N60201.AR.000530
NS MAYPORT
5090.3a

SITE ASSESSMENT FOR BUILDING 351 NS MAYPORT FL
1/1/2001
TETRA TECH NUS

Rev. 1
01/19/01

Site Assessment Report
for
Building 351

Naval Station Mayport
Mayport, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order 0122

January 2001

Rev. 1
01/19/01

SITE ASSESSMENT REPORT
FOR
BUILDING 351

NAVAL STATION MAYPORT
MAYPORT, FLORIDA

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

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

Submitted by:
Tetra Tech NUS, Inc.
661 Andersen Drive
Foster Plaza 7
Pittsburgh, Pennsylvania 15220

CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0122

JANUARY 2001

PREPARED UNDER THE SUPERVISION OF:

MARK A. PETERSON, P.G.
TASK ORDER MANAGER
TETRA TECH NUS, INC.
JACKSONVILLE, FLORIDA

APPROVED FOR SUBMITTAL BY:

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

PROFESSIONAL CERTIFICATION

Site Assessment Report
Building 351
Naval Station, Mayport, Florida

This Site Assessment 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 in general conformance with the Requirements of FAC 62-770. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of additional information on the assessment described in this report. This report was developed specifically for the referenced site and should not be construed to apply to any other site.

Mark A. Peterson

Mark Peterson, P.G.
Florida License No. PG-1852

1/19/01

Date

TABLE OF CONTENTS

SECTION **PAGE**

EXECUTIVE SUMMARY **ES-1**

ACRONYMS ..... **iii**

1.0 INTRODUCTION **1-1**
1.1 PURPOSE AND SCOPE 1-1
1.2 SITE DESCRIPTION AND SETTING 1-2
1.2.1 Location 1-2
1.2.2 Site Description 1-2
1.2.3 Topography and Drainage 1-2
1.2.4 Regional Hydrogeology 1-2
1.2.5 Land Use 1-6
1.2.6 Potable Water Well Survey 1-6
1.3 SITE HISTORY 1-6

2.0 SUBSURFACE INVESTIGATION METHODS **2-1**
2.1 QUALITY ASSURANCE 2-1
2.2 SOIL INVESTIGATON 2-1
2.2.1 Direct-Push Soil Borings 2-1
2.2.2 Hollow Stem Auger Soil Borings 2-2
2.3 GROUNDWATER INVESTIGATION 2-2
2.3.1 Direct-Push Well Borings 2-2
2.3.2 Monitoring Well Installation 2-2
2.4 MEDIA SAMPLING METHODOLOGY 2-4
2.4.1 Lithologic Sampling 2-4
2.4.2 Soil Vapor Screening 2-4
2.4.3 Soil Analytical Sampling 2-5
2.4.4 Groundwater Mobile Lab Screening 2-5
2.4.5 Groundwater Analytical Sampling 2-6
2.4.6 Free Product Sampling 2-6
2.5 HYDROLOGIC INVESTIGATION 2-7
2.5.1 Water Level Measurements 2-7
2.5.2 Aquifer Characteristics 2-8

3.0 RESULTS OF INVESTIGATION **3-1**
3.1 SITE-SPECIFIC HYDROGEOLOGY 3-1
3.1.1 Lithology 3-1
3.1.2 Aquifer Characteristics and Classification 3-1
3.2 SOIL QUALITY 3-1
3.3 WATER QUALITY 3-4
3.3.1 Temporary Well Point Sampling 3-4
3.3.2 Monitoring Well Sampling 3-4

4.0 DISCUSSION **4-1**

5.0 CONCLUSIONS AND RECOMMENDATION **5-1**

REFERENCES **R-1**

TABLE OF CONTENTS (Con't)

APPENDICES

A CAR SUMMARY SHEET A-1
B SOURCE REMOVAL REPORT B-1
C INVESTIGATION DERIVED WASTE MANIFEST C-1
D SOIL BORING LOGS D-1
E WELL COMPLETION RECORDS E-1
F GROUNDWATER SAMPLE LOG SHEETS F-1
G U.S. GEOLOGICAL SURVEY REPORT 97- 4262 ..... G-1
H LABORATORY ANALYTICAL REPORTS FOR SOIL H-1
I MOBILE LABORATORY ANALYTICAL REPORTS FOR GROUNDWATER I-1
J LABORATORY ANALYTICAL REPORTS FOR GROUNDWATER J-1

TABLES

NUMBER PAGE
1-1 Potable Water Well Survey Summary 1-7
2-1 Well Construction Details 2-3
3-1 Groundwater Elevation Summary 3-2
3-2 Soil Head-Space Screening Summary 3-5
3-3 Soil Sample Analytical Results Summary 3-7
3-4 Groundwater Results – Mobile Analytical Laboratory 3-8
3-5 Groundwater Results – Fixed Based Laboratory 3-12

FIGURES

NUMBER PAGE
1-1 Regional Map 1-3
1-2 Building 351 Site Location Map and Potable Water Well Locations 1-4
1-3 Site Map 1-5
3-1 Groundwater Elevation Contour Map 3-3
3-2 Soil Head-space Results 3-6
3-3 DPT Boring Locations and Mobile Laboratory Results 3-9
3-4 Monitoring Well Locations and Groundwater Results 3-10

ACRONYMS

AST	Above Ground Storage Tank
bls	Below Land Surface
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
CAR	Contamination Assessment Report
CLEAN	Comprehensive Long-term Environmental Action Navy
CompQAP	Comprehensive Quality Assurance Plan
CTO	Contract Task Order
DPT	Direct-Push Technology
EDB	1,2-dibromoethane
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	Flame Ionization Detector
FL-PRO	Florida Petroleum Range Organics
ft	Foot/Feet
GCTLs	Groundwater Cleanup Target Levels
HSA	Hollow Stem Auger
ID	Inside Diameter
IDW	Investigation Derived Waste
KAG	Kerosene Analytical Group
MGD	Million Gallons Per Day
mg/kg	milligram per kilogram
mL	milliliter
msl	Mean Sea Level
MTBE	Methyl Tertiary-butyl Ether
μg/kg	microgram per kilogram
μg/L	microgram per liter
NA	Natural Attenuation
NAVY	United States Navy
NGVD	National Geodetic Vertical Datum
NS	Naval Station
ORP	Oxidation Reduction Potential
OVA	Organic Vapor Analyzer
PAH	Polynuclear Aromatic Hydrocarbon
PE	Polyethylene
ppb	parts per billion
PVC	Poly Vinyl Chloride

ACRONYMS (Cont'd)

RAP	Remedial Action Plan
SA	Site Assessment
SAR	Site Assessment Report
SB	Soil Boring
SCTL	Soil Cleanup Target Level
SOPs	Standard Operating Procedures
SOUTHNAVFACENGCOM	Southern Division Naval Facilities Engineering Command
SVOC	Semi-volatile Organic Compounds
TRPH	Total Recoverable Petroleum Hydrocarbon
TW	Temporary Well
TtNUS	Tetra Tech NUS, Inc.
umhos/cm	micro ohms per centimeter
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOA	Volatile Organic Aromatic

EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) has completed a Site Assessment (SA) for Building 351 at the Naval Station (NS), Mayport, Florida. The SA was conducted in general accordance with the requirements of Chapter 62-770, Florida Administrative Code (FAC). The assessment report was submitted to the Florida Department of Environmental Protection (FDEP) for approval.

TtNUS performed the following tasks during the SA:

- Reviewed available Navy documents and identified potential sources and receptors for petroleum hydrocarbons in the vicinity, evaluated private potable wells within a 0.25 mile radius and public water supply wells within a 0.50 mile radius, located nearby surface water bodies, and determined surface hydrology and drainage.
- Conducted site survey to identify utilities and constructed a Site Plan.
- Performed direct push investigation which included the installation of 12 soil borings to collect samples for screening with an Organic Vapor Analyzer (OVA), and to collect groundwater samples for field screening for benzene, toluene, ethylbenzene, total xylenes (BTEX), Methyl tertiary-butyl ether (MTBE), and naphthalene using a mobile laboratory.
- Collected three soil samples from selected soil borings for laboratory analysis of the Kerosene Analytical Group (KAG) parameters which includes BTEX, MTBE, 1-methylnaphthalene, 2-methylnaphthalene, 16 Polynuclear Aromatic Hydrocarbons (PAHs) listed in 62-770 FAC Table A, and Total Recoverable Petroleum Hydrocarbons (TRPHs).
- Installed four shallow monitoring wells, each to approximately 13 feet (ft) below land surface (bls). Collected groundwater samples from each site monitoring well for laboratory analysis for KAG parameters. KAG parameter for groundwater include BTEX, MTBE, 1-methylnaphthalene, 2-methylnaphthalene, 16 PAHs listed in 62-770, FAC Table A, 1,2-dichloroethane and other listed Priority Pollutant Volatile Organic Halocarbons, 1,2-dibromoethane (EDB), total lead, and TRPHs.
- Installed a temporary well point, approximately 8 feet bls, in November 2000. Collected a groundwater sample from the monitoring well for laboratory analysis for KAG parameters. In January 2001, the temporary well point was completed as a permanent monitoring well.
- Surveyed monitoring well top of casing elevations and collected depth to groundwater measurements.
- Evaluated groundwater flow direction and gradient.

