0.132	0.141	0.130	0.152	0.139	0.146	0.140	5.99
)	C	Chloroform	0.609	0.552	0.530	0.582	0.546	0.600	0.570	5.62
)		1,1,1-Trichloroetha	0.621	0.558	0.560	0.607	0.572	0.625	0.590	5.25
)	S	Dibromofluoromethan	0.218	0.232	0.216	0.225	0.215	0.234	0.223	3.75
)		1,1-Dichloropropene	0.488	0.408	0.427	0.470	0.417	0.438	0.441	7.10
)		Carbon Tetrachlorid	0.569	0.492	0.533	0.571	0.567	0.591	0.554	6.41
)	S	1,2-Dichloroethane-	0.169	0.176	0.160	0.174	0.167	0.181	0.171	4.21
)		Benzene	0.838	0.778	0.789	0.810	0.796	0.805	0.802	2.60
)		1,2-Dichloroethane	0.388	0.345	0.328	0.353	0.320	0.352	0.348	6.86
		Trichloroethene	0.528	0.347	0.351	0.381	0.345	0.362	0.386	18.44
	C	1,2-Dichloropropane	0.310	0.308	0.302	0.318	0.296	0.299	0.305	2.63
		Dibromomethane	0.197	0.177	0.168	0.185	0.179	0.178	0.181	5.45
		1,4-Dioxane		0.000	0.001	0.001	0.001	0.001	0.001#	19.85
		Bromodichloromethan	0.474	0.470	0.485	0.491	0.510	0.556	0.498	6.39
		2-Nitropropane	0.059	0.051	0.048	0.052	0.048	0.052	0.052	7.40
		2-Chloroethyl vinyl	0.121	0.129	0.124	0.126	0.128	0.137	0.128	4.42
		4-Methyl-2-pentanon	0.235	0.205	0.185	0.189	0.190	0.206	0.202	9.21
		cis-1,3-Dichloropro	0.399	0.392	0.418	0.425	0.416	0.451	0.417	5.03
	I	Chlorobenzene-d5	----------ISTD----------							
	S	Toluene-d8	0.728	0.619	0.613	0.632	0.657	0.629	0.647	6.63

= Out of Range

Response Factor Report MSVOA1

Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : SW-846 Method 8260B & EPA 624 (low level)
Last Update : Mon Aug 14 08:57:33 2000
Response via : Initial Calibration

Calibration Files
1 =G0013987.D 2 =G0013988.D 3 =G0013989.D
4 =G0013990.D 5 =G0013991.D 6 =G0013992.D

		Compound	1	2	3	4	5	6	Avg	%RSD
)	C	Toluene		1.078	1.077	1.222	1.278	1.214	1.174	7.76
)		trans-1,3-Dichlorop	0.452	0.414	0.434	0.468	0.460	0.500	0.455	6.47
)		1,1,2-Trichloroetha	0.237	0.244	0.223	0.250	0.237	0.238	0.238	3.77
)		Tetrachloroethene	0.539	0.477	0.535	0.550	0.556	0.535	0.532	5.34
)		2-hexanone	0.177	0.172	0.169	0.169	0.165	0.176	0.171	2.72
)		1,3-Dichloropropane	0.496	0.473	0.464	0.480	0.464	0.492	0.478	2.86
)		Dibromochloromethan	0.411	0.454	0.464	0.493	0.487	0.548	0.476	9.56
)		1,2-Dibromoethane	0.335	0.356	0.349	0.372	0.364	0.371	0.358	3.93
)		1-Chlorohexane	0.595	0.440	0.502	0.519	0.513	0.512	0.513	9.63
)	P	Chlorobenzene	0.904	0.862	0.857	0.890	0.919	0.910	0.890	2.89
)		1,1,1,2-Tetrachloro	0.466	0.475	0.465	0.498	0.492	0.516	0.486	4.14
)	C	Ethylbenzene	1.411	1.463	1.352	1.579	1.606	1.542	1.492	6.70
)		m,p-Xylene	1.474	1.132	1.364	1.455	1.463	1.395	1.381	9.34
)		o-Xylene	1.461	1.367	1.331	1.504	1.502	1.458	1.437	5.00
)		Styrene	0.869	0.878	0.878	0.936	0.936	0.925	0.904	3.54
)	P	Bromoform		0.285	0.274	0.325	0.324	0.355	0.313	10.58
	I	1,4-Dichlorobenzene-d	----------ISTD----------							
		Isopropylbenzene	2.889	2.294	2.524	2.600	2.810	2.630	2.624	8.08
	S	4-Bromofluorobenzen	0.630	0.618	0.633	0.600	0.624	0.633	0.623	2.06
		Bromobenzene	0.857	0.740	0.757	0.735	0.767	0.759	0.769	5.80
	P	1,1,2,2-Tetrachloro	0.589	0.537	0.552	0.525	0.538	0.547	0.548	4.08
		1,2,3-Trichloroprop	0.152	0.185	0.169	0.172	0.180	0.184	0.173	7.18
		n-Propylbenzene	3.194	2.554	2.945	3.012	3.139	2.940	2.964	7.61
		2-Chlorotoluene	2.252	1.885	1.907	2.072	2.148	2.061	2.054	6.84
		4-Chlorotoluene	2.364	1.980	2.088	2.240	2.296	2.268	2.206	6.51
		1,3,5-Trimethylbenz	2.535	2.052	2.159	2.312	2.382	2.281	2.287	7.39
		sec-Butylbenzene	3.275	2.436	2.659	2.808	2.914	2.724	2.803	10.05
		1,3-Dichlorobenzene	1.476	1.277	1.317	1.255	1.343	1.243	1.318	6.51
		4-Isopropyltoluene	2.824	2.179	2.256	2.453	2.496	2.324	2.422	9.50
		1,4-Dichlorobenzene	1.664	1.275	1.337	1.361	1.431	1.365	1.405	9.69
		tert-Butylbenzene	2.342	1.827	1.908	1.999	2.071	1.997	2.024	8.76
		n-Butylbenzene	2.614	1.944	2.051	2.264	2.389	2.205	2.245	10.68
		1,2-Dichlorobenzene	1.450	1.241	1.206	1.201	1.300	1.223	1.270	7.48
		1,2,4-Trimethylbenz	2.587	2.070	2.135	2.357	2.457	2.300	2.318	8.38
		1,2-Dibromo-3-Chlor	0.156	0.142	0.137	0.142	0.166	0.162	0.151	7.92
		1,2,4-Trichlorobenz		0.891	1.012	0.976	1.100	1.011	0.998	7.52
		Hexachlorobutadiene		0.443	0.563	0.587	0.609	0.521	0.545	12.04
		Naphthalene		1.027	1.140	1.084	1.250	1.236	1.147	8.37
		1,2,3-Trichlorobenz		0.806	0.870	0.827	0.949	0.867	0.864	6.37

0.0142 / 0.3575 / 3.96

Out of Range

Instrument Performance Check (BFB)

Job Number: F7266
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample: VG391-BFB
Lab File ID: G0014123.D
Instrument ID: GCMSG
Injection Date: 08/17/00
Injection Time: 21:30

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	125184	24.8		Pass
75	30.0 - 60.0% of mass 95	268864	53.2		Pass
95	Base peak, 100% relative abundance	505728	100.0		Pass
96	5.0 - 9.0% of mass 95	37256	7.4		Pass
173	Less than 2.0% of mass 174	1096	0.22	(0.32) [a]	Pass
174	50.0 - 100.0% of mass 95	343232	67.9		Pass
175	5.0 - 9.0% of mass 174	23157	4.6	(6.7) [a]	Pass
176	95.0 - 101.0% of mass 174	331904	65.6	(96.7) [a]	Pass
177	5.0 - 9.0% of mass 176	26517	5.2	(8.0) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

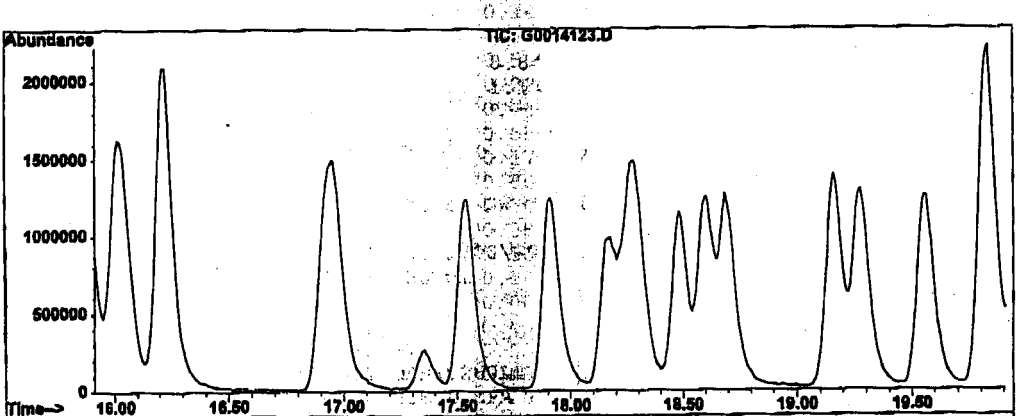
This check applies to the following Samples, MS, MSD, Blanks, and Standards:

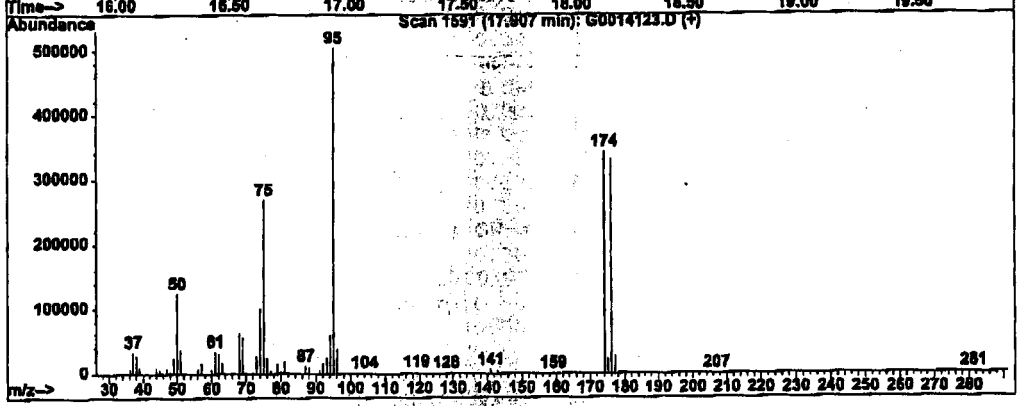
Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VG391-BS5	G0014124.D	08/17/00	22:09	00:39	Blank Spike
VG392-BS2	G0014124.D	08/17/00	22:09	00:39	Blank Spike
VG391-MB5	G0014125.D	08/17/00	22:48	01:18	Method Blank
VG392-MB2	G0014125.D	08/17/00	22:48	01:18	Method Blank
ZZZZZZ	G0014126.D	08/17/00	23:28	01:58	(unrelated sample)
ZZZZZZ	G0014127.D	08/18/00	00:07	02:37	(unrelated sample)
ZZZZZZ	G0014128.D	08/18/00	00:46	03:16	(unrelated sample)
ZZZZZZ	G0014129.D	08/18/00	01:25	03:55	(unrelated sample)
ZZZZZZ	G0014130.D	08/18/00	02:04	04:34	(unrelated sample)
ZZZZZZ	G0014131.D	08/18/00	02:43	05:13	(unrelated sample)
F7290-8MS	G0014132.D	08/18/00	03:23	05:53	Matrix Spike
F7290-8MSD	G0014133.D	08/18/00	04:03	06:33	Matrix Spike Duplicate
ZZZZZZ	G0014134.D	08/18/00	04:42	07:12	(unrelated sample)
ZZZZZZ	G0014135.D	08/18/00	05:22	07:52	(unrelated sample)
ZZZZZZ	G0014136.D	08/18/00	06:01	08:31	(unrelated sample)
ZZZZZZ	G0014137.D	08/18/00	06:40	09:10	(unrelated sample)
ZZZZZZ	G0014138.D	08/18/00	07:19	09:49	(unrelated sample)
F7266-1	G0014139.D	08/18/00	07:59	10:29	OWSGWMW01S001
F7266-2	G0014140.D	08/18/00	08:38	11:08	OWSTB080400

Methods: SW-846 8260B

Data File : C:\HPCHEM\1\DATA\081700\G0014123.D
Acq On : 17 Aug 2000 9:30 pm
Sample : CC390-20,10ml
Misc : ms679,vg393,,,,,
MS Integration Params: LSCINT.P
Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : SW-846 Method 8260B & EPA 624 (low level)

Vial: 18
Operator: RickW
Inst : MSVOA1
Multiplr: 1.00





Spectrum Information: Scan 1591

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	24.8	125184	PASS
75	95	30	60	53.2	268864	PASS
95	95	100	100	100.0	505728	PASS
96	95	5	9	7.4	37256	PASS
173	174	0.00	2	0.3	1096	PASS
174	95	50	100	67.9	343232	PASS
175	174	5	9	6.7	23157	PASS
176	174	95	101	96.7	331904	PASS
177	176	5	9	8.0	26517	PASS

Evaluate Continuing Calibration Report

ta File : C:\HPCHEM\1\DATA\081700\G0014123.D Vial: 18
q On : 17 Aug 2000 9:30 pm Operator: RickW
mple : CC390-20,10ml Inst : MSVOA1
sc : ms679,vg393,,,,, Multiplr: 1.00
Integration Params: LSCINT.P

thod : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
tle : SW-846 Method 8260B & EPA 624 (low level)
st Update : Mon Aug 14 08:57:33 2000
sponse via : Multiple Level Calibration

NHF

n. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
x. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
I	Fluorobenzene	1.000	1.000	0.0	104	0.00
	Dichlorodifluoromethane	0.432	0.420	2.8	93	0.00
P	Chloromethane	0.247	0.260	-5.3	103	-0.02
C	Vinyl Chloride	0.248	0.260	-4.8	98	0.00
	Bromomethane	0.204	0.119	41.7#	55	-0.02
	Chloroethane	0.183	0.180	1.6	98	0.00
	Trichlorofluoromethane	0.847	0.791	6.6	92	0.02
	Acrolein	0.010	0.008	20.0	82	-0.01
C	1,1-Dichloroethene	0.490	0.528	-7.8	100	0.00
	Freon 113	0.428	0.428	0.0	89	0.02
	Acetone	0.027	0.029	-7.4	113	-0.02
	Carbon Disulfide	0.680	0.622	1.3	91	0.00
	Methylene Chloride	0.393	0.386	1.8	97	-0.01
	trans-1,2-Dichloroethene	0.451	0.445	1.3	94	0.00
	Acrylonitrile	0.026	0.027	-3.8	116	0.00
	Methyl Tert Butyl Ether	0.582	0.529	9.1	94	-0.01
P	1,1-Dichloroethane	0.535	0.521	2.6	95	-0.02
	Vinyl acetate	0.506	0.531	-4.9	103	0.00
	Di-isopropyl ether	1.178	1.195	-1.4	104	0.00
	2,2-Dichloropropane	0.513	0.480	6.4	88	0.00
	cis-1,2-Dichloroethene	0.230	0.217	5.7	89	0.00
	2-Butanone	0.046	0.048	-4.3	107	0.02
	Bromochloromethane	0.140	0.148	-5.7	101	0.00
C	Chloroform	0.570	0.526	7.7	94	0.00
	1,1,1-Trichloroethane	0.590	0.580	1.7	99	0.00
S	Dibromofluoromethane	0.223	0.203	9.0	94	0.04
	1,1-Dichloropropene	0.441	0.466	-5.7	103	0.00
	Carbon Tetrachloride	0.554	0.562	-1.4	102	0.00
S	1,2-Dichloroethane-d4	0.171	0.161	5.8	96	0.00
	Benzene	0.802	0.845	-5.4	108	0.00
	1,2-Dichloroethane	0.348	0.344	1.1	101	0.00
	Trichloroethene	0.386	0.405	-4.9	110	0.00
C	1,2-Dichloropropane	0.305	0.332	-8.9	108	0.02
	Dibromomethane	0.181	0.174	3.9	98	0.00
	1,4-Dioxane	0.001	0.001	0.0	203#	-0.01
	Bromodichloromethane	0.498	0.487	2.2	103	0.00
	2-Nitropropane	0.052	0.053	-1.9	107	0.00
	2-Chloroethyl vinyl ether	0.128	0.117	8.6	96	-0.01
	4-Methyl-2-pentanone	0.202	0.179	11.4	98	-0.01
	cis-1,3-Dichloropropene	0.417	0.311	25.4#	76	-0.02
I	Chlorobenzene-d5	1.000	1.000	0.0	87	0.00
S	Toluene-d8	0.647	0.660	-2.0	91	0.00
C	Toluene	1.474	1.300	-10.7	92	0.00