It should be noted that the surficial aquifer at the site is classified as a G-II. Therefore, the Groundwater Cleanup Target Levels (GCTLs) used for this site were Table I from Chapter 62-777, FAC.

A source removal was conducted at Building 351 which included removal for excessively contaminated soils and free product. The results of the SA indicate that hydrocarbon constituents were detected in soils and groundwater at the site. Analytical results indicate that volatile organics (benzene, ethylbenzene, and xylenes) and PAH constituents were detected above GCTL values in one monitoring well in the source area. The level of total xylenes in the source area well exceeds FDEP natural attenuation (NA) default concentrations. GCTLs were not exceeded in other site monitoring wells. Based on these results, it is recommended that a monitoring plan for NA be prepared for the site. Should xylenes continue to exceed NA default concentrations after one year, then a Remedial Action Plan (RAP) should be prepared.

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

An SA was conducted by TtNUS for the US Navy (Navy) Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) under Contract Task Order (CTO) 0122, for the Comprehensive Long-term Environmental Action Navy (CLEAN), Contract Number N62467-94-D-0888. The SA was conducted at Building 351 (the site) located at the NS Mayport, Duval County, Florida. The FDEP Facility Identification Number is FL168626008.

The purpose of this SA was to determine the nature and extent of petroleum hydrocarbon impacted soil and groundwater in accordance with the requirements of Chapter 62-770, FAC. Taking the following actions at Building 351 fulfilled this objective:

- Review of all available applicable documents such as closure reports, discharge reports, maintenance records, and construction plans.
- Survey of potential hydrocarbon sources in the vicinity of Building 351.
- Survey of potential receptors in the vicinity of Building 351, including public and private water supplies and surface water bodies.
- Completion of a surface and subsurface soil head-space, soil investigation, and initial groundwater screening, using direct-push technology (DPT).
- Mobile laboratory screening of groundwater samples for BTEX, MTBE, and naphthalene to aid in determining the optimum number and location of permanent monitoring wells.
- Installation of four shallow monitoring wells.
- Installation of temporary well point, November 2000, completion of temporary well point to permanent monitoring well, January 2001.
- Collection of soil and groundwater samples for laboratory analysis for constituents of the KAG.
- Determination of groundwater flow direction, hydraulic conductivity, hydraulic gradient, and transmissivity.

A Contamination Assessment Report (CAR) Summary Sheet, as required by Chapter 62-770, FAC, is included in Appendix A.

1.2 SITE DESCRIPTION AND SETTING

1.2.1 Location

NS Mayport is located in eastern Duval County, approximately 16 miles northeast of downtown Jacksonville, Florida. NS Mayport is located in Township 1 south, Range 29 east, Section 38, on the Mayport, Florida United States Geological Survey (USGS) Quadrangle (7.5-Minute Series) presented in Figure 1-1.

1.2.2 Site Description

Building 351 located within the northeastern section of the NS Mayport. Building 351 is one of the primary buildings used for the Fleet Training Facility. The source area for assessment activities is north of the main entrance to Building 351 and between Buildings 351 and 1388. Petroleum was released into the subsurface due to a leak from a diesel fuel line in the vicinity of the entrance area to Building 351. The location of Building 351 within NS Mayport is depicted on Figure 1-2. A Site Plan is shown in Figure 1-3.

1.2.3 Topography and Drainage

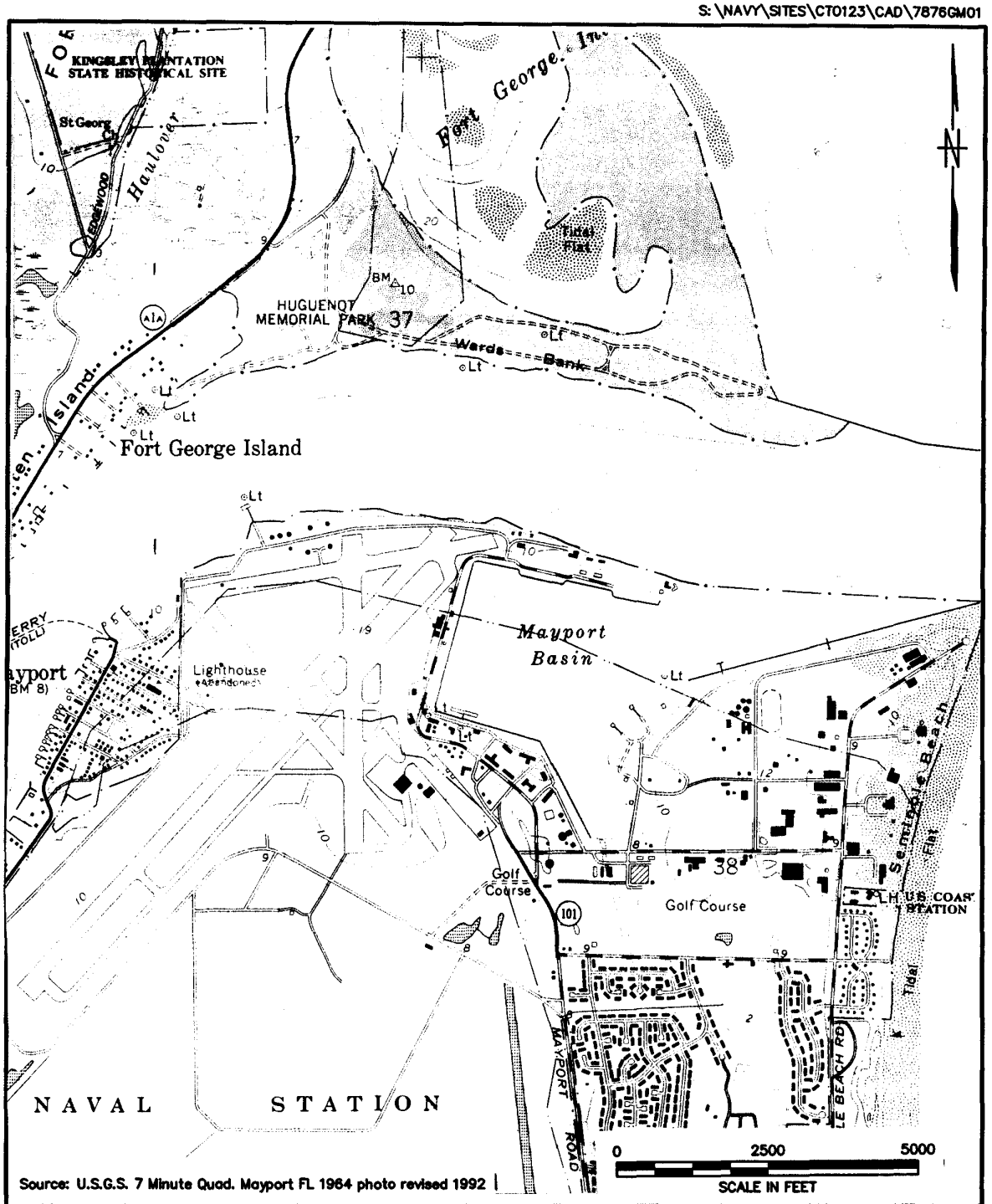
The site is located in the southeastern Coastal Plain physiographic province. The topography is gentle to flat and composed of a series of marine terraces. NS Mayport is located within the Silver Bluff terrace. The average land surface elevation is between 8 -10 feet above mean sea level (msl).

Building 351 is located on the west side of the base, which is bound by the St. John's River to the west and north and the Atlantic Ocean to the east. Site surface drainage is directed to swales that surround the compound.

1.2.4 Regional Hydrogeology

Northeast Florida is underlain by two main aquifer systems: the Surficial aquifer system and the Floridan aquifer system. The Southeastern Coastal Plain aquifer system underlies the Floridan aquifer system in portions of northeast Florida. The Surficial aquifer system in the vicinity of NS Mayport includes sediments of Holocene to Miocene age. These undifferentiated surficial deposits extend from land surface to the top of the Hawthorn Group about 50 feet bls (USGS, 1997).