Trans-1,3-dichloropropene

	1,1,2-Trichloroethane	0.238	0.254	-6.7	88	0.00
	Tetrachloroethene	0.532	0.590	-10.9	93	-0.01
	2-hexanone	0.171	0.192	-12.3	99	0.00
	1,3-Dichloropropane	0.478	0.501	-4.8	91	0.00
	Dibromochloromethane	0.476	0.470	1.3	83	-0.02
	1,2-Dibromoethane	0.358	0.386	-7.8	90	-0.01
	1-Chlorohexane	0.513	0.550	-7.2	92	0.00
P	Chlorobenzene	0.890	0.928	-4.3	91	-0.01
	1,1,1,2-Tetrachloroethane	0.486	0.517	-6.4	90	-0.01
C	Ethylbenzene	1.492	1.692	-13.4	93	-0.01
	m,p-Xylene	1.381	1.565	-13.3	93	0.00
	o-Xylene	1.437	1.611	-12.1	93	-0.01
	Styrene	0.904	0.951	-5.2	88	-0.01
P	Bromoform	0.313	0.276	11.8	74	-0.01
I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	83	-0.01
	Isopropylbenzene	2.624	2.872	-9.5	92	-0.02
S	4-Bromofluorobenzene	0.623	0.645	-3.5	90	-0.01
	Bromobenzene	0.769	0.790	-2.7	89	0.00
P	1,1,2,2-Tetrachloroethane	0.548	0.606	-10.6	96	0.00
	1,2,3-Trichloropropane	0.173	0.190	-9.8	92	0.00
	n-Propylbenzene	2.964	3.274	-10.5	90	0.00
	2-Chlorotoluene	2.054	2.229	-8.5	90	-0.01
	4-Chlorotoluene	2.206	2.393	-8.5	89	-0.01
	1,3,5-Trimethylbenzene	2.287	2.472	-8.1	89	-0.01
	sec-Butylbenzene	2.803	3.022	-7.8	90	0.00
	1,3-Dichlorobenzene	1.318	1.319	-0.1	87	-0.01
	4-Isopropyltoluene	2.422	2.580	-6.5	88	-0.02
	1,4-Dichlorobenzene	1.405	1.404	0.1	86	-0.01
	tert-Butylbenzene	2.024	2.221	-9.7	92	0.00
	n-Butylbenzene	2.245	2.378	-5.9	87	0.00
	1,2-Dichlorobenzene	1.270	1.244	2.0	86	0.00
	1,2,4-Trimethylbenzene	2.318	2.474	-6.7	87	-0.01
	1,2-Dibromo-3-Chloropropane	0.151	0.156	-3.3	91	0.00
	1,2,4-Trichlorobenzene	0.998	0.987	1.1	84	0.00
	Hexachlorobutadiene	0.545	0.643	-18.0	91	0.00
	Naphthalene	1.147	1.143	0.3	88	0.00
	1,2,3-Trichlorobenzene	0.864	0.896	-3.7	90	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

G0013990.D 8260LL.M Fri Aug 18 14:38:49 2000 MSVOA1

Method Blank Summary

Job Number: F7266
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG392-MB2	G0014125.D	1	08/17/00	RAW	n/a	n/a	VG392

The QC reported here applies to the following samples: **Method:** SW846 8260B

F7266-1, F7266-2

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	2.0	ug/l	
75-25-2	Bromoform	ND	2.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-00-3	Chloroethane	ND	5.0	ug/l	
67-66-3	Chloroform	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	2.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
591-78-6	2-Hexanone	ND	10	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	ug/l	
74-83-9	Methyl bromide	ND	5.0	ug/l	
74-87-3	Methyl chloride	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	ug/l	
100-42-5	Styrene	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

Method Blank Summary

Job Number: F7266
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG392-MB2	G0014125.D	1	08/17/00	RAW	n/a	n/a	VG392

The QC reported here applies to the following samples: **Method:** SW846 8260B

F7266-1, F7266-2

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	92%	80-120%
17060-07-0	1,2-Dichloroethane-D4	97%	69-128%
2037-26-5	Toluene-D8	92%	80-120%
460-00-4	4-Bromofluorobenzene	100%	80-120%

Volatile Internal Standard Area Summary

Job Number: F7266
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Check Std: VG393-CC390
Lab File ID: G0014123.D
Instrument ID: GCMSG
Injection Date: 08/17/00
Injection Time: 21:30

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Check Std	2354005	10.78	1508779	15.84	1039865	19.97
Upper Limit [a]	4708010	11.28	3017558	16.34	2079730	20.47
Lower Limit [b]	1177003	10.28	754390	15.34	519933	19.47

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
VG391-BS5	2311223	10.77	1846874	15.83	1089939	19.96
VG392-BS2	2311223	10.77	1846874	15.83	1089939	19.96
VG392-MB2	1722938	10.78	1557186	15.84	1071829	19.98
VG391-MB5	1722938	10.78	1557186	15.84	1071829	19.98
ZZZZZZ	1648639	10.78	1511943	15.84	1004211	19.97
ZZZZZZ	1738184	10.77	1426761	15.83	1005292	19.97
ZZZZZZ	1900730	10.78	1608276	15.84	1074955	19.96
ZZZZZZ	2323448	10.78	1539843	15.84	1028679	19.97
ZZZZZZ	2293938	10.78	1599329	15.83	1019418	19.97
ZZZZZZ	2279372	10.78	1562671	15.83	987531	19.96
F7290-8MS	1780366	10.77	1493178	15.83	1089897	19.97
F7290-8MSD	1773222	10.79	1540410	15.84	1109940	19.97
ZZZZZZ	1865438	10.78	1588363	15.84	1106627	19.97
ZZZZZZ	2035101	10.78	1820648	15.85	1245738	19.97
ZZZZZZ	2046074	10.79	1857473	15.85	1230830	19.97
ZZZZZZ	2550476	10.78	2158253	15.84	1447835	19.98
ZZZZZZ	2206689	10.78	1833194	15.85	1213985	19.97
F7266-1	1967850	10.79	1839824	15.84	1226907	19.98
F7266-2 [c]	2052060	10.77	1726059	15.83	1226225	19.97

IS 1 = Fluorobenzene
IS 2 = Chlorobenzene-D5
IS 3 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of internal standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of internal standard area; Retention time -0.5 minutes.
(c) Sample vial(s) contained significant headspace; reported results are considered minimum values.

Volatile Surrogate Recovery Summary

Job Number: F7266
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Method: SW846 8260B **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
F7266-1	G0014139.D	84.0	82.0	88.0	97.0
F7266-2	G0014140.D	89.0	89.0	94.0	98.0
F7290-8MS	G0014132.D	90.0	91.0	96.0	100.0
F7290-8MSD	G0014133.D	88.0	88.0	93.0	103.0
VG392-BS2	G0014124.D	98.0	102.0	98.0	124.0*
VG392-MB2	G0014125.D	92.0	97.0	92.0	100.0
VG392-MB	G0014088.D	91.0	95.0	88.0	105.0

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	80-120%
S2 = 1,2-Dichloroethane-D4	69-128%
S3 = Toluene-D8	80-120%
S4 = 4-Bromofluorobenzene	80-120%

Blank Spike Summary

Job Number: F7266
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG392-BS2	G0014124.D	1	08/17/00	RAW	n/a	n/a	VG392

The QC reported here applies to the following samples: **Method:** SW846 8260B

F7266-1, F7266-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	142	114	37-160
71-43-2	Benzene	25	24.7	99	61-141
75-27-4	Bromodichloromethane	25	22.5	90	72-125
75-25-2	Bromoform	25	20.6	82	62-126
108-90-7	Chlorobenzene	25	23.6	94	75-125
75-00-3	Chloroethane	25	30.0	120	58-134
67-66-3	Chloroform	25	22.4	90	73-125
75-15-0	Carbon disulfide	125	114	91	70-146
56-23-5	Carbon tetrachloride	25	25.0	100	62-126
75-34-3	1,1-Dichloroethane	25	23.5	94	75-125
75-35-4	1,1-Dichloroethylene	25	26.0	104	73-125
107-06-2	1,2-Dichloroethane	25	23.4	94	66-130
78-87-5	1,2-Dichloropropane	25	25.8	103	75-125
124-48-1	Dibromochloromethane	25	22.7	91	75-125
10061-01-5	cis-1,3-Dichloropropene	25	20.8	83	58-136
540-59-0	1,2-Dichloroethene (total)	50	48.0	96	57-137
10061-02-6	trans-1,3-Dichloropropene	25	20.8	83	49-139
100-41-4	Ethylbenzene	25	25.2	101	67-128
591-78-6	2-Hexanone	125	128	102	60-135
108-10-1	4-Methyl-2-pentanone	125	128	102	64-131
74-83-9	Methyl bromide	25	16.7	67	32-149
74-87-3	Methyl chloride	25	28.4	114	59-143
75-09-2	Methylene chloride	25	24.1	96	73-125
78-93-3	Methyl ethyl ketone	125	127	102	54-133
1634-04-4	Methyl Tert Butyl Ether	25	23.7	95	72-125
100-42-5	Styrene	25	25.1	100	74-127
71-55-6	1,1,1-Trichloroethane	25	23.6	94	72-125
79-34-5	1,1,2,2-Tetrachloroethane	25	27.2	109	68-125
79-00-5	1,1,2-Trichloroethane	25	24.1	96	75-125
127-18-4	Tetrachloroethylene	25	24.1	96	75-125
108-88-3	Toluene	25	25.0	100	72-125
79-01-6	Trichloroethylene	25	23.4	94	72-125
75-01-4	Vinyl chloride	25	31.9	128	63-138
1330-20-7	Xylene (total)	75	75.5	101	69-127

Blank Spike Summary

Job Number: F7266
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG392-BS2	G0014124.D	1	08/17/00	RAW	n/a	n/a	VG392

The QC reported here applies to the following samples: **Method:** SW846 8260B

F7266-1, F7266-2

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	98%	80-120%
17060-07-0	1,2-Dichloroethane-D4	102%	69-128%
2037-26-5	Toluene-D8	98%	80-120%
460-00-4	4-Bromofluorobenzene	124%*	80-120%

Sequence Name: C:\HPCHEM\2\SEQUENCE\0815edb.S
Comment:
Operator: stephw
Data Path: C:\HPCHEM\2\DATA\0815edb\
Pre-Seq Cmd:
Post-Seq Cmd:

gmn 341

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	MN08822	504_1	hexane
2	Sample	2	MN08823	504_1	0.125ppb std p528
3	Sample	3	MN08824	504_1	0.25ppb std p528
4	Sample	4	MN08825	504_1	0.50ppb std p528
5	Sample	5	MN08826	504_1	0.75ppb std p528
6	Sample	6	MN08827	504_1	1.0ppb std p528
7	Sample	7	MN08828	504_1	MDL std p529
8	Sample	8	MN08829	504_1	QC check p530
9	Sample	9	MN08830	504_1	F7266-1 14:45
10	Sample	10	MN08831	504_1	mb
11	Sample	11	MN08832	504_1	bs
12	Sample	12	MN08833	504_1	F7289-15
13	Sample	13	MN08834	504_1	F7289-16
14	Sample	14	MN08835	504_1	F7289-17
15	Sample	15	MN08836	504_1	F7253-1
16	Sample	16	MN08837	504_1	F7300-3
17	Sample	17	MN08838	504_1	F7300-3ms
18	Sample	18	MN08839	504_1	F7300-3msd
19	Sample	19	MN08840	504_1	0.25ppb ccv
20	Sample	19	MN08841	504_1	0.25ppb ccv

Response Factor Report ECD 2

Method : C:\HPCHEM\2\METHODS\504_1.M (Chemstation Integrator)
Title : EDB/DBCP by EPA 504.1 or SW846 8011
Last Update : Tue Aug 15 14:06:01 2000

RSD < 20%

Calibration Files
.125 =MN08823.D 0.25 =MN08824.D 0.50 =MN08825.D
0.75 =MN08826.D 1.0 =MN08827.D

	Compound	.125	0.25	0.50	0.75	1.0	Avg	%RSD
1)	1,2-Dibromoethane	3.234	3.484	3.139	2.914	2.874	3.129 E4	7.97
2)	1,2-Dibromo-3-chlorop	7.417	7.327	6.921	6.511	6.517	6.939 E4	6.20

Signal #2 Calibration Files
.125 =MN08823.D 0.25 =MN08824.D 0.50 =MN08825.D
0.75 =MN08826.D 1.0 =MN08827.D

	Compound	.125	0.25	0.50	0.75	1.0	Avg	%RSD
)	1,2-Dibromoethane	2.626	2.745	2.535	2.396	2.393	2.539 E4	5.96
)	1,2-Dibromo-3-chlorop	7.799	7.859	7.522	7.036	7.154	7.474 E4	4.96

$\%RSD = \frac{0.370}{7.474}(100) = 4.96$

Out of Range
504_1.M Tue Aug 15 14:06:21 2000 GCECD1

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\2\DATA\0815EDB\MN08840.D\ECD1B.CH Vial: 19
Signal #2 : C:\HPCHEM\2\DATA\0815EDB\MN08840.D\ECD2A.CH
Acq On : 15 Aug 2000 6:43 pm Operator: stephw
Sample : 0.25ppb ccv Inst : ECD 2
Misc : gc1031,gmn341,water,,,10, Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\2\METHODS\504_1.M (Chemstation Integrator)
Title : EDB/DBCP by EPA 504.1 or SW846 8011
Last Update : Tue Aug 15 14:06:01 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 20% Max. Rel. Area : 150%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1,2-Dibromoethane	31.290	32.441 E3	-3.7	93	0.00
1,2-Dibromo-3-chloropropane	69.387	71.282 E3	-2.7	97	0.00
Signal #2					
1,2-Dibromoethane	25.388	26.577 E3	-4.7	97	0.00
1,2-Dibromo-3-chloropropa	74.740	79.164 E3	-5.9	101	0.00

Method Blank Summary

Job Number: F7266
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GMN341-MB	MN08831.D	1	08/15/00	SKW	n/a	n/a	GMN341

The QC reported here applies to the following samples: **Method:** EPA 504.1

F7266-1

CAS No.	Compound	Result	RL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	ug/l	

Blank Spike Summary

Job Number: F7266
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GMN341-BS	MN08832.D	1	08/15/00	SKW	n/a	n/a	GMN341

The QC reported here applies to the following samples: **Method:** EPA 504.1

F7266-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
106-93-4	1,2-Dibromoethane	0.25	0.22	88	70-130

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE ____ OF ____

CLIENT NAS Whiting Field		JOB NUMBER	
SUBJECT Sample Calc.			
BASED ON OWSGWMW015001 (F7266-1)		DRAWING NUMBER	
BY Douglas S Schlom	CHECKED BY	APPROVED BY	DATE 9/26/00

Fraction: Volatile
Matrix: Aqueous
Compound: Chloroform
form I: 0.54 ug/L

$$ug/L = \frac{A_x (I_s)}{A_{is} (RRF)(V_o)}$$

$$= \frac{24125 \text{ Area} (250 ng)}{1967850 \text{ Area} (0.570)(10.0 ml)}$$

$$= 0.537 \text{ ng/ml or ug/L}$$

A_x = 24125 Area

I_s = 250 ng

A_{is} = 1967850 Area

$\overline{RRF}$ 0.570

V_o = 10.0 ml

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\081700\G0014139.D
Acq On : 18 Aug 2000 7:59 am
Sample : F7266-1,10ml
Misc : ms678,vg392,,,,,
MS Integration Params: LSCINT.P
Quant Time: Aug 18 14:00 2000

Vial: 33
Operator: RickW
Inst : MSVOA1
Multiplr: 1.00

Quant Results File: 8260LL.RES

Quant Method : C:\HPCHEM\1\METHODS\8260LL.M (RTE Integrator)
Title : SW-846 Method 8260B & EPA 624 (low level)
Last Update : Mon Aug 14 08:57:33 2000
Response via : Initial Calibration
DataAcq Meth : 8260LL

Rev

Internal Standards

	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	10.79	96	1967850	25.00 ug/L	0.00
41) Chlorobenzene-d5	15.84	117	1839824	25.00 ug/L	0.00
59) 1,4-Dichlorobenzene-d4	19.98	152	1226907	25.00 ug/L	0.00

ystem Monitoring Compounds

26) Dibromofluoromethane	9.75	113	743072	42.27	0.03
Spiked Amount 50.000	Range 80 - 120		Recovery =	84.54%	
29) 1,2-Dichloroethane-d4	10.33	65	548950	40.76	0.00
Spiked Amount 50.000	Range 69 - 128		Recovery =	81.52%	
42) Toluene-d8	13.35	98	2085689	43.84	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery =	87.68%	
61) 4-Bromofluorobenzene	17.91	95	1488273	48.69	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery =	97.38%	

arget Compounds

					Qvalue
24) Chloroform	9.46	83	24125m	0.54 ug/L	
30) Naphthalene	24.34	128	126399	2.25 ug/L	96

= qualifier out of range (m) = manual integration

GC/MS Analysis Log

Date: 8-17-00 Analyst Signature: [illegible] Run Batch: _____

Analysis Method: 8260 Column: DB-624 Detector: 5970MSD

Method File: 8260LL Instrument ID: G Calibration Date: 8-13-00

	Data File	Sample ID	Sample Amt.	Matrix	PH	ALS #	Dil.	Method	Vial #	Comments
(11)	G001H132	F7290-MS	10mL	W		27	1	8260	2	✓ matrix
(12)	33	-MSD	↓	↓		27	↓	↓	2	✓ matrix
	34	F7264-1			1	28			1	✓
	35	-2			1	29			1	✓
	36	-3			1	30			1	✓
	37	-4			1	31			1	✓
	38	-5			1	32			1	✓
	39	F7266-1			1.5	33			1	✓
	40	-2	↓	↓	1	34	↓	↓	1	HS!

NAF

Notes: _____

Matrix: Designate W for water, L for [illegible]

tial Sequence: C:\HPCHEM\1\SEQUENCE\0810PAH.S

Sel	Run	Vial	Method	Datafile	SeqTable	Calib:RF:RT	Sample Name
No	1	1	8310_46	AA003602	01:01		8310 L4 CCV s808
No	2	2	8310_46	AA003603	02:01		op1909-mb
No	3	3	8310_46	AA003604	03:01		f7194-2
No	4	4	8310_46	AA003605	04:01		f7194-7
No	5	5	8310_46	AA003606	05:01		f7194-9,4
No	6	6	8310_46	AA003607	06:01		f7194-10,4
No	7	7	8310_46	AA003608	07:01		f7194-15,4
No	8	8	8310_46	AA003609	08:01		op1913-mb
No	9	9	8310_46	AA003610	09:01		f7205-4
No	10	10	8310_46	AA003611	10:01		f7205-11
No	11	1	8310_46	AA003612	11:01		ccv
No	12	11	8310_46	AA003613	12:01		wp66-bs
No	13	12	8310_46	AA003614	13:01		wp66-mb
No	14	13	8310_46	AA003615	14:01		wp66-8310
No	15	14	8310_46	AA003616	15:01		wp66-dupe
No	16	1	8310_46	AA003617	16:01		ccv
No	17	15	8310_46	AA003618	17:01		op1921-bs
No	18	16	8310_46	AA003619	18:01		op1921-mb
No	19	17	8310_46	AA003620	19:01		f7234-1
No	20	18	8310_46	AA003621	20:01		f7234-2
No	21	19	8310_46	AA003622	21:01		f7234-3
No	22	20	8310_46	AA003623	22:01		op1921-ms
No	23	21	8310_46	AA003624	23:01		op1921-msd
No	24	22	8310_46	AA003625	24:01		f7253-1
No	25	23	8310_46	AA003626	25:01		f7266-1
No	26	1	8310_46	AA003627	26:01		ccv
No	27	24	8310_46	AA003628	27:01		f7236-1
No	28	25	8310_46	AA003629	28:01		f7236-2
No	29	26	8310_46	AA003630	29:01		f7236-3
No	30	27	8310_46	AA003631	30:01		f7236-4
No	31	28	8310_46	AA003632	31:01		f7236-5
No	32	29	8310_46	AA003633	32:01		f7236-6
No	33	30	8310_46	AA003634	33:01		f7241-1
No	34	31	8310_46	AA003635	34:01		f7241-2
No	35	32	8310_46	AA003636	35:01		f7241-3
No	36	1	8310_46	AA003637	36:01		ccv
No	37	33	8310_46	AA003638	37:01		f7259-1,8
No	38	34	8310_46	AA003639	38:01		f7259-2
No	39	2	8310_46	AA003640	39:01		f7259-3
No	40	3	8310_46	AA003641	40:01		f7259-4
No	41	1	8310_46	AA003642	41:01		ccv

Response Factor Report DAD

ethod : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
itle : PAH's BY EPA 8310
ast Update : Fri Jul 28 07:53:49 2000

alibration Files
1 =AA003250.D L2 =AA003251.D L3 =AA003252.D
4 =AA003256.D L5 =AA003254.D L6 =AA003255.D

	Compound	L1	L2	L3	L4	L5	L6	Avg		%RSD
	Naphthalene	4.669	4.540	4.582	4.303	4.755	4.572	4.570	E5	3.34
	Acenaphthylene	1.702	1.604	1.671	1.581	1.764	1.685	1.668	E5	4.00
	1-Methyl Naphthalen	3.886	3.712	3.789	3.549	3.954	3.772	3.777	E5	3.74
	2-Methyl Naphthalen	4.064	3.754	3.800	3.565	3.962	3.788	3.822	E5	4.53
	Acenaphthene	3.096	2.967	2.984	2.788	3.099	2.971	2.984	E5	3.81
	Fluorene	0.983	0.992	0.997	0.940	1.039	0.992	0.991	E6	3.20
	Phenanthrene	7.729	7.987	8.078	7.618	8.485	8.075	7.995	E5	3.82
S	O-Terphenyl	3.851	3.868	3.838	3.600	4.038	3.845	3.840	E5	3.64
	Anthracene		5.205	5.568	5.147	5.445	5.268	5.326	E4	3.29
	Fluoranthene	7.063	7.324	7.410	6.955	7.733	7.342	7.305	E5	3.76
	Pyrene	1.516	1.486	1.476	1.369	1.486	1.396	1.455	E6	4.02
S	P-Terphenyl	1.396	1.341	1.323	1.246	1.396	1.319	1.337	E6	4.21
	Benzo(a)Anthracene	2.108	2.098	2.104	1.979	2.199	2.081	2.095	E6	3.36
	Chrysene	3.048	3.029	2.924	2.658	2.790	2.567	2.836	E6	6.98
	Benzo(b)Fluoranthen	0.987	1.002	1.015	0.958	1.066	1.019	1.008	E6	3.57
	Benzo(k)Fluoranthen	6.706	6.217	6.670	6.470	7.044	6.742	6.642	E5	4.19
	Benzo(a) Pyrene	1.033	1.077	1.121	1.065	1.200	1.145	1.107	E6	5.47
	Dibenzo(a,h)anthrac	1.055	1.033	1.087	1.004	1.125	1.082	1.064	E6	4.03
	Benzo(g,h,i) Peryle	6.870	6.954	7.187	6.800	7.588	7.252	7.108	E5	4.14
	Indeno(1,2,3-cd)pyr	5.449	5.173	5.372	5.071	5.678	5.396	5.356	E5	3.99

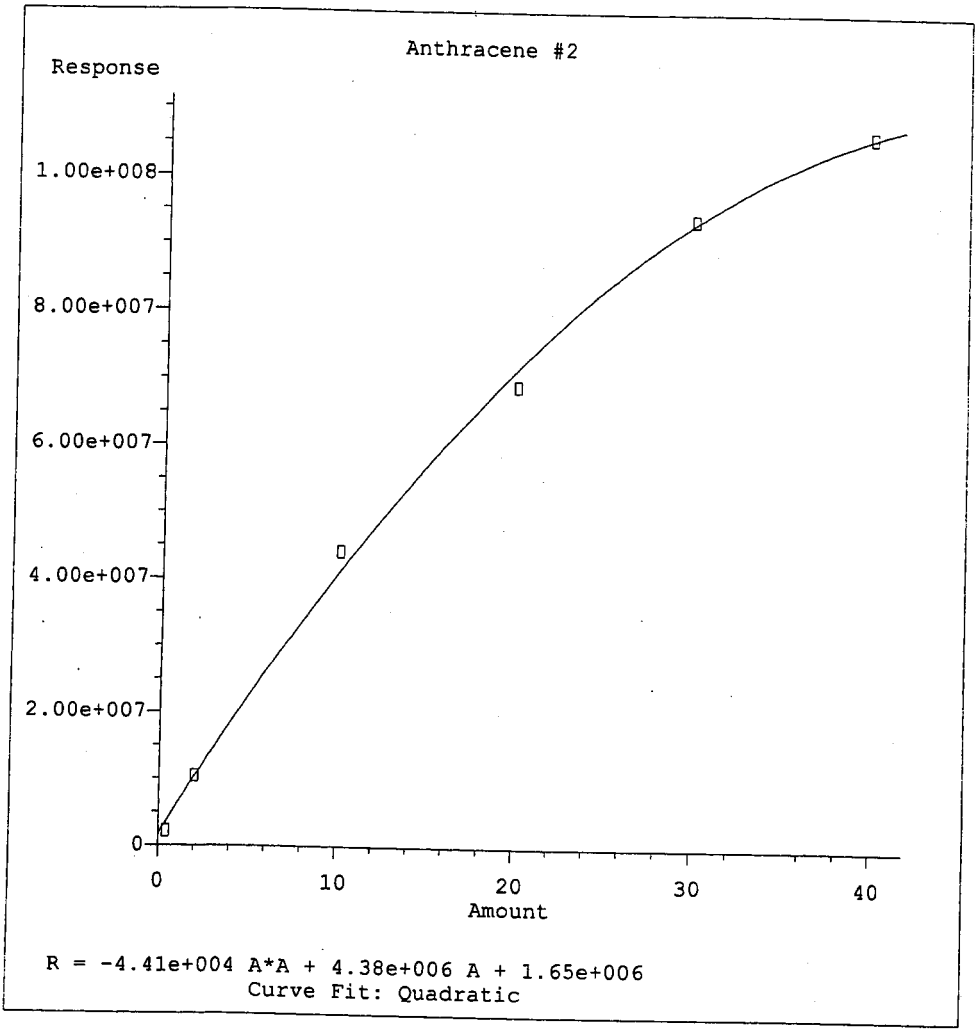
%RSD = .1769 / 5.326 = 3.3

al #2 Calibration Files
=AA003250.D L2 =AA003251.D L3 =AA003252.D
=AA003256.D L5 =AA003254.D L6 =AA003255.D

	Compound	L1	L2	L3	L4	L5	L6	Avg		%RSD
	Naphthalene	2.655	2.630	2.670	2.500	2.768	2.649	2.645	E5	3.26
	Acenaphthylene	1.706	1.680	1.686	1.586	1.771	1.692	1.687	E5	3.53
	1-Methyl Naphthalen	1.731	1.595	1.610	1.503	1.674	1.599	1.619	E5	4.79
	2-Methyl Naphthalen	2.445	2.197	2.211	2.071	2.299	2.202	2.237	E5	5.58
	Acenaphthene	1.132	1.124	1.116	1.042	1.151	1.112	1.113	E5	3.37
	Fluorene	1.147	1.116	1.122	1.054	1.166	1.113	1.120	E6	3.42
	Phenanthrene	2.775	2.701	2.662	2.448	2.624	2.441	2.608	E6	5.24
S	O-Terphenyl	6.818	6.984	6.842	6.387	7.157	6.821	6.835	E5	~~3.74~~
	Anthracene	5.417	5.186	4.404	3.447	3.125	2.658	4.040	E6	28.09
	Fluoranthene	7.439	7.581	7.713	7.270	8.118	7.740	7.643	E5	3.81
	Pyrene	7.783	7.836	7.896	7.416	8.218	7.827	7.829	E5	3.27
S	P-Terphenyl	6.615	6.506	6.438	6.024	6.745	6.324	6.442	E5	3.89
	Benzo(a)Anthracene	1.611	1.473	1.491	1.408	1.575	1.493	1.508	E6	4.86
	Chrysene	2.373	2.277	2.264	2.111	2.308	2.181	2.252	E6	4.15
	Benzo(b)Fluoranthen	1.596	1.529	1.531	1.458	1.622	1.548	1.547	E6	3.72
	Benzo(k)Fluoranthen	1.334	1.274	1.288	1.221	1.336	1.270	1.287	E6	3.39
	Benzo(a) Pyrene	1.230	1.236	1.289	1.223	1.380	1.317	1.279	E6	4.83
	Dibenzo(a,h)anthrac	3.620	3.253	3.333	3.135	3.622	3.494	3.410	E5	5.91
	Benzo(g,h,i) Peryle	4.971	4.619	5.076	4.853	5.399	5.192	5.018	E5	5.40
	Indeno(1,2,3-cd)pyr	1.155	1.113	1.181	1.125	1.238	1.185	1.166	E6	3.91

Out of Range

8310_46.M Fri Jul 28 08:39:30 2000 HPLC1



Method Name: C:\HPCHEM\1\METHODS\8310_46.M
Calibration Table Last Updated: Thu Jul 27 16:28:11 2000

Evaluate Continuing Calibration Report

ignal #1 : D:\HPCHEM\1\DATA\0810PAH\AA003617.D\DAD1B.CH Vial: 1
ignal #2 : D:\HPCHEM\1\DATA\0810PAH\AA003617.D\DAD1A.CH
cq On : 10-Aug-2000, 19:09:32 Operator: NormF
ample : ccv Inst : DAD
isc : Multiplr: 1.00
ntFile Signal #1: events.e IntFile Signal #2: events2.e

ethod : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
itle : PAH's BY EPA 8310
ast Update : Fri Aug 11 09:24:13 2000
esponse via : Multiple Level Calibration

in. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
ax. RRF Dev : 15% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(Min)
	Naphthalene	20.000	20.053	-0.3	106	0.00
	Acenaphthylene	20.000	20.407	-2.0	108	0.00
	1-Methyl Naphthalene	20.000	20.888	-4.4	111	0.00
	2-Methyl Naphthalene	20.000	20.168	-0.8	108	-0.01
	Acenaphthene	20.000	19.851	0.7	106	-0.01
	Fluorene	20.000	20.059	-0.3	106	-0.02
	Phenanthrene	20.000	20.676	-3.4	108	0.01
S	O-Terphenyl	20.000	19.863	0.7	106	-0.01
	Anthracene	20.000	20.046	-0.2	104	-0.03
	Fluoranthene	20.000	20.032	-0.2	105	-0.04
	Pyrene	20.000	19.992	0.0	106	-0.04
S	P-Terphenyl	20.000	20.044	-0.2	108	-0.05
	Benzo(a)Anthracene	10.000	10.119	-1.2	107	-0.06
	Chrysene	10.000	9.906	0.9	106	-0.06
	Benzo(b)Fluoranthene	10.000	10.282	-2.8	108	-0.07
	Benzo(k)Fluoranthene	10.000	10.141	-1.4	104	-0.09
	Benzo(a) Pyrene	10.000	10.357	-3.6	108	-0.10
	Dibenzo(a,h)anthracene	10.000	10.177	-1.8	108	-0.13
	Benzo(g,h,i) Perylene	10.000	10.456	-4.6	109	-0.14
	Indeno(1,2,3-cd)pyrene	10.000	10.687	-6.9	113	-0.17

nal #2

	Naphthalene	20.000	20.316	-1.6	107	0.00
	Acenaphthylene	20.000	20.440	-2.2	109	0.00
	1-Methyl Naphthalene	20.000	20.772	-3.9	112	0.00
	2-Methyl Naphthalene	20.000	20.206	-1.0	109	-0.01
	Acenaphthene	20.000	19.579	2.1	105	-0.01
	Fluorene	20.000	20.016	-0.1	106	-0.02
	Phenanthrene	20.000	20.086	-0.4	107	0.01
	O-Terphenyl	20.000	19.532	2.3	105	-0.01
	Anthracene	20.000	18.474	7.6	98	-0.03
	Fluoranthene	20.000	20.080	-0.4	106	-0.04
	Pyrene	20.000	20.317	-1.6	107	-0.04
	P-Terphenyl	20.000	19.953	0.2	107	-0.05
	Benzo(a)Anthracene	10.000	10.006	-0.1	107	-0.06
	Chrysene	10.000	9.984	0.2	107	-0.06
	Benzo(b)Fluoranthene	10.000	10.139	-1.4	108	-0.07
	Benzo(k)Fluoranthene	10.000	10.001	-0.0	105	-0.09
	Benzo(a) Pyrene	10.000	10.260	-2.6	107	-0.10
	Dibenzo(a,h)anthracene	10.000	10.206	-2.1	111	-0.13
	Benzo(g,h,i) Perylene	10.000	10.405	-4.0	108	-0.14
	Indeno(1,2,3-cd)pyrene	10.000	10.232	-2.3	106	-0.17