S:\NAVY\SITES\CT0123\CAD\7876GM01

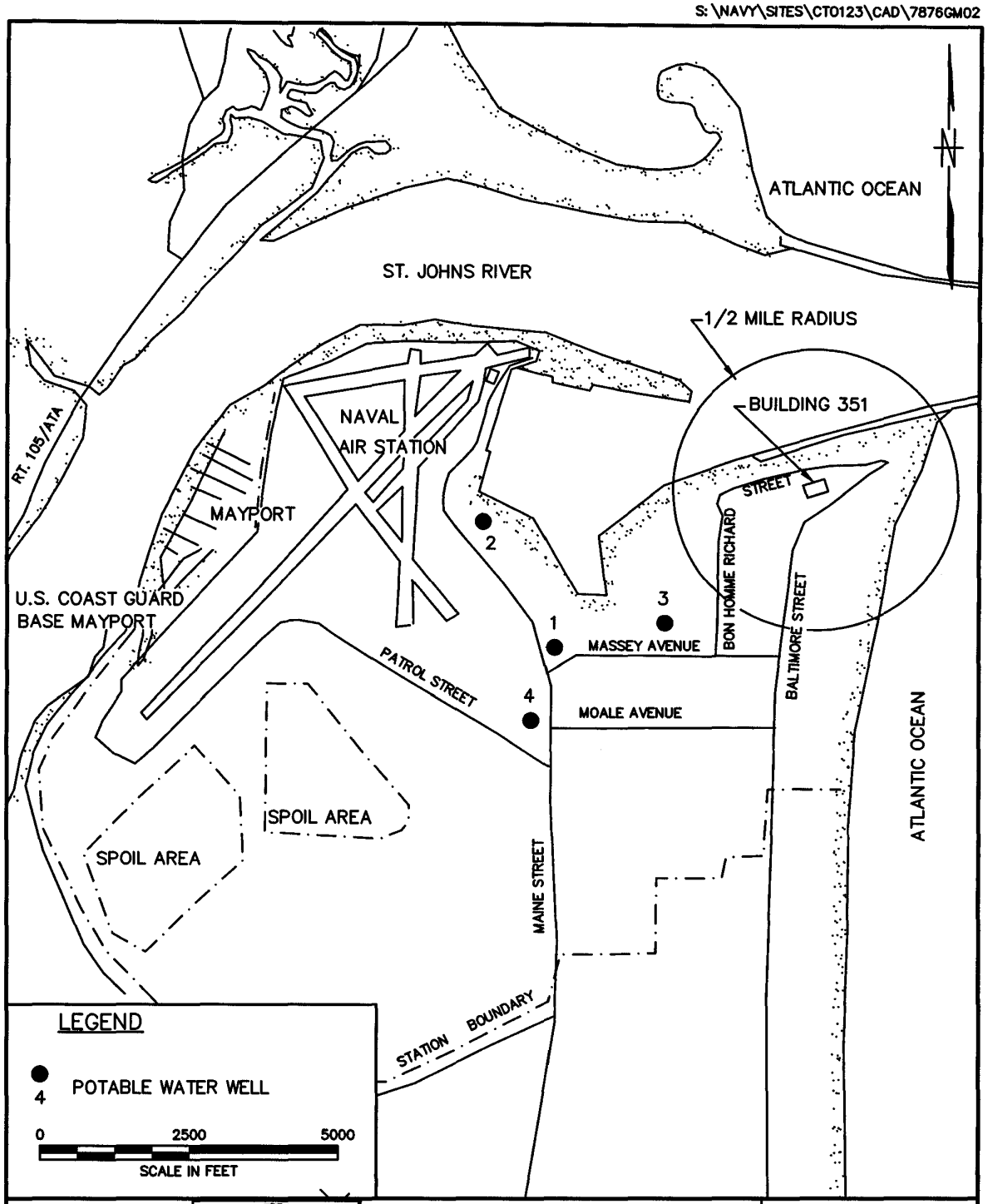


Source: U.S.G.S. 7 Minute Quad. Mayport FL 1964 photo revised 1992

DRAWN BY CW DATE 10/3/00	DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMD	REGIONAL MAP MAYPORT NAVAL STATION MAYPORT, FLORIDA	CONTRACT NO. 7867
CHECKED BY DATE			APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1-1 / REV. 0

FORM CADD NO. SDIV_AV.DWG - REV 0 - 1/20/98

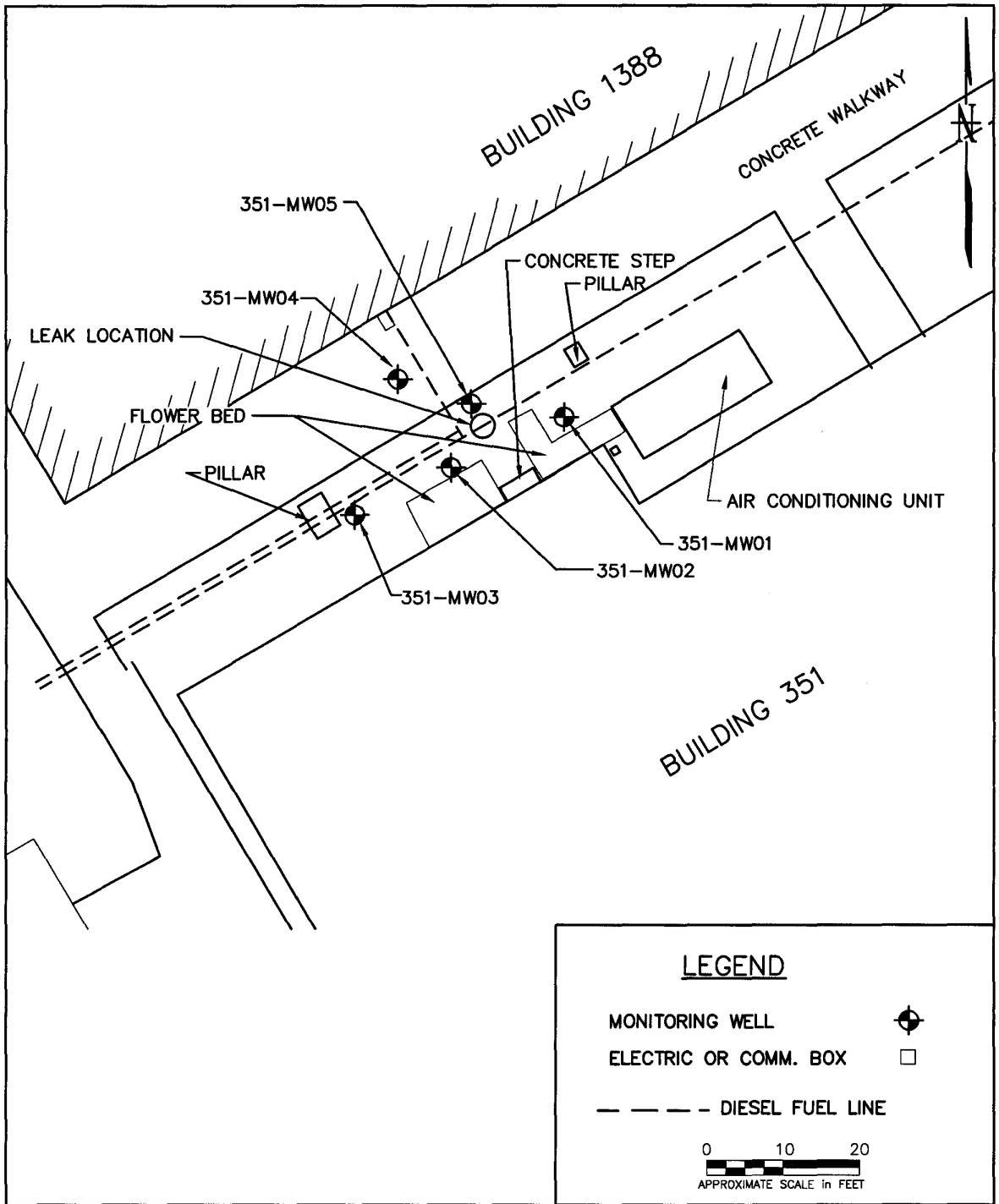
S:\NAVY\SITES\CTO123\CAD\7876GM02



DRAWN BY CW DATE 9/14/00	DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMD	SITE LOCATION MAP AND POTABLE WATER WELL LOCATIONS MAYPORT NAVAL STATION MAYPORT, FLORIDA	CONTRACT NO. 7867
CHECKED BY DATE			APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1-2 REV. 0

FORM CADD NO. SDIV_AV.DWG - REV 0 - 1/20/98

S:\PROJECTS\MAYPORT\CAD\0123\BLD351\500BM01



LEGEND

MONITORING WELL

ELECTRIC OR COMM. BOX

— — — — DIESEL FUEL LINE

0 10 20
APPROXIMATE SCALE in FEET

DRAWN BY CW DATE 12/6/00			CONTRACT NO. 0500
CHECKED BY DATE		SITE MAP BUILDING 351 MAYPORT NAVAL STATION MAYPORT, FLORIDA	APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1-3 REV. 0

FORM CADD NO. SDIV_AV.DWG – REV 0 – 1/20/98

The Surficial aquifer system consists of fine-grained sands near the surface interspersed with thin (less than 1 ft) clay lenses and generally grades to a mixture of sand and coarse shell fragments from 30 to 50 feet bls. The base of the Surficial aquifer system is the intermediate confining unit which is a sequence of marine clays and discontinuous limestone stringers (Spechler, 1994).

The Floridan aquifer system is the principal source of groundwater for public drinking water in most of northern peninsular Florida. At NS Mayport, three potable water supply wells are producing water from this aquifer system. In the area of investigation, the system is comprised of (from oldest to youngest) the Oldsmar Formation, the Avon Park Formation, and the Ocala Limestone. The Hawthorn Group, which forms the confining zone, unconformably overlies the Floridan aquifer system.

1.2.5 Land Use

The site is located close to the mouth of the St. John's River. The Atlantic Ocean is due east of the site. The area directly west of the site consists of a fire training facility. Various storage and office buildings are located to the south of Building 351.

1.2.6 Potable Water Well Survey

The potable water supply information presented in this report was obtained from the Site 1330 CAR dated May 1992. The CAR was prepared by the U.S. Army Corps of Engineers for site 1330 at NS Mayport. The base water treatment plant and the maintenance contractor, Lon Coleman Jones, confirm the accuracy of the water well information.

Potable water is supplied to NS Mayport by four on-base supply wells. Currently, three of the wells are active and one is inactive. The water supply is obtained from one 12-inch and two 16-inch diameter wells, which draw water from the Floridan aquifer at depths ranging from approximately 420 to 1,000 feet. Well capacities range between 2.1 and 2.9 million gallons per day (MGD) with a combined total pumping capacity of 10.0 MGD. The water is treated by the base water treatment plant prior to distribution.

Information that was gathered during the potable well survey is summarized on Table 1-1. The locations of the potable wells are depicted on Figure 1-2. None of the wells are within a 0.50-mile radius of the site.

1.3 SITE HISTORY

On July 1, 1999 a diesel fuel surface spill was reported at the Fleet Training Facility, Building 351. The cause of the discharge was reported to be a leaking 1.5-inch diameter, underground distribution pipe

Table 1-1
Potable Water Well Survey Summary

Site Assessment Report for Building 351
Naval Station Mayport
Mayport, Florida

Well No.[1]	Usage	Total Depth (feet)	Casing Depth (feet)	Completion Date
1	Potable active	1001	435	10/06/61
2	Potable inactive	1000	435	04/03/58
3	Potable active	1000	433	07/20/79
4	Potable active	500	419	05/29/79

Notes:

1 = refer to Figure 1-2 for locations of potable wells.

containing diesel fuel. The total quantity of the diesel fuel release was unknown. However, approximately 1,140 gallons of free product was recovered between July and August 1999. An excavation was conducted to remove grossly contaminated soils. The fuel impacted an area approximately 14 feet long by 8 feet wide. Hydrocarbon impacted soil was screened using a calibrated OVA equipped with a Flame Ionization Detector (FID). The horizontal extent of the excavation was limited due to the presence of permanent structures adjacent to the impacted areas. In total, approximately seven tons of diesel contaminated soil was removed from the impacted area. A closure sample collected from the floor of the excavation indicated that no constituents were detected in excess of SCTLs or leachability standards for groundwater protection. Following the soil excavation, four temporary monitoring wells were installed in the excavation area to evaluate groundwater quality. An oil-water interface probe indicated the presence of approximately two feet of liquid phase hydrocarbons in the shallow aquifer beneath the excavation area. A free phase product recovery effort was initiated and free product was recovered. A total of 1,140 gallons of fuel oil was recovered during the free product recovery effort.

Detailed information regarding the initial response actions are documented in a "Source Removal Report, Diesel Fuel Discharge, Mayport Naval Air Station Fleet Training Facility - # 351 prepared by Aerostar Environmental Services dated August 1999. This report is provided in Appendix B.

2.0 SUBSURFACE INVESTIGATION METHODS

2.1 QUALITY ASSURANCE

The site investigation was conducted in accordance with the Standard Operating Procedures (SOPs) prescribed by the FDEP Quality Assurance Section Document DER-001/92, and adopted by the TtNUS Comprehensive Quality Assurance Plan (CompQAP) Number 980038.

2.2 SOIL INVESTIGATON

Soil borings at Building 351 were installed using two advancement methods: DPT and hollow stem augers (HSA). Prior to breaking ground at any soil boring location, TtNUS reviewed utility drawings provided by the NS Mayport Public Works Department, and requested utility mark-outs from Lon Coleman Jones, the facility contractor.

Soil boring advancement equipment was decontaminated prior to and following each use as specified in the TtNUS' CompQAP. Rinse water generated during the decontamination of equipment was containerized in 55-gallon drums, sampled, and removed for later disposal.

In addition to liquid investigation derived waste (IDW), soil cuttings were also generated during soil boring advancement. Soil cuttings were also placed in 55-gallon steel drums, sampled, and removed for later disposal. IDW manifests are provided in Appendix C. Soil boring lithologic logs are provided in Appendix D.

2.2.1 Direct-Push Soil Borings

TtNUS conducted a soil vapor assessment at Building 351 on May 3 and 5, 2000. DPT soil borings were advanced for the purpose of collecting soil and groundwater samples. Thirteen soil borings (351-TW-01 through 351-TW-12) were advanced in the area around the line leak. The borings were advanced until the water table was encountered. Soil samples were collected at 2-ft intervals from each boring for soil head-space screening and lithologic description.

2.2.2 Hollow Stem Auger Soil Borings

On May 24, 2000, four-soil borings (351-MW01 through MW04) were drilled by using HSA drilling techniques. HSA soil borings were advanced for the purpose of installing groundwater monitoring wells. Soil borings were also used to characterize the site lithology and/or provide additional assessment data on soil vapor concentrations in the area.

2.3 GROUNDWATER INVESTIGATION

2.3.1 Direct-Push Well Borings

During the DPT investigation, soil borings were advanced approximately five feet into the water table, and groundwater samples were collected. The samples were collected from a depth of approximately 10 feet bls and analyzed by a mobile lab for BTEX, MTBE, and naphthalene.

2.3.2 Monitoring Well Installation

Monitoring wells were installed in conjunction with the HSA soil boring procedures discussed in Section 2.2. Prior to installation of the monitoring wells, the soil and groundwater screening data obtained during the DPT investigation was evaluated to determine the optimum number and placement of the wells. Monitoring wells were designed so that the screened interval intersected the surface of the groundwater. Monitoring well placement was designed to provide spatial coverage and to determine if petroleum products had impacted groundwater in the area of the release.

The monitoring wells were installed with a truck mounted drill rig using 4.25-inch inside diameter (ID) HSA. Each well was constructed of 2-inch, flush-threaded, schedule 40 poly vinyl chloride (PVC) riser and 0.010 inch slot well screen with a 6 inch silt trap and well bottom cap. The shallow wells were installed to approximately 13 feet bls with a 10-ft screen section. The annulus around each well was filled to approximately 1 ft above the screen with US Standard Sieve size 20/30-silica sand, followed by a 6-inch to 1-ft 30/65 fine sand seal. The remainder of the annulus was grouted to the surface. Each well is secured with a locking, watertight cap within a steel, 8-inch diameter steel access port. The access port is set within a 24-inch square concrete apron finished slightly above grade. Monitoring well construction details are summarized on Table 2-1. Monitoring well completion records are provided in Appendix E.

Table 2-1
Well Construction Details

Site Assessment Report for Building 351
Naval Station Mayport
Mayport, Florida

Well No.	Date Installed	Installation Method	Top of Casing Elevation (feet msl)	A/G Riser Length if Applicable	Total Well Depth (Feet)	Screened Interval (FBLS)	Well Diameter (inches)	LITHOLOGY OF SCREENED INTERVAL
351-MW-01	24-May-00	HSA	8.94	N/A	13.00	3-13	2.00	Medium to fine sand
351-MW-02	24-May-00	HSA	8.90	N/A	13.00	3-13	2.00	Medium to fine sand
351-MW-03	24-May-00	HSA	8.76	N/A	13.00	3-13	2.00	Medium to fine sand
351-MW-04	24-May-00	HSA	9.52	N/A	13.00	3-13	2.00	Medium to fine sand
351-MW-05	11-Jan-01	Hand-augar		N/A	7.00	1-7	2.00	Medium to fine sand

Notes:
HSA = Hollow Stem Auger
FBLS = feet below land surface.
msl = mean sea level
N/A = not applicable

Each monitoring well was developed using a centrifugal pump. Field measurements of pH, temperature, and specific conductance were collected from the water generated during development. The monitoring wells were developed until such field measurements became stable and/or the purge water clear. Stabilization of field measurements is based on the U. S. Environmental Protection Agency (USEPA) SOPs (1997) which specifies the following criteria: temperature +/-0.5° C, pH +/-0.1 unit, and specific conductance +/-10 micro ohms/centimeter (umhos/cm). A TtNUS geologist supervised all monitoring well development. Development water was containerized as liquid IDW for later sampling and disposal.