Evaluate Continuing Calibration Report

Signal #1 : D:\HPCHEM\1\DATA\0810PAH\AA003627.D\DAD1B.CH Vial: 1
Signal #2 : D:\HPCHEM\1\DATA\0810PAH\AA003627.D\DAD1A.CH
Acq On : 10-Aug-2000, 23:07:57 Operator: NormF
Sample : ccv Inst : DAD
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Fri Aug 11 09:24:13 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(Min)
	Naphthalene	20.000	20.093	-0.5	107	0.00
	Acenaphthylene	20.000	20.383	-1.9	108	0.00
	1-Methyl Naphthalene	20.000	20.858	-4.3	111	0.00
	2-Methyl Naphthalene	20.000	20.124	-0.6	108	0.00
	Acenaphthene	20.000	19.850	0.7	106	0.00
	Fluorene	20.000	19.964	0.2	105	0.00
	Phenanthrene	20.000	20.626	-3.1	108	0.03
S	O-Terphenyl	20.000	19.819	0.9	106	0.00
	Anthracene	20.000	19.819	0.9	103	0.00
	Fluoranthene	20.000	20.064	-0.3	105	0.00
	Pyrene	20.000	19.978	0.1	106	-0.01
S	P-Terphenyl	20.000	20.024	-0.1	107	-0.02
	Benzo(a)Anthracene	10.000	10.099	-1.0	107	-0.02
	Chrysene	10.000	9.867	1.3	105	-0.03
	Benzo(b)Fluoranthene	10.000	10.080	-0.8	106	-0.02
	Benzo(k)Fluoranthene	10.000	10.004	-0.0	103	-0.03
	Benzo(a) Pyrene	10.000	10.423	-4.2	108	-0.04
	Dibenzo(a,h)anthracene	10.000	10.165	-1.6	108	-0.06
	Benzo(g,h,i) Perylene	10.000	10.435	-4.4	109	-0.06
	Indeno(1,2,3-cd)pyrene	10.000	10.633	-6.3	112	-0.08

gnal #2

	Naphthalene	20.000	20.556	-2.8	109	0.00
	Acenaphthylene	20.000	20.463	-2.3	109	0.00
	1-Methyl Naphthalene	20.000	20.722	-3.6	112	0.00
	2-Methyl Naphthalene	20.000	20.157	-0.8	109	0.00
	Acenaphthene	20.000	19.592	2.0	105	0.00
	Fluorene	20.000	19.976	0.1	106	0.00
	Phenanthrene	20.000	20.020	-0.1	107	0.03
	O-Terphenyl	20.000	19.488	2.6	104	0.00
	Anthracene	20.000	18.383	8.1	97	0.00
	Fluoranthene	20.000	20.062	-0.3	105	0.00
	Pyrene	20.000	20.291	-1.5	107	-0.01
	P-Terphenyl	20.000	19.933	0.3	107	-0.02
	Benzo(a)Anthracene	10.000	9.977	0.2	107	-0.02
	Chrysene	10.000	9.964	0.4	106	-0.03
	Benzo(b)Fluoranthene	10.000	10.080	-0.8	107	-0.02
	Benzo(k)Fluoranthene	10.000	9.962	0.4	105	-0.03
	Benzo(a) Pyrene	10.000	10.373	-3.7	108	-0.04
	Dibenzo(a,h)anthracene	10.000	10.227	-2.3	111	-0.06
	Benzo(g,h,i) Perylene	10.000	10.403	-4.0	108	-0.06
	Indeno(1,2,3-cd)pyrene	10.000	10.152	-1.5	105	-0.08

Method Blank Summary

Job Number: F7266
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1921-MB	AA003619.D	1	08/10/00	NF	08/07/00	OP1921	GAA116

The QC reported here applies to the following samples: **Method:** EPA 8310

F7266-1

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	76%	29-133%
92-94-4	p-Terphenyl	90%	33-133%

Semivolatile Surrogate Recovery Summary

Job Number: F7266
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Method: EPA 8310 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S2 [a]
F7266-1	AA003626.D	74.0	81.0
OP1921-BS	AA003618.D	87.0	100.0
OP1921-MB	AA003619.D	76.0	90.0
OP1921-MB	AA003648.D	76.0	90.0
OP1921-MS	AA003623.D	80.0	94.0
OP1921-MSD	AA003624.D	78.0	93.0

Surrogate Compounds	Recovery Limits
S1 = o-Terphenyl	29-133%
S2 = p-Terphenyl	33-133%

(a) Recovery from GC signal #1

Blank Spike Summary

Job Number: F7266
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1921-BS	AA003618.D	1	08/10/00	NF	08/07/00	OP1921	GAA116

The QC reported here applies to the following samples: **Method:** EPA 8310

F7266-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
83-32-9	Acenaphthene	20	18.1	90	40-130
208-96-8	Acenaphthylene	20	18.6	93	28-130
120-12-7	Anthracene	20	18.6	93	62-130
56-55-3	Benzo(a)anthracene	10	9.7	97	67-130
50-32-8	Benzo(a)pyrene	10	9.8	98	59-130
205-99-2	Benzo(b)fluoranthene	10	9.8	98	61-130
191-24-2	Benzo(g,h,i)perylene	10	9.6	96	50-130
207-08-9	Benzo(k)fluoranthene	10	9.6	96	59-130
218-01-9	Chrysene	10	9.6	96	64-130
53-70-3	Dibenzo(a,h)anthracene	10	9.3	93	17-130
206-44-0	Fluoranthene	20	19.0	95	71-130
86-73-7	Fluorene	20	18.5	92	55-130
193-39-5	Indeno(1,2,3-cd)pyrene	10	9.8	98	50-130
91-20-3	Naphthalene	20	18.1	90	38-130
90-12-0	1-Methylnaphthalene	20	18.8	94	35-130
91-57-6	2-Methylnaphthalene	20	18.1	90	33-130
85-01-8	Phenanthrene	20	19.3	96	58-130
129-00-0	Pyrene	20	19.0	95	61-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	87%	29-133%
92-94-4	p-Terphenyl	100%	33-133%

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE ____ OF ____

CLIENT NAS Whiting Field		JOB NUMBER	
SUBJECT Sample Calc.			
BASED ON Blank spike (op1921-bs)		DRAWING NUMBER	
BY Douglas S. Schlee	CHECKED BY	APPROVED BY	DATE 9/26/00

Fraction: Polynuclear Aromatic Hydrocarbons
Matrix: Aqueous
Compound: Naphthalene on Signal #1
Form I: 18.1 ug/L

$$ug/L = \frac{A_x (V_t)(Df)}{\overline{CF}(V_i)(V_s)}$$

A_x = 8282324 Area

V_t = 1.0 ml = 1000 ul

Df = 1

$\overline{CF}$ = $4.570 \times 10^5 \frac{Area}{ng}$

V_i = 1.0 ul

V_s = 1000 ml

$$= \frac{8282324\ Area\ (1000\ ul)(1)}{4.570 \times 10^5 \frac{Area}{ng}(1.0\ ul)(1000\ ml)}$$

$$= 18.12\ ng/ml \text{ or } ug/L$$

Quantitation Report (QT Reviewed)

Signal #1 : D:\HPCHEM\1\DATA\0810PAH\AA003618.D\DAD1B.CH Vial: 15
Signal #2 : D:\HPCHEM\1\DATA\0810PAH\AA003618.D\DAD1A.CH
Acq On : 10-Aug-2000, 19:33:23 Operator: NormF
Sample : op1921-bs Inst : DAD
Misc : op1921,gaa116,water,,,1, Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: events2.e
Quant Time: Aug 11 9:03 2000 Quant Results File: 8310_46.RES

Quant Method : C:\HPCHEM\1\METHODS\8310_46.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Fri Aug 11 08:32:37 2000
Response via : Initial Calibration
DataAcq Meth : 8310_46.M

Volume Inj. : 10ul
Signal #1 Phase : Pinnacle PAH Signal #2 Phase: Pinnacle PAH
Signal #1 Info : DAD 270nm Signal #2 Info : DAD 254nm

Compound	RT#1	RT#2	Resp#1	Resp#2	ppm	ppm
System Monitoring Compounds						
S O-Terphenyl	8.25	8.25	6695662	11693394	17.436	17.109
iked Amount	20.000	Range	29 - 133	Recovery	= 87.18%	85.55%
S P-Terphenyl	10.41	10.41	26793463	12842920	20.044	19.936
iked Amount	20.000	Range	33 - 133	Recovery	= 100.22%	99.68%
Target Compounds						
Naphthalene	5.86	5.86	8282324	4984043	18.122	18.842
Acenaphthylene	6.41	6.41	3104065	3140910	18.611	18.620
1-Methyl Naphtha	6.76	6.76	7095405	3014963	18.786	18.627
2-Methyl Naphtha	6.98	6.98	6936050	4061789	18.147	18.154
Acenaphthene	7.17	7.18	5405989	1980059	18.117	17.792
Fluorene	7.38	7.38	18317934	20597912	18.491	18.396
Phenanthrene	7.97	7.97	15430649	48996392	19.299	18.783
Anthracene	8.58	8.58	991690	64496055	18.618	17.413
Fluoranthene	9.12	9.12	13889249	14538703	19.015	19.021
Pyrene	9.60	9.60	27649089	15094832	19.005	19.280
Benzo(a)Anthrace	10.95	10.95	20349596	14481537	9.714	9.601
Chrysene	11.35	11.35	27193325	21705149	9.589	9.636
Benzo(b)Fluorant	12.32	12.32	9888596	14995762	9.813	9.692
Benzo(k)Fluorant	12.94	12.94	6373457	12307998	9.596	9.563
Benzo(a) Pyrene	13.58	13.58	10885432	12508136	9.835	9.778
Dibenzo(a,h)anth	14.48	14.48	9933690	3191056	9.335	9.359
Benzo(g,h,i) Per	15.27	15.27	6845359	4818413	9.630	9.602
Indeno(1,2,3-cd)	15.93	15.93	5251369	10917847	9.804	9.360

NV

HPLC ANALYSIS LOG

DATE: 8-10-00
COLUMN TYPE: Pin AAII
INSTRUMENT: HPLC 1

METHODS: 8310
METHOD FILE: 8310-46
CALIB. DATE: 7/27/00

ANALYST: [illegible]
RUN BATCH: G-AA#116
AMOUNT INJECTED: 15 ul

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	SAMPLE AMOUNT	MATRIX	EXT. BATCH	DILUTION FACTOR	RUN OK	COMMENTS
AA003602	1	L4 CCV	8310		S608			✓	Passed
03	2	OP1909-MB		1000/1ml	W	OP1909	1x	✓	ND
04	3	F7194-2		980/1ml				✓	Report 4x also
05	4	7		1000/1ml				✓	✓
06	5	9		990/1ml			4x	✓	✓
07	6	10		990/1ml			4x	✓	✓
08	7	15		980/1ml			4x	✓	✓
09	8	OP1913-MB		1000/1ml		OP1913	1x	✓	ND
10	9	F7205-4		920/1ml				✓	✓
11	10	11		960/1ml				✓	ND ↑ Cry 2x
12	1	CCV						✓	Passed
13	11	WP66-8310		1000/1ml		WP66	1x	✗	Resolvent Exchange
14	12	WP66-MB						✗	
15	13	WP66-LCS						✗	
16	14	WP66-Dupe						✗	
17	1	CCV						✓	Passed
18	15	OP1921-LCS		1000/1ml		OP1921	1x	✓	✓
19	16	MB						✓	ND
20	17	F7234-1		980/1ml				✓	hits ↑ Acy
21	18	2		990/1ml				✓	BMZ
22	19	3		970/1ml				✓	BMC
23	20	OP1921-MS		990/1ml				✓	✓
24	21	MSD						✓	✓
25	22	F7253-1		910/1ml				✓	ND

Matrix: Designate "W" for Water, "S" for Soil, and "O" for Oil
Sample Amount: Initial Sample Weight (g) or Volume (ml) / Final Volume (ml)

Analyst's Signature: [illegible]

LIQUID SAMPLE PREP REPORT

e: 8-7-00 Method*: 8310 Batch#: OP1921

ch Started On: 8-7-00 Prior Number Of Samples in Batch : Ø Analyst: RL / KP

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount	Spike Amount	Final Volume (ml)	Comments
1921 MB	X	1000ml	6	N/A	0.5ml		1.0ml	
1921 BS	X	↓	↓	↓	↓	0.5ml	↓	
7234 -1	4	980ml	↓	↓	↓	↓	↓	
-2	4	980ml	↓	↓	↓	↓	↓	
-3	5	970ml	↓	↓	↓	↓	↓	
7236 -1	4	990ml	↓	↓	↓	↓	↓	
-2	4	970ml	↓	↓	↓	↓	↓	
-3	4	980ml	↓	↓	↓	↓	↓	
-4	4	970ml	↓	↓	↓	↓	↓	
-5	4	990ml	↓	↓	↓	↓	↓	
-6	4	980ml	↓	↓	↓	↓	↓	
7241 -1	5	960ml	↓	↓	↓	↓	↓	
-2	4	980ml	↓	↓	↓	↓	↓	
-3	4	980ml	↓	↓	↓	↓	↓	
7259 -1	5	980ml	↓	↓	↓	↓	↓	
-2	4	980ml	↓	↓	↓	↓	↓	
-3	4	980ml	↓	↓	↓	↓	↓	
-4	4	980ml	↓	↓	↓	↓	↓	
7253-1	9	910ml	↓	↓	↓	↓	↓	
7266 -1	9	890ml	↓	↓	↓	↓	↓	
1921 MS	4	490ml	↓	↓	↓	0.5ml	1.0ml	F7234-3
1921 MSD	4	490ml	↓	↓	↓	↓	↓	↓
DUP								

gate ID: E699 Conc: 40ppm Exp. Date: 1/31/01 Bath Temp.: 70°

ID: E688 Conc: 40/20 ppm Exp. Date: 1/06/01 Bath Temp2.: 70°

L2 Lot # 003216 Hexane Lot # Na2SO4 Lot# 004858

nt # Reagent # Reagent #

cetonitrile : 000931

ents:

uished By: M Yoganand Date: 8/7/00

ed By: Date: 8/8/00

method for SW846 methods is 3510C for waters and 3580A for non-aqueous liquids.

Sequence Name: C:\HPCHEM\2\SEQUENCE\0813PRO.S
Comment:
Operator: marke
Data Path: C:\HPCHEM\2\DATA\0813PRO\
Pre-Seq Cmd:
Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	OP10200	FL_PRO	1020ppm TPHS ccv s885
2	Sample	2	OP10201	FL_PRO	340ppm TPHS s887
3	Sample	3	OP10202	FL_PRO	solvent blank
4	Sample	4	OP10203	FL_PRO	op1936-mb
5	Sample	5	OP10204	FL_PRO	f7308-3,500
6	Sample	6	OP10205	FL_PRO	f7308-7,500
7	Sample	7	OP10206	FL_PRO	f7308-8,400
8	Sample	8	OP10207	FL_PRO	f7322-1
9	Sample	9	OP10208	FL_PRO	f7322-2
10	Sample	10	OP10209	FL_PRO	op1928-mb
11	Sample	11	OP10210	FL_PRO	op1928-bs
12	Sample	12	OP10211	FL_PRO	f7253-1,4
13	Sample	13	OP10212	FL_PRO	f7264-1,10
14	Sample	14	OP10213	FL_PRO	1020ppm TPHS ccv - 8/14/ 00:25
15	Sample	15	OP10214	FL_PRO	f7257-1
16	Sample	16	OP10215	FL_PRO	op1928-ms
17	Sample	17	OP10216	FL_PRO	op1928-msd
18	Sample	18	OP10217	FL_PRO	f7257-2,4
19	Sample	19	OP10218	FL_PRO	f7264-2,4
20	Sample	20	OP10219	FL_PRO	f7264-3,4
21	Sample	21	OP10220	FL_PRO	f7264-4
22	Sample	22	OP10221	FL_PRO	f7264-5,10
23	Sample	23	OP10222	FL_PRO	f7266-1 — 8/14/05:35
24	Sample	24	OP10223	FL_PRO	1020ppm TPHS ccv - 8/14/06:10
25	Sample	25	OP10224	FL_PRO	op1928-mb2
26	Sample	26	OP10225	FL_PRO	op1928-bs2
27	Sample	27	OP10226	FL_PRO	f7289-15
28	Sample	28	OP10227	FL_PRO	f7289-16
29	Sample	29	OP10228	FL_PRO	f7289-17
30	Sample	30	OP10229	FL_PRO	f7312-2,4
31	Sample	31	OP10230	FL_PRO	f7312-3,10
32	Sample	32	OP10231	FL_PRO	f7312-8
33	Sample	33	OP10232	FL_PRO	f7300-3,20
34	Sample	34	OP10233	FL_PRO	1020ppm TPHS ccv
35	Sample	35	OP10234	FL_PRO	f7301-1,10
36	Sample	34	OP10235	FL_PRO	1020ppm TPHS ccv

234

Response Factor Report FID 2

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Sat Jul 29 12:12:38 2000

Calibration Files
1 =OP09782.D 2 =OP09783.D 3 =OP09784.D
4 =OP09785.D 5 =OP09786.D

	Compound	1	2	3	4	5	Avg		%RSD
S	O-TERPHENYL	3.745	3.670	3.980	3.576	3.890	3.772	E4	4.33
H	TPH (C8-C40)	3.910	3.596	3.758	3.364	3.610	3.648	E4	5.58

%RSD = 0.2039 / 3.6476 (100)
= 5.576

201

Out of Range
FL_PRO.M Sat Jul 29 12:12:43 2000 GCFID1 Page 1

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\0813PRO\OP10213.D
Acq On : 14 Aug 2000 12:25 am
Sample : 1020ppm TPHS ccv
Misc : op1928,gop424,water,,,1,
IntFile : events.e

Vial: 14
Operator: marke
Inst : FID 2
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Tue Aug 01 16:09:45 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
S	O-TERPHENYL	37.723	45.354 E3	-20.2	114	0.00
H	TPH (C8-C40)	36.476	39.551 E3	-8.4	105	0.00

Out of Range SPCC's out = 0 CCC's out = 0
13.D FL_PRO.M Mon Aug 14 08:46:32 2000 GCFID1