In November 2000, TtNUS installed a temporary well point to approximately 8 feet bls using hand auger methods. The temporary well point was installed in the source area for the purpose of collecting a groundwater sample for laboratory analysis of KAG parameters. No soil samples were collected because the area was within the backfill of the original investigation. KAG parameters for groundwater include BTEX, MTBE, 1-methylnaphthalene, 2-methylnaphthalene, 16 PAHs listed in 62-770 FAC Table A, 1-2, dichloroethane and other listed Priority Pollutant Volatile Organic Halocarbons, 1,2-dibromoethane (EDB), total lead and TRPHs. In January 2000, the temporary well point was completed and a permanent monitoring well is now in place. Monitoring well completion records are provided in Appendix E.

2.4 MEDIA SAMPLING METHODOLOGY

2.4.1 Lithologic Sampling

Representative soil samples were collected during the subsurface investigation via DPT methods in order to assess the shallow subsurface geologic conditions at the Building 351. Soil boring logs for monitoring wells are provided in Appendix D.

2.4.2 Soil Vapor Screening

During DPT soil boring installation, a soil head-space assessment was conducted. The assessment consisted of both visual inspection for petroleum staining and soil head-space screening with OVA equipped with a FID. The soil head-space analysis was performed according to the headspace method prescribed in Rule 62-770.200(8), FAC. Using this method, two 16-ounce glass soil jars were half-filled with soil sample (duplicate samples). The soil jars were then sealed with aluminum foil. The soil samples were allowed to equilibrate to ambient temperature, which was within the temperature range specified by FDEP.

The samples were screened with a Heath Porta FID II OVA equipped with a FID. Prior to each day's activities, the OVA was field calibrated with 100 parts per million (ppm) methane in air, in accordance with the manufacturers specifications. Sample screening was performed by inserting the OVA probe through the foil sample cover and recording the highest OVA reading. Following collection of this initial OVA reading, the OVA was fitted with a granular activated carbon filter probe. The OVA was then used to test the headspace above the duplicate sample. The activated carbon absorbs petroleum hydrocarbons providing a filtered reading that represents naturally occurring organic vapors, and provides a reading for methane.

Upon completion of the procedure, the carbon-filtered result was subtracted from the un-filtered result, to obtain a net petroleum vapor value. In accordance with Rule 62-770.200(8), FAC, corrected headspace levels in excess of 50 ppm is defined as "excessively contaminated soil" for KAG parameters. Corrected headspace levels in excess of 10 ppm but less than 50 ppm is considered as contaminated, though not excessively contaminated.

2.4.3 Soil Analytical Sampling

Confirmatory soil samples were collected for analyses from three borings (351-SS-SB02-05, 351-SS-SB05-05 and 351-SS-SB07-05) during DPT advancements, which exhibited elevated soil gas results. The samples were analyzed for Volatile Organic Aromatic (VOA) compounds by USEPA Method 8260B, Semi-Volatile Organic Compounds (SVOC) by USEPA Method 8270C, PAHs including 1-methylnaphthalene and 2-methylnaphthalene by USEPA SW 846 Method 8310, and TRPHs by FDEP Method FL-PRO (Florida Petroleum Range Organics). These analytical methods include all compounds in the KAG for soils which is comprised of BTEX, MTBE, 1-methylnaphthalene, 2-methylnaphthalene, sixteen PAH compounds (included in 62-770 FAC, Table A), and TRPHs. In addition, one soil sample was analyzed for Total Organic Carbon.

2.4.4 Groundwater Mobile Lab Screening

During the DPT portion of the field investigation, each soil boring was advanced into the saturated zone in order to collect groundwater samples for mobile laboratory screening. The groundwater samples were collected using a detachable drive tip attached to a 24-inch long, retractable, stainless steel well screen tube. After the groundwater sampler was advanced into the water-bearing zone, the probe tube was withdrawn 24 inches to allow contact with the groundwater. A length of polyethylene (PE) tubing was then inserted into the probe and connected to a peristaltic pump. Several screen volumes were removed from the probe in order to reduce turbidity levels and provide representative groundwater samples. After purging, groundwater samples were collected by straw method and placed into 40-milliliter (mL) vials.

These samples were taken to the on-site mobile laboratory and screened for BTEX, MTBE, and naphthalene using the methods described in Section 2.4.3. All purge water was placed in 55-gallon drums on site for later sampling and disposal.

2.4.5 Groundwater Analytical Sampling

Groundwater samples were collected from site monitoring wells to determine if the groundwater in the vicinity of the line failure had been impacted by the petroleum release. TtNUS personnel collected groundwater samples from site monitoring wells on June 14, 2000 and January 4, 2001. Groundwater samples collected from each monitoring well were analyzed using USEPA Method 8260B for VOA's and EDB, USEPA Method 8270B for SVOC's, USEPA Method 8310 for PAHs, USEPA Method 6010 for lead (unfiltered), and FL-PRO for TRPHs. In addition, one of the wells was sampled for anions, sulfide and methane. The analytical methods used include all parameters in the KAG for groundwater. The KAG parameters are BTEX, MTBE, 1-methylnaphthalene and 2, methylnaphthalene, sixteen PAH's (listed in 62-770, FAC Table A), 1,2-dichloroethane and listed Priority Pollutant Volatile Organic Halocarbons, EDB, total lead, and TRPHs. The groundwater samples were collected using the low-flow or quiescent purging and sampling method using new Teflon ™ tubing and a peristaltic pump. Temperature, pH, specific conductance, turbidity, dissolved oxygen, oxidation-reduction potential (ORP) measurements, and total well purge volumes were recorded at the time of sample collection. Groundwater samples were placed on ice and shipped to an approved analytical laboratory (Severn Trent Laboratory). Groundwater-sample log sheets are provided in Appendix F.

Sampling activities were performed in accordance with the procedures prescribed in the FDEP Quality Assurance Section's SOPs for Laboratory Operations and Sample Collection Activities, (DER-001/92), adopted by TtNUS' CompQAP. Samples were placed in laboratory supplied containers provided with preservative. During the groundwater-sampling event, quality control samples (e.g. equipment blanks and trip blanks) were prepared and submitted to the laboratory as required by the approved CompQAP. Sampling activities were documented in a site-specific field logbook, and samples were transmitted under chain-of-custody protocols to the laboratory.

2.4.6 Free Product Sampling

Prior to groundwater sampling, TtNUS personnel checked each well for free product using an oil/water interface probe. No free product was encountered during this investigation.

2.5 HYDROLOGIC INVESTIGATION

2.5.1 Water Level Measurements

The depth to groundwater was measured in site monitoring wells on June 14, 2000. Measurements were made from the north rim of the top of well riser using an electronic water level indicator. The water level measurements were used to determine the depth to water in the surficial aquifer.

The elevation of the north rim for the top of each well riser was surveyed by a Florida registered surveyor, to the nearest 0.01 ft. Elevations are based on the National Geodetic Vertical Datum (NGVD) of 1929.

Groundwater elevations were determined by subtracting the measured depth to groundwater for each well from it's respective top of riser elevation.

The horizontal groundwater gradient across the site was evaluated from the average of water level measurements collected on June 14, 2000. The groundwater gradient was calculated from groundwater contours developed from groundwater elevation data.

The groundwater flow gradient was determined using the following equation:

$$I = \frac{h_1 - h_2}{d}$$

where:

I = the hydraulic gradient
h_1 = the water elevation at point 1
h_2 = the water elevation at point 2
d = the distance between point 1 and point 2

Potential movement of groundwater at the site may be described in terms of transportation by natural flow in the saturated zone while assuming groundwater flow follows Darcy's Law. Darcy's Law may be expressed as:

$$V = \frac{(K \times I)}{n}$$

where:

V = average seepage velocity
K = hydraulic conductivity
n = effective porosity
I = average hydraulic gradient

Site specific transmissivity is calculated using the following equation:

$T = Kb_e$

where:

T = transmissivity
K = hydraulic conductivity
b_e = affected aquifer thickness

2.5.2 Aquifer Characteristics

Previous USGS aquifer test data was used to estimate the hydraulic conductivity of the surficial aquifer system at the site. Based on data accumulated from hundreds of multi-well, single well and slug tests, the arithmetic mean hydraulic conductivity for the surficial aquifer was estimated at 10 ft/day. A report from the USGS report depicting lateral hydraulic conductivity across NS Mayport is provided in Appendix G.

3.0 RESULTS OF INVESTIGATION

3.1 SITE-SPECIFIC HYDROGEOLOGY

3.1.1 Lithology

The site is covered by fill material to a depth approximately 0.5 to 1 ft. The material was composed of coarse sand with pebbles and shell fragments and was moderately hard. Beneath the fill material was a second layer that consisted of brown to dark-brown fine sand, which was well sorted and moderately to well consolidated. This second layer extends vertically to at least 13 ft bls, which was the maximum depth drilled during the investigation. Due to the homogeneity of the subsurface, no lithologic cross-section was constructed. Soil boring logs are included as Appendix D.

3.1.2 Aquifer Characteristics and Classification

The site is above the Surficial aquifer classified as G-II by the State of Florida. Based on water level data collected from site monitoring wells on June 14, 2000, the depth to the shallow aquifer across the study area is approximately 5- to 6-ft bls. Groundwater elevations are presented in Table 3-1.

Using the groundwater flow gradient equation presented in Section 2.5.1, a hydraulic gradient of 0.003-feet/foot to the north was calculated from the data collected on June 14, 2000. The groundwater flow direction is depicted in Figure 3-1.

Lithologic data and available literature indicate the effective porosity of the lithology comprising the surficial aquifer is approximately thirty percent (0.30) (Heath, 1994).

Using a hydraulic conductivity of 4.34-ft/day, the hydraulic gradient of 0.003-feet/foot, an inferred effective porosity value of 0.30, and Darcy's Equation as stated in Section 2.5.1, the groundwater seepage velocity across the site was calculated at 0.04-ft/day or 14.6-ft/year in a northerly direction.

3.2 SOIL QUALITY

The vertical and horizontal extent of petroleum impacted soil in the vadose zone was assessed through soil head-space analysis performed during the direct-push investigation and monitoring well installation as described in Section 2.2.1 and 2.3.2 of this report. Soils exhibiting an OVA response of greater than 50 ppm were not encountered in any of the borings across the site. These data indicate that "excessively

Table 3-1
Water Table Elevation and Monitoring Well Construction Data

Site Assessment Report for Building 351
Naval Station Mayport
Mayport, Florida

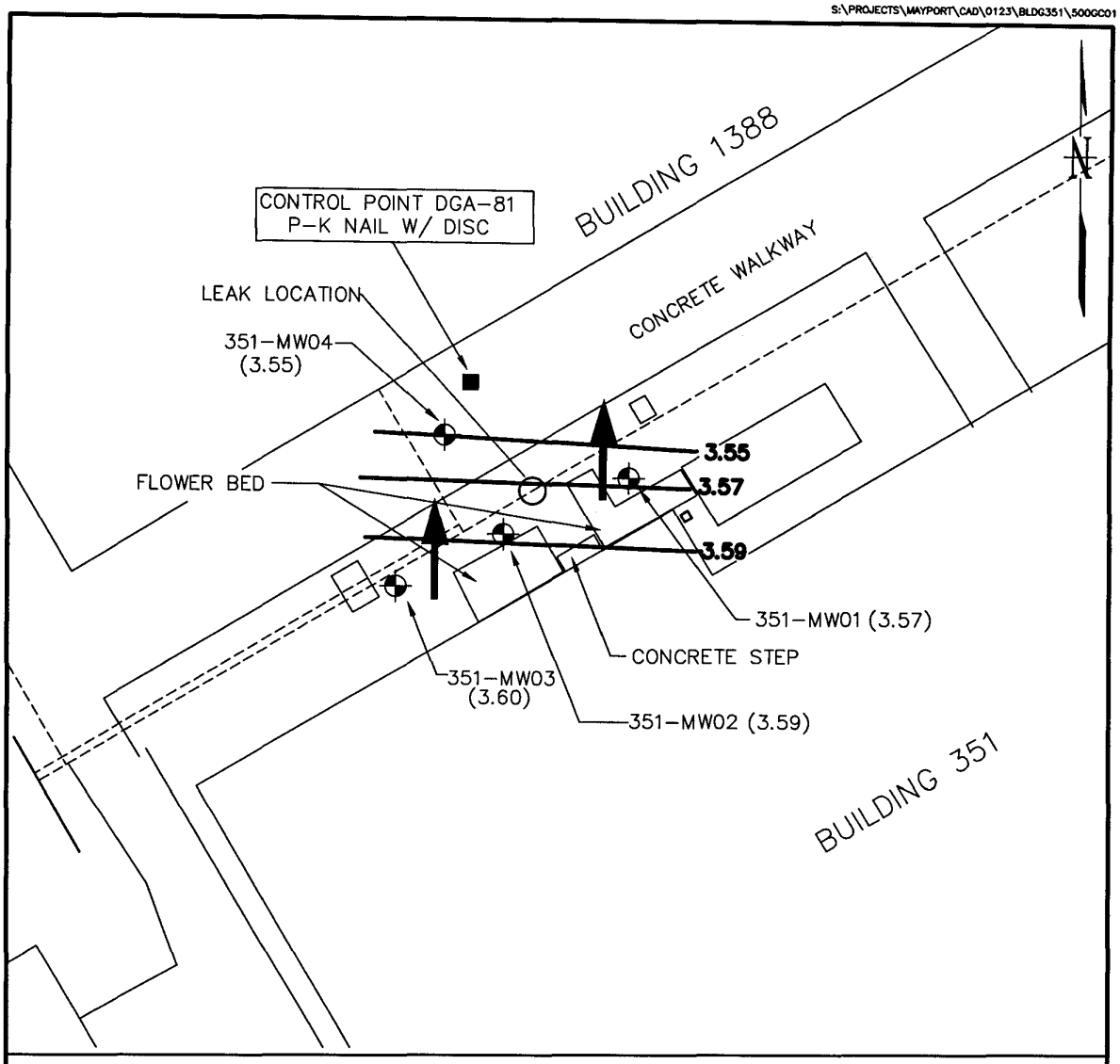
Well Number	Total Well Depth (feet, bls)	Screened Interval	Top of Riser Elevation (feet msl)	June 2000	
				Depth to Water below Top of Riser (feet)	Water Elevation (feet msl)
Building 351					
351-MW01	13.00	3-13	8.94	5.37	3.57
351-MW02	13.00	3-13	8.90	5.31	3.59
351-MW03	13.00	3-13	8.76	5.16	3.60
351-MW04	13.00	3-13	9.52	5.97	3.55

Notes:

bls - below land surface.

msl - mean sea level.

S:\PROJECTS\MAYPORT\CAD\0123\BLDG351\500GC01



LEGEND

WATER TABLE ELEVATION (FT MSL) (3.57)

EQUIPOTENTIAL LINE (FT MSL) 3.55

INFERRED DIRECTION OF GROUNDWATER FLOW

MONITORING WELL

SURVEY CONTROL MNMT

DIESEL FUEL LINE

0 10 20
APPROXIMATE SCALE in FEET

DRAWN BY CW DATE 12/6/00		GROUNDWATER ELEVATION CONTOUR MAP BUILDING 351 JUNE 14, 2000 U.S. NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NO. 0500
CHECKED BY DATE			APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3-1 REV. 0

FORM CADD NO. SDIV_AV.DWG – REV 0 – 1/20/98

contaminated" soil (greater than 50 ppm OVA-FID response as defined by Chapter 62-770.200, FAC) was not present at the site. Soil head-space screening results are presented in Table 3-2. Soil boring locations and vapor readings are depicted on Figure 3-2. Please note the boring locations are designated with an SB (soil boring) for analytical purposes. On Figure 3-2, the soil boring locations are designated with a TW (temporary well) which was later established in the boring.

The analytical data for the confirmatory laboratory samples indicated that no VOA or SVOA compounds are present above detection limits in vadose zone surface or subsurface soil. One PAH compound, fluoranthene, was detected at 6.9 micrograms per kilogram (µg/kg) in sample 351-SS-SB07 (05) but the result is below the SCTL. All soil results were below leachability standards for groundwater protection. A summary of soil sample analytical results is presented in Table 3-3. Laboratory analytical reports for soil are located in Appendix H.

3.3 WATER QUALITY

3.3.1 Temporary Well Point Sampling

TtNUS personnel collected groundwater samples from each soil boring during the DPT investigation. Twelve (12) groundwater samples were collected between May 3 and 5, 2000. The samples were analyzed for BTEX, MTBE, and naphthalene by the mobile analytical laboratory.

BTEX constituents were detected in three of the temporary well point samples. Location 351-TW-12 had concentrations of benzene (2.2 µg/L), toluene (2.9 µg/L), ethylbenzene (6.2 µg/L), and total xylenes (3.3 µg/L). The benzene concentration in the sample was above the GCTL. Concentrations of analytes were below GCTLs in the sample 351-TW-13 with ethylbenzene and total xylenes detected at concentrations of 0.57 and 0.73 µg/L respectively. In samples from location 351-GW-TW-06, toluene was detected at 2 µg/L. Naphthalene was not detected in any temporary well point groundwater samples. No other groundwater samples had levels of BTEX constituents above detection limits. A summary of the mobile screening results is found on Table 3-4. Temporary well point locations with associated analytical results are located on Figure 3-3. The mobile laboratory analytical results for groundwater are presented in Appendix I.