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\0813PRO\OP10223.D
Acq On : 14 Aug 2000 6:10 am
Sample : 1020ppm TPHS ccv
Misc : op1928,gop424,water,,,1,
IntFile : events.e

Vial: 24
Operator: marke
Inst : FID 2
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Tue Aug 01 16:09:45 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
S	O-TERPHENYL	37.723	43.326 E3	-14.9	109	0.00
H	TPH (C8-C40)	36.476	38.614 E3	-5.9	103	0.00

= Out of Range SPCC's out = 0 CCC's out = 0
223.D FL_PRO.M Mon Aug 14 08:48:20 2000 GCFID1

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Method Blank Summary

Job Number: F7266
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1928-MB	OP10209.D	1	08/13/00	ME	08/09/00	OP1928	GOP424

The QC reported here applies to the following samples: **Method:** FLORIDA-PRO

F7266-1

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	ND	0.25	mg/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	105%	40-140%

Semivolatile Surrogate Recovery Summary

Job Number: F7266
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Method: FLORIDA-PRO **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]
F7266-1	OP10222.D	85.0
OP1928-BS	OP10210.D	110.0
OP1928-MB	OP10209.D	105.0
OP1928-MB	OP10239.D	104.0
OP1928-MS	OP10215.D	111.0
OP1928-MSD	OP10216.D	107.0

Surrogate Compounds	Recovery Limits
S1 = o-Terphenyl	40-140%

(a) Recovery from GC signal #1

Blank Spike Summary

Job Number: F7266
Account: TETRFLTA Tetra-Tech, NUS
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP1928-BS	OP10210.D	1	08/13/00	ME	08/09/00	OP1928	GOP424

The QC reported here applies to the following samples: **Method:** FLORIDA-PRO

F7266-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH (C8-C40)	0.85	0.805	95	49-123

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	110%	40-140%

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE ____ OF ____

CLIENT: NAS Whiting Field		JOB NUMBER	
SUBJECT: Sample Calc.			
BASED ON: OWSGWMW01S001 (F7266-1)		DRAWING NUMBER	
BY: Douglas S Schlen	CHECKED BY	APPROVED BY	DATE: 9/26/00

Fraction: Total Recoverable Petroleum Hydrocarbons ($C_8 - C_{40}$)
Matrix: Aqueous
Compound: $C_8 - C_{40}$
Form I: 0.392 mg/L

$$\mu g/L = \frac{A_x (V_t)}{\overline{CF} (V_i)(V_o)}$$

A_x = 12997922 Area

V_t = 1000 µl = 1.0 ml

$\overline{CF}$ = $3.648 \times 10^4 \frac{Area}{mg}$

V_i = 1.0 ml

V_o = 920 ml

$$\frac{12997922 \text{ Area } (1000 \mu l)}{3.648 \times 10^4 \frac{Area}{mg} (1.0 \mu l)(920 ml)}$$

$$= 387 \mu g/ml \text{ or } \mu g/L \left(\frac{1 mg}{1000 \mu g}\right) = 0.387 mg/L$$

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\2\DATA\0813PRO\OP10222.D
Acq On : 14 Aug 2000 5:35 am
Sample : f7266-1
Misc : op1928,gop424,water,,,1,
IntFile : events.e
Quant Time: Aug 14 8:43 2000 Quant Results File: FL_PRO.RES

Vial: 23
Operator: marke
Inst : FID 2
Multiplr: 1.00

Quant Method : C:\HPCHEM\2\METHODS\FL_PRO.M (Chemstation Integrator)
Title : TPH by FL_PRO
Last Update : Tue Aug 01 16:09:18 2000
Response via : Initial Calibration
DataAcq Meth : FL_PRO.M

Volume Inj. : 2uL
Signal Phase : DB-5
Signal Info : 0.32mm ID

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
S O-TERPHENYL	10.35	1610532	42.693 PPM
iked Amount 50.000 Range 40 - 140		Recovery =	85.39%
Target Compounds			
H TPH (C8-C40)	13.00	12997922	356.346 PPM

920ml
TPH=0.39

RT Delta > 1/2 Window
222.D FL_PRO.M Mon Aug 14 08:51:31 2000 (m)=manual int. GCFID1

GC ANALYSIS LOG

DATE: 8/13/00
COLUMN TYPE: DB-5/17
INSTRUMENT: FID2

METHODS: FLPHO
METHOD FILE: FLPHO
CALIB. DATE: 7/27/00

ANALYST: ME
RUN BATCH: B-OP424
AMOUNT INJECTED: / ul

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	SAMPLE AMOUNT	MATRIX	EXT. BATCH	DILUTION FACTOR	RUN OK	COMMENTS
OP10200	1	1020ppm TPHS ccv	FLPHO					✓	SSSS passed
01	2	340 ppm TPHS						✓	SCS2 passed
02	3	solvent Blank						✓	BDL
03	4	OP1936-mb		30.0g/1ml	S	OP1936	x1	✓	BDL
04	5	F7268-3		30.0g/5ml			x500 (5/100)	✓	TPH=36(500)
05	6	-7						✓	TPH=29(500)
06	7	-8					x400 (5/100)	✓	TPH=29(400)
07	8	F7322-1		30.0g/1ml			x1	✓	TPH=9.6
08	9	-2						✓	TPH=14
09	10	OP1928-mb		1000ml/1ml	W	OP1928		✓	BDL
10	11	-MS						✓	✓
11	12	F2537		910ml/1ml			x4	✓	BMX1
12	13	F7264-1		900ml/1ml			x10	✓	TPH=0.59(10)
13	14	1020ppm TPHS ccv						✓	SSSS passed
14	15	F2557-1		950ml/1ml	W	OP1928	x1	✓	TPH=0.55
15	16	OP1928-MS		430ml/1ml				✓	✓
16	17	-MSD						✓	✓
17	18	F2257-2		880ml/1ml			x4	✓	BMX1
18	19	F7264-2		940ml/1ml				✓	BMX8
19	20	-3		960ml/1ml				✓	TPH=1.2(4)
20	21	-4					x1	✓	BDL
21	22	-5					x10	✓	double spk, TPH=1.3(10)
22	23	F7266-1		920ml/1ml			x1	✓	TPH=0.79
23	24	1020ppm TPHS ccv						✓	SSSS passed

Matrix: Designate "W" for Water, "S" for Soil, and "O" for Oil
Sample Amount: Initial Sample Weight (g) or Volume (ml) / Final Volume (ml)

Analyst's Sig...

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LIQUID SAMPLE PREP REPORT

08-09-00 Method*: Fl PRO Batch#: 1928.

Started On: 08-09-00 Prior Number Of Samples in Batch: Ø Analyst: BG

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount	Spike Amount	Final Volume (ml)	Comments
1928 MB	X	1000mL	6	<2	0.5mL	—	1.0mL	
928 BS	X	↓	6	↓	↓	0.5mL	↓	
257-1	11	950mL	≤2	NA	↓	↓	↓	
-2	11	880mL	↓	↓	↓	↓	↓	
253-1	11	910mL	↓	↓	↓	↓	↓	
264-1	10	900mL	↓	↓	↓	↓	↓	
-2	11	940mL	↓	↓	↓	↓	↓	
-3	11	960mL	↓	↓	↓	↓	↓	
-4	10	960mL	↓	↓	↓	↓	↓	
-5	11	960mL	↓	↓	↓	↓	↓	
2616-1	12	920	↓	↓	↓	↓	↓	May have Bubble Sort
928 MS	10	~~430mL~~ 430mL			0.5mL	0.5mL	1.0mL	F7257-1
928 MSD	10	~~430mL~~ 430mL			↓	↓	↓	↓
DUP								

KP

te ID: E700A Conc: 100 ppm Exp. Date: 1/31/01 Bath Temp.: 75°C

: E693 Conc: 100 ppm Exp. Date: 1/20/01 Bath Temp2.:

Lot # 003216 Hexane Lot # Na2SO4 Lot#

E7-048 Reagent # Sigma-995185 Reagent

ts:

shed By: Marsh Hiaua Date: 8-9-00

l By: Date: 8-9-00

thod for SW846 methods is 3510C for waters and 3580A for non-aqueous liquids

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**T. HANSEN**	**DATE:**	**SEPTEMBER 20, 2000**
FROM:	**GRETCHEN A. PHIPPS**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – TAL METALS, CYANIDE AND LEAD**
CTO-079 NAS WHITING FIELD
SDGs – F7252 AND F7266

SAMPLES: **SDG F7252**

1/Aqueous/

13G00303

SDG F7266

1/Aqueous/

OWSGWMW01S001

Overview

The sample set for CTO 079, NAS Whiting Field, SDGs F7252 and F7266, consists of two (2) aqueous environmental samples.

The sample in SDG F7252 was analyzed for target analyte list (TAL) metals and cyanide The sample in SDG F7266 was analyzed for lead only. The samples were collected by TetraTech NUS on August 3 and 4, 2000 and analyzed by Accutest Laboratories under Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Metals, with exception to mercury, were conducted using MW 846 method 6010B. Mercury analyses were conducted using SW 846 methods 7470A. Cyanide analyses were conducted using EPA method 335.2.

These data were evaluated based on the following parameters:

* • Data Completeness
• Holding Times
• Calibration Recoveries
• Laboratory Blank Analyses
* • Laboratory Control Sample Results
* • ICP Interference Check Sample Results
* • Matrix Spike / Matrix Spike Duplicate Recoveries
* • Laboratory Duplicate Recoveries
• ICP Serial Dilution Results
* • Sample Quanitation
* • Detection Limits

* - All quality control criteria were met for this parameter.

Holding Times

The holding time for cyanide analyses was exceeded by four (4) days. The nondetected result reported for cyanide was qualified as estimated, "UJ".

Laboratory Blank Analyses

The following contaminants were detected in the laboratory method / preparation blanks at the following maximum concentrations:

Affected sample: SDG F7252

Analyte	Maximum Concentration	Action Level
Aluminum	44.5µg/L	222.5µg/L
Antimony	3.8µg/L	19µg/L
Barium	1.1µg/L	5.5µg/L
Beryllium	1.5µg/L	7.5µg/L
Cadmium	1.0µg/L	5.0µg/L
Calcium	45.3µg/L	226.5µg/L
Chromium(1)	7.0µg/L	35µg/L
Cobalt	1.2µg/L	6.0µg/L
Iron(1)	75.6µg/L	378µg/L
Lead	2.5µg/L	12.5µg/L
Magnesium	47.6µg/L	238µg/L
Manganese	1.2µg/L	6.0µg/L
Nickel(1)	5.6µg/L	28µg/L
Potassium	256µg/L	1280µg/L
Selenium	4.6µg/L	23µg/L
Silver	1.2µg/L	6.0µg/L
Thallium	2.2µg/L	11µg/L
Vanadium	1.0µg/L	5.0µg/L
Zinc	1.5µg/L	7.5µg/L

(1) Maximum concentration present in a preparation blank.

Affected sample: SDG F7266

Analyte	Maximum Concentration	Action Level
Lead	2.7µg/L	13.5µg/L

An action level of 5X the maximum concentration were used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken into consideration when evaluation for blank contamination. Positive results less than the blank action levels for chromium, cobalt, lead, nickel, potassium, selenium and vanadium were qualified, "U", as a result of blank contamination.

ICP Serial Dilution

The ICP Serial Dilution Percent Differences (%Ds) for calcium, magnesium and sodium were >10% quality control limit affecting the sample in SDG F7252. The positive results reported for calcium, manganese and sodium in the affected sample were qualified as estimated, "J".

Notes

The Contract Required Detection Limit (CRDL) %Rs for arsenic, iron, lead and silver were outside the 80-120% quality control limits. However, no validation action was required per regional guidance.

Executive Summary

Laboratory Performance: The holding time for cyanide analyses was exceeded. Several analytes were present in the laboratory method / preparation blanks.

Other Factors Affecting Data Quality: Calcium, manganese and sodium were qualified due to ICP Serial Dilution noncompliances.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994 and the NFESC document entitled "Navy IRCDQM" (September, 1999).

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)."

Gretchen A. Phipps

Tetra Tech NUS
Gretchen A. Phipps
Chemist

TetraTech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

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

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

SAMPLE NUMBER:	13G00303											
SAMPLE DATE:	08/03/00			/ /			/ /			/ /		
LABORATORY ID:	F7252-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
INORGANICS	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
ALUMINUM	559											
ANTIMONY	2.4	U										
ARSENIC	3.4	U										
BARIUM	9.1											
BERYLLIUM	0.36	U										
CADMIUM	0.33	U										
CALCIUM	1510	J	I									
CHROMIUM	14.7	U	A									
COBALT	1.7	U	A									
COPPER	2.4											
IRON	820											
LEAD	3.3	U	A									
MAGNESIUM	598											
MANGANESE	75.2	J	I									
MERCURY	0.06	U										
NICKEL	9.2	U	A									
POTASSIUM	1260	U	A									
SELENIUM	4.1	U	A									
SILVER	0.96	U										
SODIUM	11900	J	I									
THALLIUM	2.7	U										
VANADIUM	2.2	U	A									
ZINC	22.4											

SAMPLE NUMBER:	13G00303											
SAMPLE DATE:	08/03/00			/ /			/ /			/ /		
LABORATORY ID:	F7252-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
FIELD DUPLICATE OF:												
INORGANICS	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
CYANIDE(MG/L)	0.005	UJ	H									

SAMPLE NUMBER:	OWSGWMW01S001											
SAMPLE DATE:	08/04/00			/ /			/ /			/ /		
LABORATORY ID:	F7266-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
LEAD	1.6	U										

APPENDIX B
RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID:	13G00303		
Lab Sample ID:	F7252-1		
Matrix:	AQ - Ground Water	**Date Sampled:**	08/03/00
		Date Received:	08/04/00
		Percent Solids:	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed By	Method
Cyanide, Total	<0.0050	0.0050	mg/l	1	08/21/00 JK	EPA 335.2

RL = Reporting Limit

Report of Analysis

Client Sample ID: 13G00303
Lab Sample ID: F7252-1
Matrix: AQ - Ground Water
Project: NAS Whiting Field PO#NOO52-MSA0200-014

Date Sampled: 08/03/00
Date Received: 08/04/00
Percent Solids: n/a

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	559	200	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Antimony	2.4 U	5.0	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Arsenic	3.4 U	10.0	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Barium	9.1 B	200	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Beryllium	0.36 U	5.0	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Cadmium	0.33 U	5.0	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Calcium	1510	1000	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Chromium	14.7	10.0	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Cobalt	1.7 B	50.0	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Copper	2.4 B	25.0	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Iron	820	300	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Lead	3.3 B	5.0	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Magnesium	598 B	5000	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Manganese	75.2	15.0	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Mercury	0.06 U	1.0	ug/l	1	08/11/00	08/14/00	BP	SW846 7470A
Nickel	9.2 B	40.0	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Potassium	1260 B	5000	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Selenium	4.1 B	10.0	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Silver	0.96 U	10.0	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Sodium	11900	5000	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Thallium	2.7 U	10.0	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Vanadium	2.2 B	50.0	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A
Zinc	22.4	20.0	ug/l	1	08/08/00	08/15/00	JK	SW846 6010A

RL = Reporting Limit

ACCUTEST

Report of Analysis

Client Sample ID:	OWSGWMW01S001		
Lab Sample ID:	F7266-1	**Date Sampled:**	08/04/00
Matrix:	AQ - Ground Water	**Date Received:**	08/05/00
		Percent Solids:	n/a
Project:	NAS Whiting Field PO#NOO52-MSA0200-014		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Lead	1.6 U	5.0	ug/l	1	08/10/00	08/17/00	JK	SW846 6010A

RL = Reporting Limit

Florida • 4405 Vineland Road • Suite C-15 • Orlando, FL 32811 • tel: 407-425-6700 • fax: 407-425-0707 • http://www.accutest.com

APPENDIX C
SUPPORT DOCUMENTATION

HOLDING TIME
08/25/00

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	13G00303	F7252-1	NORMAL	F7252	CN	08/03/00	08/14/00	08/21/00	11	7	18
UG/L	13G00303	F7252-1	NORMAL	F7252	M	08/03/00	08/08/00	08/15/00	5	7	12
UG/L	13G00303	F7252-1	NORMAL	F7252	OS	08/03/00	08/08/00	08/09/00	5	1	6
UG/L	13G00303	F7252-1	NORMAL	F7252	OV	08/03/00	/ /	08/16/00	0	0	13
UG/L	13G00303	F7252-1	NORMAL	F7252	PCB	08/03/00	08/08/00	08/11/00	5	3	8
UG/L	13G00303	F7252-1	NORMAL	F7252	PEST	08/03/00	08/08/00	08/10/00	5	2	7

ACCUTEST

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: Tetra Tech NUS, Inc.
ADDRESS: 1401 Oven Park Dr. #102
CITY, STATE, ZIP: Tallahassee FL 32312
SEND REPORT TO:
PHONE #: 850-385-8899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting Field
LOCATION: Milton, FL
PROJECT NO.: N10052 (WR04)
FAX #: 850-385-9860

ANALYTICAL INFORMATION

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	VOC/MTBE (8260C)	Inorganics (6010B)	SVOC (8270C)	Post PCB (8082)	CN- (9010B)	LAB USE ONLY
1	13600303	8-3-00	0301	JA	GW	9	✓	✓	✓		✓	3	1	2	2	1	

DATA TURNAROUND INFORMATION

- ☐ STANDARD
- ☐ 48 HOUR RUSH
- ☐ 24 HOUR EMERGENCY
- ☒ OTHER 2 weeks

APPROVED BY: T. Hansen, L. Smith, H. Engle

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- ☒ STANDARD
- ☐ COMMERCIAL "B"
- ☒ DISK DELIVERABLE
- ☐ STATE FORMS
- ☐ OTHER (SPECIFY) _____

COMMENTS/REMARKS

2 weeks turnaround!