3.3.2 Monitoring Well Sampling

TtNUS personnel collected groundwater samples from four monitoring wells on June 14, 2000.

Table 3-2
Soil Head-Space Screening Summary

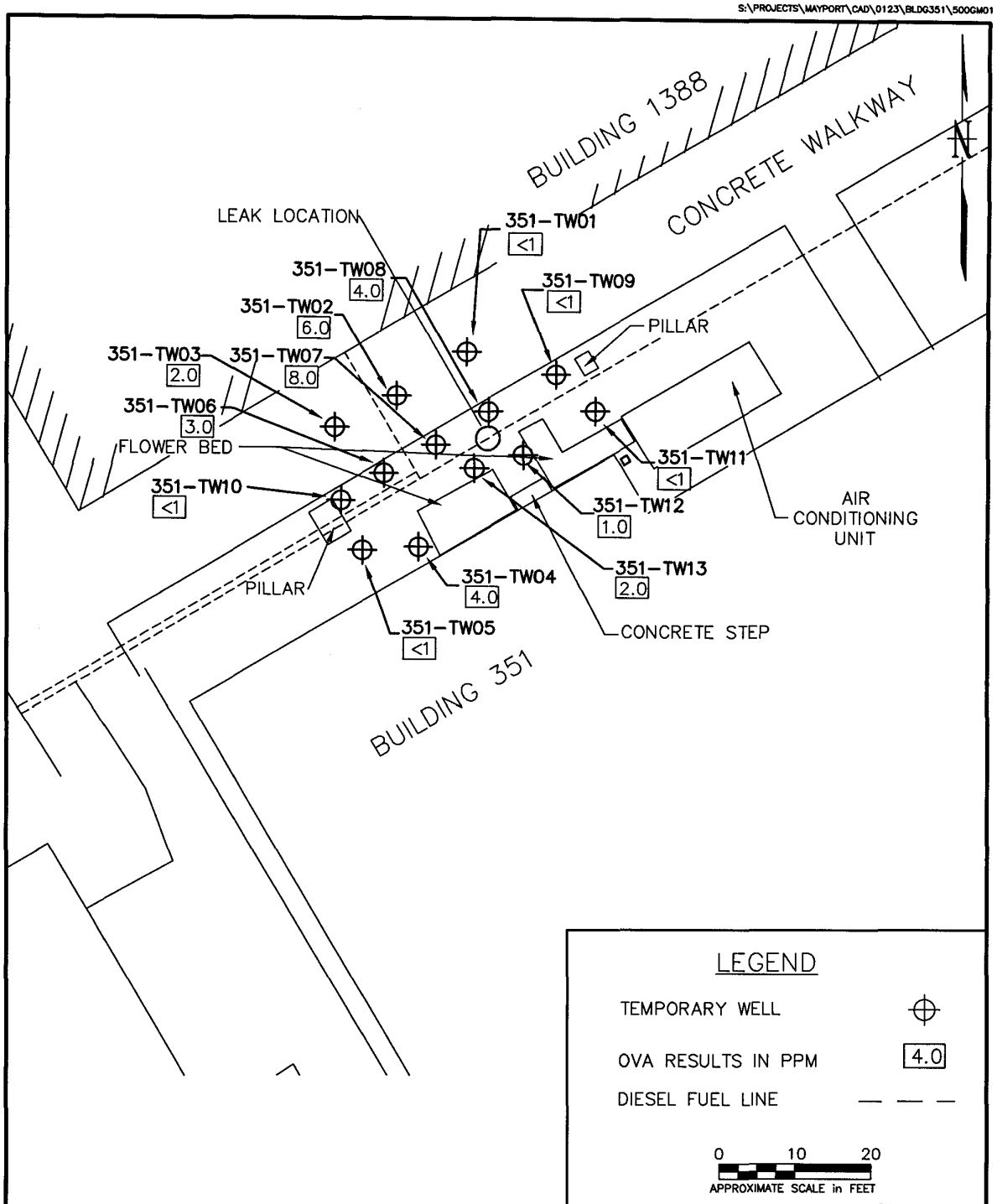
Site Assessment Report for Building 351
Naval Station Mayport
Mayport, Florida

Sample		OVA Headspace results in ppm		
Location	Date	Unfiltered	Filtered	Total
351-TW-01	5/4/00	<1	<1	<1
351-TW-02	5/4/00	6.00	<1	6.00
351-TW-03	5/4/00	2.00	<1	2.00
351-TW-04	5/4/00	4.00	<1	4.00
351-TW-05	5/4/00	<1	<1	<1
351-TW-06	5/4/00	3.00	<1	3.00
351-TW-07	5/4/00	8.00	<1	8.00
351-TW-08	5/4/00	4.00	<1	4.00
351-TW-09	5/4/00	<1	<1	<1
351-TW-10	5/4/00	<1	<1	<1
351-TW-11	5/4/00	<1	<1	<1
351-TW-12	5/4/00	1.00	<1	<1
351-TW-13	5/4/00	2.00	<1	2.00

Notes: All samples < 5 ft depth

ppm = parts per million

S:\PROJECTS\MAYPORT\CAD\0123\BLDG351\500GM01



LEGEND

TEMPORARY WELL

OVA RESULTS IN PPM 4.0

DIESEL FUEL LINE

0 10 20
APPROXIMATE SCALE in FEET

DRAWN BY CW DATE 12/6/00	DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMD	SOIL HEAD-SPACE RESULTS BUILDING 351 MAY 4, 2000 U.S. NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NO. 0500
CHECKED BY DATE			APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3-2 REV. 0

FORM CADD NO. SDIV_AV.DWG - REV 0 - 1/20/98

Table 3-3
Soil Sample Analytical Results Summary - Fixed Based Laboratory

Site Assessment Report for Building 351
Naval Station Mayport
Mayport, Florida

Compound	SCTLs[1]	Leachability Standards for Groundwater	351-SS-SB02-05'	351-SS-SB05-05'	351-SS-SB07-05'
			5/24/00	5/24/00	5/24/00
Volatile Organic Aromatics USEPA Method 8260B (µg/kg)					
Benzene	1,100	7.0	<5.7	<5.7	<6.2
Toluene	380,000	500	<5.7	<5.7	<6.2
Ethylbenzene	1,100,000	600	<5.7	<5.7	<6.2
Xylenes (total)	5,900,000	200	<11	<11	<12
Acetone	780,000	2,800	6 J	<23	<2.5
Polynuclear Aromatic Hydrocarbons USEPA Method 8310 (µg/kg)					
Naphthalene	40,000	1,700	<52	<55	<53
Anthracene	18,000,000	2,500,000	<52	<55	<53
Fluoranthene	2,900,000	1,200,000	<5.2	<5.6	6.9
OTHER (mg/kg)					
TRPH- FL PRO	340	340	9.8 J	36	<11
TOC	NA		NS	NS	0

Notes:
[1]SCTL = Soil Cleanup Target Level (in mg/kg)
< = below laboratory detection limit
Analytical Results = µg/kg
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
NA = not applicable
NS = not sampled
J = estimated below practical quantitation limit