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1. [signature] 1700 8-3-00	1700 8-3-00	1. [signature] 8/4 09:00	2.		2.
3.		3.	4.		4.
5.		5.			

SEAL #: PRESERVE WHERE APPLICABLE ☐ ON ICE ☐ TEMPERATURE 2 C

0011

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F7252
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Cyanide, Total	GP1682	0.0050	<0.0050	mg/l	102.0	80-120%

Associated Samples:
Batch GP1682: F7252-1

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F7252
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0815M1.ASC
QC Limits: 70 to 130 % Recovery

Date Analyzed: 08/15/00
Run ID: MA1990

Methods: SW846 6010A
Units: ug/l

Metal	CRI True	CRIA True	CRI Results	% Rec	CRIA Results	% Rec
Aluminum	200		183	91.5		
Antimony		5.0			4.1	82.0
Arsenic		10			7.3	73.0
Barium	200		201	100.5		
Beryllium	5.0		5.0	100.0		
Cadmium	5.0		4.9	98.0		
Calcium	1000		1090	109.0		
Chromium	10		10.4	104.0		
Cobalt	50		50.0	100.0		
Copper	25		25.0	100.0		
Iron	300		371	123.7		
Lead		5.0			6.3	126.0
Magnesium	5000		5250	105.0		
Manganese	15		15.6	104.0		
Molybdenum	50					
Nickel	40		42.3	105.8		
Potassium	5000		4100	82.0		
Selenium		10			11.8	118.0
Silver	10		24.7	123.0		
Sodium	5000		4870	97.4		
Thallium		10			9.4	94.0
Tin	50					
Vanadium	50		51.3	102.6		
Zinc	20		23.0	115.0		

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F7252
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0815M1.ASC
QC Limits: result < RL

Date Analyzed: 08/15/00
Run ID: MA1990

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	22.9	<200	16.0	<200	17.8	<200	18.9	<200
Antimony	5.0	2.39	1.1	<5.0	1.1	<5.0	-1.9	<5.0	3.8	<5.0B
Arsenic	10	3.4	1.4	<10.0	-1.1	<10.0	-1.4	<10	2.1	<10.0
Barium	200	.39	0.40	<200B	0.40	<200	0.090	<200	0.60	<200B
Beryllium	5.0	.36	1.0	<5.0B	0.80	<5.0B	0.63	<5.0	1.0	<5.0B
Cadmium	5.0	.33	0.20	<5.0	0.20	<5.0	-0.17	<5.0	0.50	<5.0B
Calcium	1000	19.5	-0.1	<1000	4.2	<1000	4.5	<1000	11.4	<1000
Chromium	10	.637	0.80	<10.0B	2.7	<10.0B	1.4	<10	2.0	<10.0B
Cobalt	50	.797	0.70	<50.0	0.70	<50.0	-0.56	<50	0.80	<50.0B
Copper	25	.747	-0.80	<25.0B	-0.90	<25.0B	-1.8	<25	-0.60	<25.0
Iron	300	32	25.7	<300	18.6	<300	-5.9	<300	21.8	<300
Lead	5.0	1.59	2.3	<5.0B	0.90	<5.0	1.9	<5.0	0.60	<5.0
Magnesium	5000	17.6	7.4	<5000	8.3	<5000	-4.0	<5000	10.8	<5000
Manganese	15	.16	0.40	<15.0B	0.40	<15.0B	0.25	<15	0.60	<15.0B
Molybdenum	50	.68								
Nickel	40	1	0.10	<40.0	1.5	<40.0B	-0.11	<40	1.4	<40.0B
Potassium	5000	28.2	192	<5000B	220	<5000B	-13	<5000	183	<5000B
Selenium	10	2	3.2	<10.0B	3.0	<10.0B	4.6	<10	2.9	<10.0B
Silver	10	.96	1.2	<10.0B	0.20	<10.0	0.30	<10	-0.1	<10.0
Sodium	5000	153	-280	<5000B	-288	<5000B	-780	<5000<	-204	<5000B
Thallium	10	2.69	2.3	<10.0	-1.3	<10.0	1.6	<10	1.6	<10.0
Tin	50	2.2								
Vanadium	50	.717	0.40	<50.0	0.50	<50.0	-1.0	<50	0.60	<50.0
Zinc	20	.83	0.20	<20.0	0.40	<20.0	0.37	<20	0.50	<20.0

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F7252
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N00052-MSA0200-014

File ID: IR0815M1.ASC
QC Limits: result < RL

Date Analyzed: 08/15/00
Run ID: MA1990

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	22.1	<200	20.7	<200	26.6	<200	35.8	<200
Antimony	5.0	2.39	3.7	<5.0B	2.0	<5.0	3.7	<5.0B	3.0	<5.0
Arsenic	10	3.4	2.3	<10.0	1.4	<10	2.1	<10.0	1.5	<10
Barium	200	.39	0.70	<200B	0.55	<200	0.80	<200B	1.1	<200
Beryllium	5.0	.36	1.2	<5.0B	1.0	<5.0	1.3	<5.0B	1.5	<5.0<
Cadmium	5.0	.33	0.80	<5.0B	0.62	<5.0	0.80	<5.0B	1.0	<5.0
Calcium	1000	19.5	14.4	<1000	12.5	<1000	25.6	<1000B	28.1	<1000
Chromium	10	.637	2.5	<10.0B	1.5	<10	1.6	<10.0B	1.9	<10
Cobalt	50	.797	1.1	<50.0B	0.67	<50	1.1	<50.0B	1.2	<50
Copper	25	.747	-0.30	<25.0	-0.42	<25	0.20	<25.0	0.30	<25
Iron	300	32	24.8	<300	12.3	<300	28.5	<300	34.3	<300
Lead	5.0	1.59	1.7	<5.0B	1.3	<5.0	1.7	<5.0B	2.5	<5.0
Magnesium	5000	17.6	16.9	<5000	12.6	<5000	18.8	<5000B	22.1	<5000
Manganese	15	.16	0.80	<15.0B	0.66	<15	0.90	<15.0B	1.2	<15
Molybdenum	50	.68								
Nickel	40	1	0.80	<40.0	0.35	<40	1.2	<40.0B	1.6	<40
Potassium	5000	28.2	218	<5000B	184	<5000	203	<5000B	190	<5000
Selenium	10	2	3.8	<10.0B	3.6	<10	3.7	<10.0B	2.7	<10
Silver	10	.96	0.30	<10.0	0.0	<10	0.50	<10.0	0.16	<10
Sodium	5000	153	-122	<5000	-300	<5000	-190	<5000B	-160	<5000
Thallium	10	2.69	1.6	<10.0	1.3	<10	2.2	<10.0	1.7	<10
Tin	50	2.2								
Vanadium	50	.717	0.90	<50.0B	0.45	<50	1.0	<50.0B	1.0	<50
Zinc	20	.83	0.80	<20.0	0.52	<20	0.90	<20.0B	1.5	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F7252
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0815M1.ASC
QC Limits: result < RL

Date Analyzed: 08/15/00
Run ID: MA1990

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	-7.1	<200	2.9	<200	44.5	<200	7.2	<200
Antimony	5.0	2.39	-0.51	<5.0	0.70	<5.0	-0.40	<5.0	0.60	<5.0
Arsenic	10	3.4	-1.6	<10	-0.46	<10	-0.010	<10	-1.6	<10
Barium	200	.39	-0.38	<200	0.14	<200	0.26	<200	0.16	<200
Beryllium	5.0	.36	-0.36	<5.0	0.22	<5.0	0.42	<5.0	0.55	<5.0
Cadmium	5.0	.33	-0.55	<5.0	0.030	<5.0	0.20	<5.0	0.19	<5.0
Calcium	1000	19.5	-8.1	<1000	2.4	<1000	45.3	<1000	3.0	<1000
Chromium	10	.637	-0.36	<10	0.17	<10	0.35	<10	0.54	<10
Cobalt	50	.797	-0.21	<50	0.31	<50	0.25	<50	0.27	<50
Copper	25	.747	-0.50	<25	-0.070	<25	-0.23	<25	-0.56	<25
Iron	300	32	-9.6	<300	3.3	<300	21.0	<300	5.6	<300
Lead	5.0	1.59	0.85	<5.0	1.5	<5.0	1.6	<5.0	1.1	<5.0
Magnesium	5000	17.6	-7.9	<5000	3.1	<5000	47.6	<5000	6.6	<5000
Manganese	15	.16	-0.37	<15	0.15	<15	0.24	<15	0.15	<15
Molybdenum	50	.68								
Nickel	40	1	-0.40	<40	0.63	<40	0.45	<40	0.030	<40
Potassium	5000	28.2	196	<5000	192	<5000	256	<5000	218	<5000
Selenium	10	2	0.94	<10	1.2	<10	1.6	<10	2.7	<10
Silver	10	.96	0.050	<10	0.26	<10	0.29	<10	0.70	<10
Sodium	5000	153	-240	<5000	-160	<5000	-200	<5000	-170	<5000
Thallium	10	2.69	-1.6	<10	-2.3	<10	-0.66	<10	-1.2	<10
Tin	50	2.2								
Vanadium	50	.717	-0.36	<50	0.070	<50	0.15	<50	0.28	<50
Zinc	20	.83	-0.57	<20	0.0	<20	0.030	<20	0.070	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F7252
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0814W1.HGX
QC Limits: result < RL

Date Analyzed: 08/14/00
Run ID: MA1986

Methods: EPA 245.1, SW846 7470A
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Mercury	1.0	.06	-0.11	<1.0	-0.071	<1.0	0	<1.0	0	<1.0

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F7252
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2949
Matrix Type: AQUEOUS

Methods: EPA 245.1, SW846 7470A
Units: ug/l

Prep Date: 08/11/00

Metal	RL	IDL	MB raw	final
Mercury	1.0	.06	-0.032	<1.0

Associated samples MP2949: F7252-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F7252
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2934
Matrix Type: AQUEOUS

Methods: SW846 6010A
Units: ug/l

Prep Date: 08/08/00

Metal	RL	IDL	MB raw	final
Aluminum	200	30	-1.2	<200
Antimony	5.0	2.4	-1.2	<5.0
Arsenic	10.0	3.4	-3.4	<10.0
Barium	200	.39	-0.36	<200
Beryllium	5.0	.36	-0.07	<5.0
Cadmium	5.0	.33	-0.29	<5.0
Calcium	1000	19.5	12.8	<1000
Chromium	10.0	.64	7.0	<10.0
Cobalt	50.0	.8	0.08	<50.0
Copper	25.0	.75	-1.1	<25.0
Iron	300	32	75.6	<300
Lead	5.0	1.6	0.40	<5.0
Magnesium	5000	17.6	-2.4	<5000
Manganese	15.0	.16	0.90	<15.0
Molybdenum	50.0	.68		
Nickel	40.0	1	5.6	<40.0
Potassium	5000	28.2	179	<5000
Selenium	10.0	2	3.4	<10.0
Silver	10.0	.96	0.21	<10.0
Sodium	5000	153	-316	<5000
Thallium	10.0	2.7	-0.65	<10.0
Tin	50.0	2.2		
Vanadium	50.0	.72	-0.57	<50.0
Zinc	20.0	.83	0.97	<20.0

Associated samples MP2934: F7252-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F7252
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2934
Matrix Type: AQUEOUS

Methods: SW846 6010A
Units: ug/l

Prep Date: 08/08/00 08/08/00

Metal	F7252-1 Original	DUP	RPD	QC Limits	F7252-1 Original	MS	Spikelot MPFLICP	% Rec	QC Limits
Aluminum	559	564	1.1	0-20	559	24300	29000	81.9	80-120
Antimony	0.0	0.0	NC	0-20	0.0	822	1000	82.2	80-120
Arsenic	0.0	0.0	NC	0-28	0.0	3570	4000	89.3	72-110
Barium	9.1	9.9	8.2	0-14	9.1	3540	4000	88.3	64-116
Beryllium	0.0	0.0	NC	0-20	0.0	86.8	100	86.8	80-120
Cadmium	0.0	0.0	NC	0-16	0.0	87.1	100	87.1	64-120
Calcium	1510	1520	0.5	0-20	1510	23800	25000	89.2	80-120
Chromium	14.7	15.0	1.8	0-33	14.7	364	400	87.2	66-119
Cobalt	1.7	1.8	6.2	0-20	1.7	841	1000	83.9	80-120
Copper	2.4	1.9	24.3	0-39	2.4	432	500	86.0	65-124
Iron	820	821	0.2	0-20	820	25200	27000	90.3	80-120
Lead	3.3	3.2	0.6	0-44	3.3	892	1000	88.8	60-127
Magnesium	598	607	1.4	0-20	598	22900	25000	89.1	80-120
Manganese	75.2	76.0	1.0	0-20	75.2	955	1000	88.0	80-120
Molybdenum									
Nickel	9.2	8.8	5.3	0-30	9.2	883	1000	87.4	71-119
Potassium	1260	1240	4.7	0-20	1260	21600	25000	81.3	80-120
Selenium	4.1	5.5	28.2 (a)	0-28	4.1	3400	4000	85.0	65-115
Silver	0.0	0.0	NC	0-21	0.0	85.1	100	85.1	63-123
Sodium	11900	12000	1.1	0-20	11900	33600	25000	86.5	80-120
Thallium	0.0	5.4	200.0(a)	0-20	0.0	3830	4000	95.8	80-120
Tin									
Vanadium	2.2	2.5	10.9	0-20	2.2	888	1000	88.6	80-120
Zinc	22.4	20.3	9.6	0-31	22.4	891	1000	86.9	69-120

Associated samples MP2934: F7252-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) RPD acceptable due to low duplicate and sample concentrations.

Cr, Se, Tl
OK - results <5X CRDL
diff <2X CRDL
GAD
9-20-00

SERIAL DILUTION RESULTS SUMMARY

Login Number: F7252
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2934
Matrix Type: AQUEOUS

Methods: SW846 6010A
Units: ug/l

Prep Date: 08/08/00

Metal	F7252-1 Original	SDL 1:5	RPD	QC Limits
Aluminum	558	395	29.3 (a)	0-10
Antimony	0.00	0.00	NC	0-10
Arsenic	0.00	0.00	NC	0-10
Barium	9.12	13.3	46.3 (a)	0-10
Beryllium	0.00	0.00	NC	0-10
Cadmium	0.00	0.00	NC	0-10
Calcium	1510	1040	31.3	0-10
Chromium	14.7	7.81	46.9 (a)	0-10
Cobalt	1.73	0.00	100.0(a)	0-10
Copper	2.40	0.00	100.0(a)	0-10
Iron	820	578	29.8 (a)	0-10
Lead	3.27	8.16	149.5(a)	0-10
Magnesium	598	396	33.7 (a)	0-10
Manganese	75.2	47.0	37.5	0-10
Molybdenum				
Nickel	9.25	7.90	14.6 (a)	0-10
Potassium	1260	1520	20.5 (a)	0-10
Selenium	4.11	22.3	443.6(a)	0-10
Silver	0.00	0.00	NC	0-10
Sodium	11900	7280	38.9	0-10
Thallium	0.00	55.6		0-10
Tin				
Vanadium	2.25	0.00	100.0(a)	0-10
Zinc	22.4	19.0	15.1 (a)	0-10

Cd
Mn
Na

Associated samples MP2934: F7252-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

0321

MP2949

Mercury Digestion Log: Water and Soil

Method Of Digestion: EPA 245.1 Temp: 95°

Analyst: Thermometer #: 34

Time Started: 8:00 Time Ended: 4:00

Reagents Added:	HNO3	HCL	H2SO4	Pot. Perm.	Pot. Persulfate
Mfg: Fisher					
Lot#:	1100010	419100	318084	GN1526	

Sample #	Wt(g)	Init.Vol.(ml)	Final Vol.(ml)	Date	Comments
F7306 - 2 Dup		100ml	100ml	081100	
2 MS					30ml GN1502
1 2 MSD					Same as MS
2 2					
3 3					
4 F7309 1					
5 2					
6 3					
7 4					
8 5					
9 6					
10 7					
11 F7310 1					
12 2					
13 F7252-1					
14					
15					
16					
17					
18					
19					
20					
MB					
SB					Same as MS

Analyst's Signature: L Greene Date: 081100

MP2934

Metals Digestion Log: Water

Method Of Digestion: ICP 3010-A Temp: 95 Thermometer ID#: 34

Added:	HNO_3	HCl	H_2O_2
Mfg:	Fischer	Fischer	
Lot #:	1100010	419100	

Sample #	Init. Vol / Wt	Final Vol / Wt	Date	Comments
F7252-1 -DUP	50ml		080800	
-1 -MS				spiked with 10 ml of ACC + 0.5 ml 6W14 85 + 0.25 ml ACC 182
1- MSD				
2- F7152-1				same as MS
3- -2				
4- F7218-4				
5- -5				
6- F7170-1				
7- 2				
8- 3				
9- 4				
10- F7265-1				
11- 1A				
12- F7245-2				
13- F7255-1				
14- -2				
15- -3				
16- -4				
17- -5				
18- -6				
19- F7255 1A				
20- F7252-1				
MB/SB				
MB/SB				
				same as MS

Analyst's Signature: Emily M. Mayo Date: 080800

QC Review: Date:

0329

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F7252
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0815M1.ASC Date Analyzed: 08/15/00 Methods: SW846 6010A
Analyst: JK Run ID: MA1990
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
18:30	ZZZZZZ	1		
18:35	ZZZZZZ	1		
18:40	ZZZZZZ	1		
18:45	MA1990-CCV11	1		
18:50	MA1990-CCB11	1		

Refer to raw data for calibration curve and standards.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F7252
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0815M1.ASC
Analyst: JK
Date Analyzed: 08/15/00
Run ID: MA1990
Methods: SW846 6010A
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
09:27	MA1990-ICV1	1		
09:41	MA1990-ICB1	1		
09:46	MA1990-CCV1	1		
09:51	MA1990-CCB1	1		
09:56	MA1990-CRI1	1		
10:02	MA1990-CRIA1	1		
10:08	MA1990-ICSA1	1		
10:13	MA1990-ICSAB1	1		
10:19	MA1990-CCV2	1		
10:24	MA1990-CCB2	1		
10:31	MP2934-MB1	1		
10:37	MP2934-B1	1		
10:42	MP2934-D1	1		
10:47	F7252-1	1		
10:52	MP2934-S1	1		
11:00	MP2934-S1	1		
11:05	MP2934-S2	1		
11:10	MP2934-SD1	5		
11:15	ZZZZZZ	1		
11:20	ZZZZZZ	1		
11:25	MA1990-CCV3	1		
11:30	MA1990-CCB3	1		
11:36	ZZZZZZ	1		
11:41	ZZZZZZ	1		
11:46	MP2952-MB1	1		
11:51	MP2952-B1	1		
11:56	MP2952-D1	1		
12:01	F7332-1	1		(sample used for QC only; not part of login F7252)
12:06	MP2952-S1	1		
12:11	MP2952-S2	1		
12:16	MP2952-SD1	5		
12:22	MA1990-CCV4	1		
12:27	MA1990-CCB4	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F7252
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0815M1.ASC
Analyst: JK
Date Analyzed: 08/15/00 Methods: SW846 6010A
Run ID: MA1990
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:32	ZZZZZZ	1		
12:37	ZZZZZZ	1		
12:42	ZZZZZZ	1		
12:47	ZZZZZZ	1		
12:52	ZZZZZZ	1		
12:57	ZZZZZZ	1		
13:02	ZZZZZZ	1		
13:07	ZZZZZZ	1		
13:12	ZZZZZZ	1		
13:18	ZZZZZZ	1		
13:26	MA1990-CCV5	1		
13:32	MA1990-CCB5	1		
13:38	ZZZZZZ	1		
13:43	ZZZZZZ	1		
13:48	MP2917-MB1	1		
13:53	MP2917-B1	1		
13:58	MP2917-D1	1		
14:03	F7215-1	1		(sample used for QC only; not part of login F7252)
14:09	MP2917-S1	1		
14:15	MP2917-S2	1		
14:20	MP2917-SD1	5		
14:25	MA1990-CCV6	1		
14:30	MA1990-CCB6	1		
14:44	ZZZZZZ	1		
14:49	ZZZZZZ	1		
14:54	ZZZZZZ	1		
14:59	ZZZZZZ	1		
15:04	ZZZZZZ	1		
15:09	ZZZZZZ	1		
15:14	ZZZZZZ	1		
15:19	ZZZZZZ	1		
15:24	ZZZZZZ	1		
15:29	MA1990-CCV7	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F7252
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0815M1.ASC
Analyst: JK
Date Analyzed: 08/15/00 Methods: SW846 6010A
Run ID: MA1990
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
15:34	MA1990-CCB7	1		
15:39	ZZZZZZ	1		
15:44	ZZZZZZ	1		
15:49	ZZZZZZ	1		
15:54	ZZZZZZ	1		
15:59	ZZZZZZ	1		
16:04	MA1990-CCV8	1		
16:09	MA1990-CCB8	1		
16:14	ZZZZZZ	1		
16:19	ZZZZZZ	1		
16:24	ZZZZZZ	1		
16:29	ZZZZZZ	1		
16:45	MA1990-CCV9	1		
16:50	MA1990-CCB9	1		
16:55	ZZZZZZ	1		
17:00	ZZZZZZ	1		
17:05	ZZZZZZ	1		
17:10	ZZZZZZ	1		
17:15	ZZZZZZ	1		
17:20	ZZZZZZ	1		
17:25	ZZZZZZ	1		
17:30	ZZZZZZ	1		
17:35	ZZZZZZ	1		
17:40	ZZZZZZ	1		
17:45	MA1990-CCV10	1		
17:50	MA1990-CCB10	1		
17:55	ZZZZZZ	1		
18:00	ZZZZZZ	1		
18:05	ZZZZZZ	1		
18:10	ZZZZZZ	1		
18:15	ZZZZZZ	1		
18:20	ZZZZZZ	1		
18:25	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F7252
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: HG0814W1.HGX
Analyst: BP
Parameters: Hg

Date Analyzed: 08/14/00
Run ID: MA1986

Methods: EPA 245.1, SW846 7470A

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:00	MA1986-ICV1	1		
00:00	MA1986-ICB1	1		
00:00	MA1986-CCV1	1		
00:00	MA1986-CCB1	1		
00:00	MA1986-CRI1	1		
00:00	MP2949-MB1	1		
00:00	MP2949-B1	1		
00:00	MP2949-D1	1		
00:00	MP2949-S1	1		
00:00	MP2949-S2	1		
00:00	F7306-2	1		(sample used for QC only; not part of login F7252)
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	MA1986-CCV2	1		
00:00	MA1986-CCB2	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	10		
00:00	ZZZZZZ	10		
00:00	ZZZZZZ	1		
00:00	ZZZZZZ	10		
00:00	ZZZZZZ	1		
00:00	F7252-1	1		
00:00	MA1986-CCV3	1		
00:00	MA1986-CCB3	1		

Refer to raw data for calibration curve and standards.

13G00303

Method: TRACE6 Sample Name: F7252-1 Operator: JK
Run Time: 08/15/00 10:47 Filename: R0815M1
Mode: CONC Type: S Corr. Factor: 1.00000
Lab ID.: Cust. Smpl. ID.: Cust. ID.:

Elems	Ag3280	Al3082	As1890	Ba4934	Be3130	Ca3179
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0003	.5585	-.0011	.0091	-.0002	1.514
SDev	.0004	.0034	.0011	.0001	0	.0029
%RSD	123	.6075	97.11	1.009	7.149	.1916

Elems	Cd2265	Co2286	Cr2677	Cu3247	Fe2714	K_7664
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avge	-.0005	.0017	.0147	.0024	.8196	1.260
SDev	.0001	.0002	.0002	.0003	.0119	.0109
%RSD	21.15	11.1	1.199	12.42	1.447	.8644

Elems	Mg2790	Mn2576	Mo2020	Na3302	Ni2316	2203/1
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.5984	.0752	-.0016	11.92	.0093	.0013
SDev	.003	.0001	.0005	.1181	.0004	.0005
%RSD	.4986	.1392	28.33	.9909	4.855	35.21

Elems	2203/2	Pb2203	Se1960	Sb2068	1960/1	1960/2
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avge	.0033	.0033	.0041	-.0016	.0015	.0047
SDev	.0002	.0003	.002	.0012	.0013	.0032
%RSD	6.19	8.887	49.34	78.09	85.58	68.33

Elems	Sn1899	Tl1908	V 2924	Zn2062
Units	ppm	ppm	ppm	ppm
Avge	.0021	-.0013	.0023	.0224
SDev	.0003	.0026	.0001	.0002
%RSD	15.98	201.5	5.628	1.019

F7266

HOLDING TIME
08/24/00

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	OWSGWMW01S001	F7266-1	NORMAL	F7266	M	08/04/00	08/10/00	08/17/00	6	7	13
UG/L	OWSGWMW01S001	F7266-1	NORMAL	F7266	OV	08/04/00	/ /	08/18/00	0	0	14
UG/L	OWSTB080400	F7266-2	NORMAL	F7266	OV	08/04/00	/ /	08/18/00	0	0	14
UG/L	OWSGWMW01S001	F7266-1	NORMAL	F7266	PAH	08/04/00	08/07/00	08/10/00	3	3	6
MG/L	OWSGWMW01S001	F7266-1	NORMAL	F7266	TPH	08/04/00	08/09/00	08/14/00	5	5	10

ACCUTEST

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: Tetra Tech NUS, Inc.
ADDRESS: 1401 Oven Park Dr. Suite 102
CITY, STATE, ZIP: Tallahassee, FL 32312
SEND REPORT TO:
PHONE #: 850-385-9899

FACILITY INFORMATION

PROJECT NAME: NAS Whiting-PDF
LOCATION: Milton, FL
PROJECT NO.: 7648.0000.BW0060101
FAX #: 850-385-9860

ANALYTICAL INFORMATION

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	VOA/VOH+MTBE (8260)	EDB (504.1)	PAH (8310)	TRPH (FL-PRO)	Total Pb (6010B)
FT266-1	OWSGWMW015001	8-4-00	1400	JA	GW	11	✓		✓	✓	✓	W	3	2	2	1
-2	OWSTB080400											2 (Trip Blank)				

MATRIX CODE

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

LAB USE ONLY

DATA TURNAROUND INFORMATION

- [x] STANDARD
- [ ] 48 HOUR RUSH
- [ ] 24 HOUR EMERGENCY
- [ ] OTHER _____

APPROVED BY: _____

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- [x] STANDARD
- [ ] COMMERCIAL "B"
- [x] DISK DELIVERABLE
- [ ] STATE FORMS
- [ ] OTHER (SPECIFY) _____

COMMENTS/REMARKS

3.0

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1.	8-4-00 1700	1. 8/4/00 1050	2.		2.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
		3.	4.		4.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY:	SEAL #	PRESERVE WHERE APPLICABLE ☐	ON ICE ☐ TEMPERATURE _____ C
		5.			

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F7266
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0817M1.ASC
QC Limits: result < RL

Date Analyzed: 08/17/00
Run ID: MA1994

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	ICB raw	final	ICB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	anr							
Antimony	5.0	2.39	anr							
Arsenic	10	3.4	anr							
Barium	200	.39	anr							
Beryllium	5.0	.36	anr							
Cadmium	5.0	.33	anr							
Calcium	1000	19.5	anr							
Chromium	10	.637	anr							
Cobalt	50	.797	anr							
Copper	25	.747	anr							
Iron	300	32	anr							
Lead	5.0	1.59	2.2	<5.0	1.4	<5.0	2.5	<5.0	1.8	<5.0
Magnesium	5000	17.6	anr							
Manganese	15	.16	anr							
Molybdenum	50	.68								
Nickel	40	1	anr							
Potassium	5000	28.2	anr							
Selenium	10	2	anr							
Silver	10	.96	anr							
Sodium	5000	153	anr							
Thallium	10	2.69	anr							
Tin	50	2.2								
Vanadium	50	.717	anr							
Zinc	20	.83	anr							

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F7266
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0817M1.ASC
QC Limits: result < RL

Date Analyzed: 08/17/00
Run ID: MA1994

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	30	anr							
Antimony	5.0	2.39	anr							
Arsenic	10	3.4	anr							
Barium	200	.39	anr							
Beryllium	5.0	.36	anr							
Cadmium	5.0	.33	anr							
Calcium	1000	19.5	anr							
Chromium	10	.637	anr							
Cobalt	50	.797	anr							
Copper	25	.747	anr							
Iron	300	32	anr							
Lead	5.0	1.59	2.0	<5.0B	1.2	<5.0	1.9	<5.0B	1.4	<5.0
Magnesium	5000	17.6	anr							
Manganese	15	.16	anr							
Molybdenum	50	.68								
Nickel	40	1	anr							
Potassium	5000	28.2	anr							
Selenium	10	2	anr							
Silver	10	.96	anr							
Sodium	5000	153	anr							
Thallium	10	2.69	anr							
Tin	50	2.2								
Vanadium	50	.717	anr							
Zinc	20	.83	anr							

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F7266
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0817M1.ASC
QC Limits: result < RL

Date Analyzed: 08/17/00
Run ID: MA1994

Methods: SW846 6010A
Units: ug/l

Metal	RL	IDL	CCB raw	final
Aluminum	200	30	anr	
Antimony	5.0	2.39	anr	
Arsenic	10	3.4	anr	
Barium	200	.39	anr	
Beryllium	5.0	.36	anr	
Cadmium	5.0	.33	anr	
Calcium	1000	19.5	anr	
Chromium	10	.637	anr	
Cobalt	50	.797	anr	
Copper	25	.747	anr	
Iron	300	32	anr	
Lead	5.0	1.59	2.7	<5.0B
Magnesium	5000	17.6	anr	
Manganese	15	.16	anr	
Molybdenum	50	.68		
Nickel	40	1	anr	
Potassium	5000	28.2	anr	
Selenium	10	2	anr	
Silver	10	.96	anr	
Sodium	5000	153	anr	
Thallium	10	2.69	anr	
Tin	50	2.2		
Vanadium	50	.717	anr	
Zinc	20	.83	anr	

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F7266
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

QC Batch ID: MP2941
Matrix Type: AQUEOUS

Methods: SW846 6010A
Units: ug/l

Prep Date: 08/10/00

Metal	RL	IDL	MB raw	final
Aluminum	200	30	anr	
Antimony	5.0	2.4		
Arsenic	10.0	3.4		
Barium	200	.39		
Beryllium	5.0	.36		
Cadmium	5.0	.33		
Calcium	1000	19.5		
Chromium	10.0	.64		
Cobalt	50.0	.8		
Copper	25.0	.75		
Iron	300	32	anr	
Lead	5.0	1.6	1.2	<5.0
Magnesium	5000	17.6		
Manganese	15.0	.16	anr	
Molybdenum	50.0	.68		
Nickel	40.0	1		
Potassium	5000	28.2		
Selenium	10.0	2		
Silver	10.0	.96		
Sodium	5000	153		
Thallium	10.0	2.7		
Tin	50.0	2.2		
Vanadium	50.0	.72	anr	
Zinc	20.0	.83		

Associated samples MP2941: F7266-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MP2941

Metals Digestion Log: Water

Method Of Digestion: ICP 3010A Temp: 95 Thermometer ID#: 36

	HNO_3	HCl	H_2O_2
Added:			
Mfg:	Fisher	Fisher	
Lot #:	1100010	419100	

Sample #	Init. Vol / Wt	Final Vol / Wt	Date	Comments
F-7282-1 -DUP	50ml	50ml	080900	
1 -MS				Spiked w 1.0ml ACC203 + 0.5ml GN1485 + 0.25ml ACC 182
1- 1 MSD				Same as MS
2- 1				
3- 2				
4- 3				
5- F-7266-1				
6- 7253-1				
7- 7264-1				
8- 2				
9- 3				
10- 4				
11- 5				
12- 7257-1				
13- 2				
14- 7255-2A				
15- 3A				
16- 4A				
17- 6A				
18-				
19-				
20-				
MB/SB				
MB/SB				Same as MS

Analyst's Signature: L Greene Date: 080900

QC Review: Date:

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F7266
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0817M1.ASC
Analyst: JK
Parameters: Pb

Date Analyzed: 08/17/00
Run ID: MA1994

Methods: SW846 6010A

Time	Sample Description	Dilution Factor	PS Recov	Comments
09:42	MA1994-ICV1	1		
09:51	MA1994-ICV2	1		
09:56	MA1994-ICB1	1		
10:22	MA1994-ICB2	1		
10:27	MA1994-CCV1	1		
10:36	MA1994-CCB1	1		
10:42	MA1994-CRI1	1		
10:53	MA1994-CRIA1	1		
11:00	MA1994-ICSA1	1		
11:05	MA1994-ICSAB1	1		
11:12	MA1994-CCV2	1		
11:17	MA1994-CCB2	1		
11:25	MP2961-MB1	1		
11:30	MP2961-B1	1		
11:35	MP2961-D1	1		
11:40	F7350-1	1		(sample used for QC only; not part of login F7266)
11:45	MP2961-S1	1		
11:50	MP2961-S2	1		
11:55	MP2961-SD1	5		
12:00	ZZZZZZ	1		
12:05	ZZZZZZ	1		
12:10	MA1994-CCV3	1		
12:16	MA1994-CCB3	1		
12:21	ZZZZZZ	1		
12:26	ZZZZZZ	1		
12:31	ZZZZZZ	1		
12:38	MP2961-MB1	1		
12:43	MP2941-MB1	1		
12:48	MP2941-B1	1		
12:53	MP2941-D1	1		
12:58	F7282-1	1		(sample used for QC only; not part of login F7266)
13:03	MP2941-S1	1		
13:09	MP2941-MB1	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F7266
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#NO052-MSA0200-014

File ID: IR0817M1.ASC
Analyst: JK
Parameters: Pb

Date Analyzed: 08/17/00
Run ID: MA1994

Methods: SW846 6010A

Time	Sample Description	Dilution Factor	PS Recov	Comments
13:20	MA1994-CCV4	1		
13:26	MA1994-CCB4	1		
13:32	MP2962-MB1	1		
13:37	MP2962-B1	1		
13:42	MP2962-D1	1		
13:47	F7368-1	1		(sample used for QC only; not part of login F7266)
13:52	MP2962-S1	1		
13:57	MP2962-S2	1		
14:03	MP2962-SD1	5		
14:08	ZZZZZZ	1		
14:13	ZZZZZZ	1		
14:18	ZZZZZZ	1		
14:24	MA1994-CCV5	1		
14:29	MA1994-CCB5	1		
14:35	MP2941-S2	1		
14:40	MP2941-SD1	5		
14:45	ZZZZZZ	1		
14:50	ZZZZZZ	1		
14:55	F7266-1	1		
15:00	ZZZZZZ	1		
15:05	ZZZZZZ	1		
15:10	ZZZZZZ	1		
15:15	ZZZZZZ	1		
15:20	MA1994-CCV6	1		
15:25	MA1994-CCB6	1		
15:30	ZZZZZZ	1		
15:35	ZZZZZZ	1		
15:40	ZZZZZZ	1		
15:45	ZZZZZZ	1		
15:50	ZZZZZZ	1		
15:55	ZZZZZZ	1		
16:00	ZZZZZZ	1		
16:05	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F7266
Account: TETRFLTA - Tetra-Tech, NUS
Project: TETRFLTA1751 - NAS Whiting Field PO#N0052-MSA0200-014

File ID: IR0817M1.ASC
Analyst: JK
Parameters: Pb

Date Analyzed: 08/17/00
Run ID: MA1994

Methods: SW846 6010A

Time	Sample Description	Dilution Factor	PS Recov	Comments
16:10	MA1994-CCV7	1		
16:15	MA1994-CCB7	1		

Refer to raw data for calibration curve and standards.

APPENDIX E

RESPONSE TO FDEP AND USPEA COMMENTS ON DRAFT-FINAL REMEDIAL INVESTIGATION REPORT FOR SITES 05, 07, 29, 35, AND 38 AT NAS WHITING FIELD

Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

November 3, 2003

Ms. Linda Martin
Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive, PO Box 190010
North Charleston, South Carolina 29419-9010

file: 5AetalRI1.doc

RE: Draft Remedial Investigation for Sites 5A, 07, 29, 35, 38 and PSC1485C, NAS Whiting Field

Dear Ms. Martin:

I have reviewed the above document dated July 2003 (received July 10, 2003). The document is a compilation of investigations for different types of sites; therefore, I will consider each site separately.

Site 5A. The Battery Acid Seepage Pit

1. This site is unusual because the original PA/SI was completed in the early 1990s and the site was granted NFA status. An additional PA/SI was also completed in January 2002. The present investigation represents the results of additional investigations to address possible PCB and pesticide contamination at the site. Including some historical information on this site will help keep the administrative record more straightforward; otherwise, a reader of the present document may question why the "Battery Acid Seepage Pit" site at which the battery acid material was discharged on the west side of the building was subjected to soil sampling only on the East side of Building 1478.

2. Please indicate why soil borings were collected only on the East side of the building.

3. Please resolve the discrepancy in Section 1.2.2.1 and 2.2 regarding the location of battery acid discharge activities (similar to comment 1., above).

4. Similar to my prior comment for the Site Investigation, please justify why groundwater sampling was not accomplished at this site. I am aware that "soil leaching will be addressed in the Site 40 and 39 RI report." What about the groundwater contaminant regime at this site. Groundwater contamination and leaching are not necessarily the same thing, unless it has been determined to be so.

5. Section 2.2.4: iron has not formally been determined to be naturally occurring at NASWF. This is something we need to address.

6. Vanadium exceeds the current Florida SCTL. Until such time that it is revised, this constituent must be addressed.

Site 07 – The South Avgas Tank Sludge Disposal Area

1. We have formally discussed this site with regard to petroleum-based contamination and cleanup and a Focused Feasibility Study is recommended; I concur, if all contaminants, including inorganic contaminants, are properly addressed.

Site 29 – Auto Hobby Shop

1. Vanadium exceeds the current Florida SCTL. Until such time that it is revised, this constituent must be adequately addressed.

Site 35 – Building 1429: Public Works Maintenance Facility

1. I concur with the development of a Focused Feasibility Study. My prior comments regarding Vanadium apply to this site also.

Site 38 – Building 2877, Former Golf Course Maintenance Building

1. I concur with the development of a Focused Feasibility Study. My prior comments regarding Vanadium apply to this site also.

Site 1485C – Pesticide Storage Building

1. I concur with the development of a Focused Feasibility Study. My prior comments regarding Vanadium apply to this site also.

I have mentioned several times prior to now of the need for adequate groundwater assessment at various sites. It may be that sufficient data already exists that can satisfy that need. Please ensure that we meet this obligation. Additionally, my examination of the data from the various sites seems to indicate that Vanadium is more prevalent in the surface soil rather in the subsurface soil. This is one good reason to better address this constituent until such time as the Florida SCTLs are revised. I look forward to the final document.

Thank you for the opportunity to review this document. If you have questions or need further clarification please contact me at (850) 245-8999.

Sincerely,

James H. Cason, P.G.
Remedial Project Manager

cc: Jim Holland, NASWF
Craig Benedikt, USEPA Region IV, Atlanta
Terry Hansen, TetraTech, Tallahassee

JJC for ESN

Engle, Howard

From: Hansen, Terry
Sent: Tuesday, November 02, 2004 11:24 AM
To: Howard Engle (Engle, Howard)
Subject: FW: Misc Sites Response to Comments

-----Original Message-----
From: Benedikt.Craig@epamail.epa.gov [mailto:Benedikt.Craig@epamail.epa.gov]
Sent: Tuesday, November 02, 2004 10:46 AM
To: Hansen, Terry; linda.a.martin@navy.mil; Smith, Larry
Cc: james.cason@dep.state.fl.us; ronald.joyner@navy.mil; atwitty@CH2M.com
Subject: Misc Sites Response to Comments

Larry/Linda/Terry -

As I mentioned during our recent meeting, I have reviewed the responses to comments for the Draft Assessment Report for Sites 5A, 7, 29, 35, 38 and PSC1485C. Below are my comments concerning the responses:

* Response to General Comment 3: I do not believe the response to FDEP's comment applies in this case. Therefore, I would prefer all statements suggesting regulatory limits are too conservative be removed.

* Response to Specific Comment 3: It does not matter that Site 5 was previously closed. Sites can be reopened based on new information.
Therefore, the current investigation of the site should be addressed as Site 5 and not as Site 5A.

* Response to Specific Comment 4: The references should be changed to Region IV RAGS and USEPA Region IX PRGs. The response still does not address the requested correction for the Region IX PRGs.

* Response to Specific Comment 8: The response states the UST stored point oil and solvents. I'm not familiar with point oil. Please verify this statement.

In addition, as we previously discussed, the information related to the investigation of PSC1485C should be removed from this document and compiled into a separate document.

As soon as I receive some feedback regarding the Site 40 RI reponses to comments from the person who conducted the risk assessment review, I will provide additional input so that document can be finalized as well.

Please let me know if you have any questions.

Thanks,

Craig A. Benedikt
Senior Remedial Project Manager
Federal Facilities Branch
U.S EPA Region 4
(404) 562-8555
(404) 562-8518 FAX
Benedikt.Craig@epa.gov

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RESPONSE TO FDEP AND USEPA COMMENTS ON DRAFT REMEDIAL INVESTIGATION REPORT FOR SITES 05, 07, 29, 35, and 38

GENERAL NOTE:

At the November 19-20, 2002 NAS Whiting Field Partnering Team meeting it was decided to re-label this report as a Remedial Investigation Report for Sites 05A, 07, 29, 35, 38, and PSC1485C. The comments received from the FDEP were made on a Preliminary Assessment/Site Investigation report prior to this decision. The comments will be addressed with regards to a Remedial Investigation, as opposed to a Preliminary Assessment / Site Investigation.

RESPONSE TO FDEP COMMENTS:

Site 05A - The Battery Acid Seepage Pit

Comment 1 *This site is unusual because the original PA/SI was completed in the early 1990s and the site was granted NFA status. An additional PA/SI was also completed in January 2002. The present investigation represents the results of additional investigations to address possible PCB and pesticide contamination at the site. Including some historical information on this site will help keep the administrative record more straightforward; otherwise, a reader of the present document may question why the "Battery Acid Seepage pit" site at which the battery acid material was discharged on the west side of the building was subjected to soil sampling only on the East side of Building 1478.*

Response

Sections 1.2.2.1 and 1.2.3.1 in the RI contain a discussion of the site description and history and previous investigations for Site 05. Section 1.2.2.1 specifically details that Site 5, Building 1478, was initially the Transformer Repair Building from the 1940s to the 1960s when it began being used as the Battery Shop until 1984. Section 1.2.3.1 details that the previous investigations were focused on contaminants consistent with a battery shop and subsequent discharges from battery shop to the dry well located on the west side of the building. Section 1.2.3.1 also explains that the Site was closed following the investigation for contaminants associated with battery operations at Building 1478. Additionally detailed in section 1.2.3.1 is the collective realization that the Navy, USEPA, and FDEP had overlooked the possibility of PCB soil contamination associated with Building 1478 being previously used as the Transformer Repair Building. Thus Site 05 was being investigated for PCB contamination. The reason from

collecting soil borings from the east side of the building is addressed in the response to Comment 2.

Comment 2 *Please indicate why soil borings were collected only on the East side of the building.*

Response
The soil assessment was conducted on the East side of Building 1478, the area where transformer fluid was most likely emptied. This area was identified based on the location of a doorway and covered porch on the East side of Building 1478. The doorway and covered porch would have provided individuals with the most accommodating outside work area. Additionally, transformers were reported to be drained of dielectric fluid and discharged to the grassy ditch located southeast of Building 1478,

Comment 3 *Please resolve the discrepancy in Section 1.2.2.1 and 2.2 regarding the location of battery acid discharge activities (similar to comment 1., above)..*

Response
Sections 1.2.2.1 and 2.2 have been clarified to state that battery acid discharge activities occurred in the dry well located west of the building, but dielectric fluid from transformers was discharged into the grassed ditch located southeast of the building.

Comment 4 *Similar to my prior comment for the Site Investigation, please justify why groundwater sampling was not accomplished at the site. I am aware that 'soil leaching will be addressed in the Site 40 and 39 RI report." What about the groundwater contaminant regime at this site. Groundwater contamination and leaching are not necessarily the same thing, unless it has been determined to be so.*

Response
Groundwater was previously investigated during the initial investigation of Site 05. During the initial investigation, the groundwater was analyzed for a full suite of possible contaminants including PCBs. Since PCBs were not detected during the initial investigation, there was no need to further investigate the groundwater associated with Site 05.

Comment 5 *Section 2.2.4: iron has not formally been determined to be naturally occurring at NASWF. This is something we need to address.*

Response
Subsequent to this comment by FDEP, it has been determined that elevated concentrations of several metals, including: aluminum, arsenic, iron, manganese, and vanadium, are most likely naturally occurring, unless the elevated concentrations can be associated with previous or current site activities.

Comment 6 *Vanadium exceeds the current Florida SCTL. Until such time that it is revised, this constituent must be addressed.*

Response
All references to the Florida SCTL being too conservative for Vanadium have been removed. However, as stated in the response to Comment 5, elevated concentrations of vanadium have been determined to be unrelated to site activities. The text in the report has been modified to include this determination.

Site 07 – The South Avgas Tank Sludge Disposal Area

Comment 1 *We have formally discussed this site with regard to petroleum-based contamination and cleanup and a Focused Feasibility Study is recommended; I concur, if all contaminants including inorganic contaminants, are properly addressed.*

Response
Elevated levels of arsenic and vanadium have been determined to be unrelated to site activities. Therefore the only contaminants to address are PAHs in the surface and subsurface soil.

Site 29 – Auto Hobby Shop

Comment 1 *Vanadium exceeds the current Florida SCTL. Until such time that it is revised, this constituent must be adequately addressed..*

Response
Please refer to the response to Comment 6 for Site 05.

Site 35 – Building 1429: Public Works Maintenance Facility

Comment 1 *I concur with the development of a Focused Feasibility Study. My prior comments regarding Vanadium apply to this site also.*

Response
Comment is noted. Please refer to the response to Comment 6 for Site 05 with regards to vanadium.

Site 38 – Building 2877, Former Golf Course Maintenance Building

Comment 1 *I concur with the development of a Focused Feasibility Study. My prior comments regarding Vanadium apply to this site also.*

Response
Comment is noted. Please refer to the response to Comment 6 for Site 05 with regards to vanadium.

PSC 1485C – Pesticide Storage Building

Comment 1 *I concur with the development of a Focused Feasibility Study. My prior comments regarding Vanadium apply tot his site also..*

Response
Comment is noted; however, since this comment was submitted by FDEP, PSC 1485C has been redesignated as Site 41. Site 41 will be investigated separately and the investigative results presented in a separate document. All references to PSC 1485C have been removed.

RESPONSE TO USEPA COMMENTS:

General Comments:

Comment 3 *In a number of locations throughout the document, the statement is made that regulatory limits are too conservative. These statements merit additional explanation or should be removed from the document.*

Response
With regards to the HHRA, refer to the response to FDEP Comment 1 for Site 5A, The Battery Acid Seepage Pit. Reasoning for using alternative limits for the ERA is contained in Appendix A of the Report.

USEPA Response *I do not believe the response to FDEP's comment applies in this case. Therefore, I would prefer all statement suggesting regulatory limits are too conservative be removed.*

Response
All statements suggesting regulatory limits are too conservative have been removed.

Specific Comments:

Comment 3 ***Page ES-1, Executive Summary.*** *The first and second sentences of the third paragraph should be reworded for clarify.*

Response
The first and second sentences of the third paragraph will be reworded as follows:

Site 05 was previously investigated and closed, however; Site 05 was not investigated for possible pesticide/PCB contamination. Therefore, the pesticide/PCB contamination investigation at Site 05 was conducted as Site 5A. Four (4) surface soil borings and four (4) subsurface soil borings were advanced using DPT at Site 5A.

USEPA Response *It does not matter that Site 5 was previously closed. Sites can be reopened based on new information. Therefore, the current investigation of the site should be addressed as Site 5 and not as Site 5A.*

Response
References to Site 5A have been replaced with Site 05, and an explanation of the need for further investigation at Site 05 has been included in Section 1.2.2.1 and 1.2.3.1.

Comment 4 ***Page ES-2, Executive Summary.*** *In the first paragraph on this page and elsewhere in the document, "Region IX RAGs" should be changed to "Region IV RAGs". In the second paragraph and elsewhere in the document, "USEPA Region IV PRGR" should be changed to "USEPA Region IX PRGs".*

Response
References to "Region IX RAGs" and "USEPA Region IV PRGR" will be changed to read "Region IV RAGs" and "USEPA Region IX PRGR."

USEPA Response *The reference should be changed to Region IV RAGS and USEPA Region IX PRGs. The response still does not address the requested* correction for the Region IX PRGs.

Response
References to "Region IX PRGR" have been corrected to read, "Region IX PRGs"

Comment 8 ***Page 1-15, Section 1.2.3.3.*** *The first sentence of the first paragraph should be reworded for clarity.*

Response
The first sentence will be reworded as follows:

"Site 29 was added to the RI/FS investigation at NAS Whiting Field between 1992 and 1993 because of the presence of a waste oil UST. The UST stored point oil and solvents from the 1940's until 1990."

USEPA Response *The response states the UST stored point oil and solvents. I'm not familiar with point oil. Please verify this statement.*

Response
The response included a mistype. The response should have read, "The UST stored paint oil and solvents from the 1940's until 1990."

Additional Comments:

In addition, as we previously discussed, the information related to the investigation of PSC1485C should be removed from this document and compiled into a separate document.

Response
PSC 1485C has been redesignated Site 41, and all references to PSC 1485C or Site 41 have been removed from this report. Investigation of Site 41 and all findings will be presented in a separate report.