Table 3-4
Groundwater Results - Mobile Analytical Laboratory

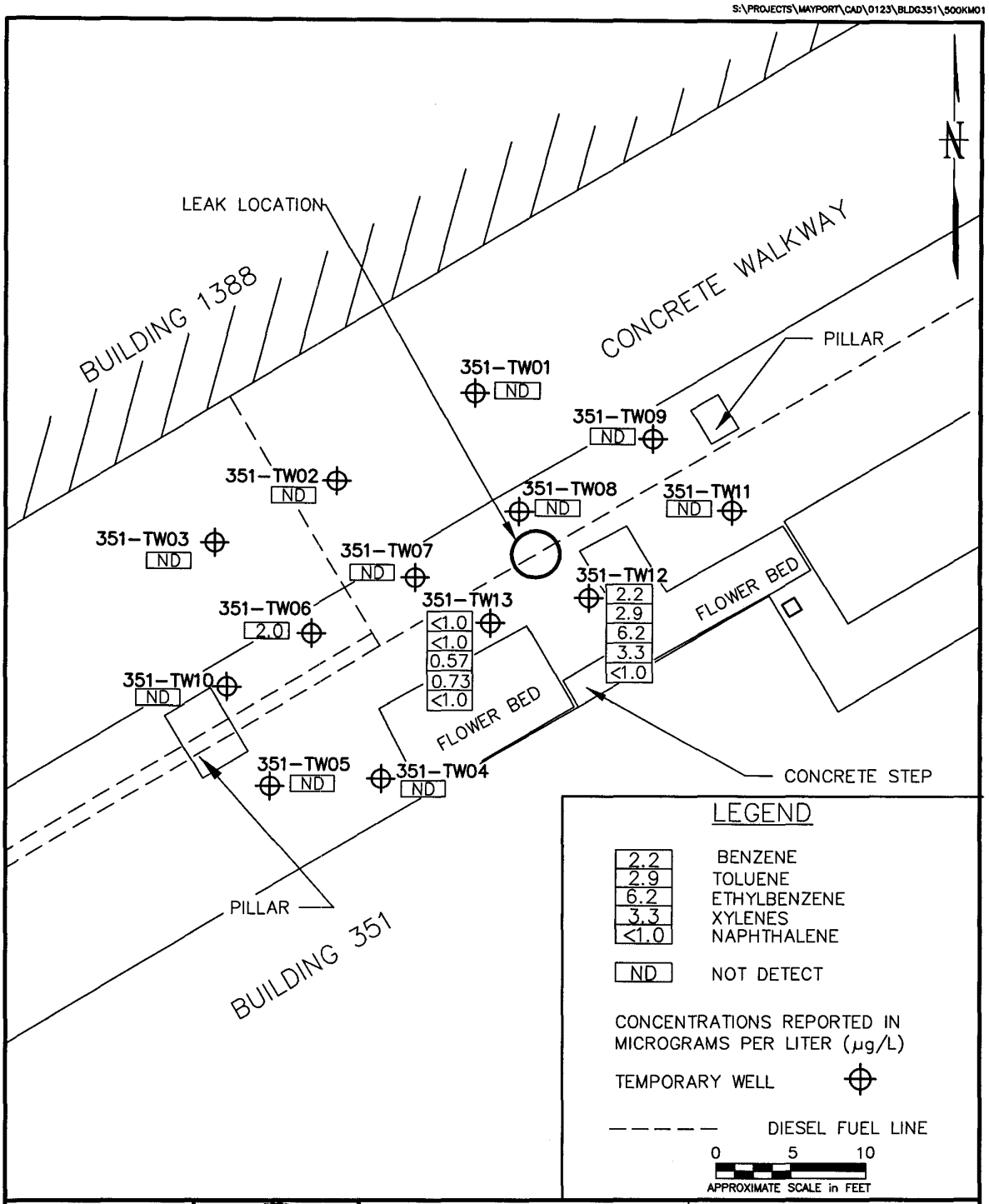
Site Assessment Report for Building 351
Naval Station Mayport
Jacksonville, Florida

Compound	GCTLs[1]	351-GW-TW-1	351-GW-TW-2	351-GW-TW-3	351-GW-TW-4	351-GW-TW-5	351-GW-TW-6	351-GW-TW-7
		5/4/00	5/4/00	5/4/00	5/4/00	5/4/00	5/4/00	5/3/00
USEPA Method 8260B (µg/L)								
Benzene	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	40	<0.1	<0.1	<0.1	<0.1	<0.1	2	<0.1
Ethylbenzene	30	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Xylenes (total)	20	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
MTBE	50	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	20	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Compound	GCTLs[1]	351-GW-TW-8	351-GW-TW-9	351-GW-TW-10	351-GW-TW-11	351-GW-TW-12	351-GW-TW-13
		5/3/00	5/5/00	5/5/00	5/5/00	5/4/00	5/4/00
USEPA Method 8260B (µg/L)							
Benzene	1	<0.1	<0.1	<0.1	<0.1	**2.2**	<0.1
Toluene	40	<0.1	<0.1	<0.1	<0.1	2.9	<0.1
Ethylbenzene	30	<0.1	<0.1	<0.1	<0.1	6.2	0.57
Xylenes (total)	20	<0.1	<0.1	<0.1	<0.1	3.3	0.73
MTBE	50	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	20	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Notes:
[1]Groundwater Clean-up Target Levels [FAC 62-777]
ND = non detect
USEPA = United States Environmental Protection Agency
µg/L = micrograms per liter

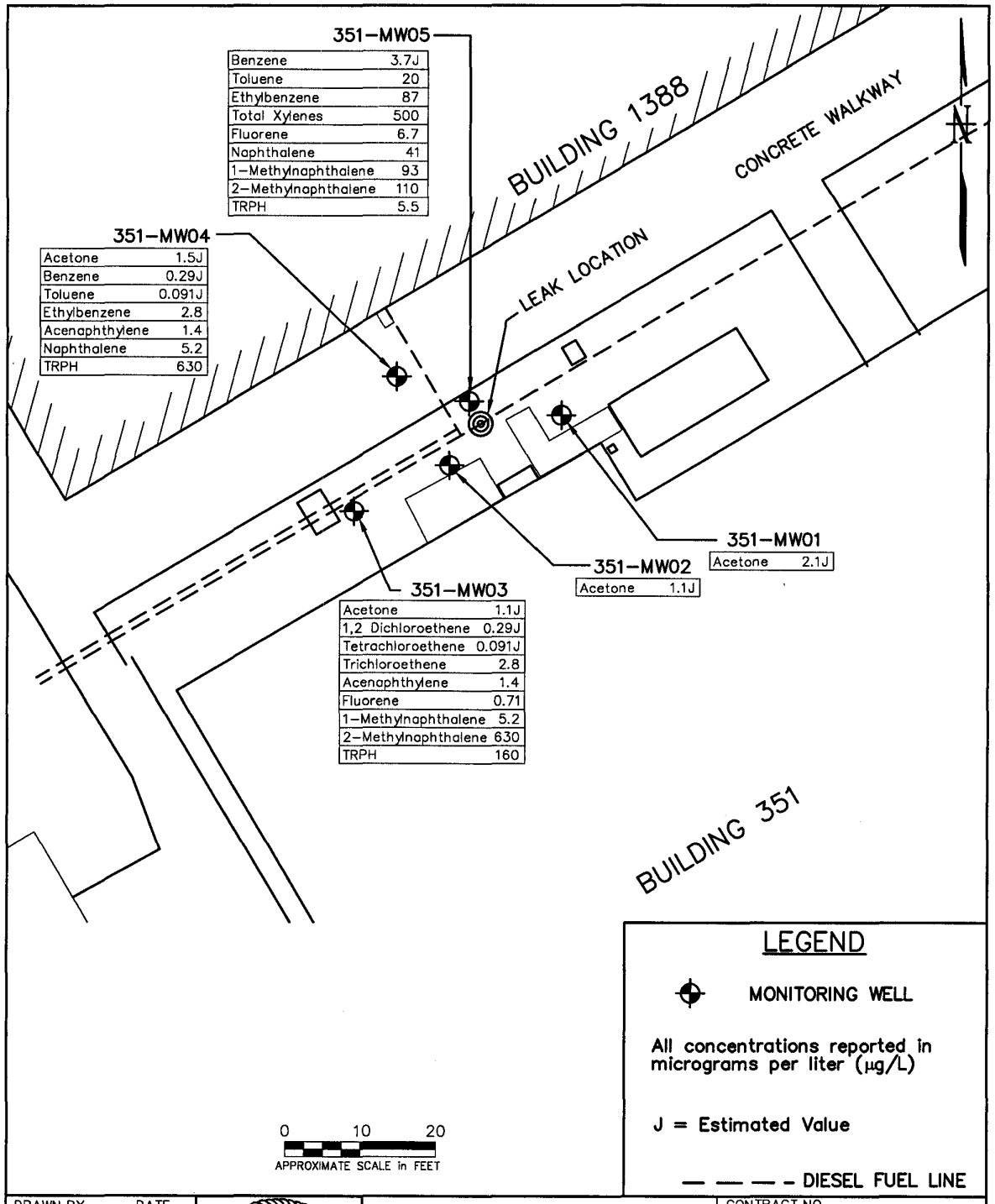
S:\PROJECTS\MAYPORT\CAD\0123\BLDG351\500KM01



DRAWN BY CW DATE 12/4/00	DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMD	DPT BORING LOCATIONS AND MOBILE LABORATORY ANALYTICAL RESULTS FOR GROUNDWATER BUILDING 351 JUNE 2000 U.S. NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NO. 0500
CHECKED BY DATE			APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3-3 REV. 0

FORM CADD NO. SDIV_AV.DWG – REV 0 – 1/20/98

S:\PROJECTS\MAYPORT\CAD\0123\BLDG. 0351\5000C01ear



LEGEND

MONITORING WELL

All concentrations reported in micrograms per liter (µg/L)

J = Estimated Value

— — — - DIESEL FUEL LINE

DRAWN BY CW DATE 12/6/00	DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMD	MONITORING WELL LOCATIONS AND GROUNDWATER ANALYTICAL RESULTS BUILDING 351 MAYPORT NAVAL STATION MAYPORT, FLORIDA	CONTRACT NO. 0500
CHECKED BY DATE			APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3-4 REV. 0

FORM CADD NO. SDIV_AV.DWG - REV 0 - 1/20/98

The analytical results indicated that no constituents exceeded respective GCTL values in wells 351-MW01, 351-MW02, 351-MW03, and 351-MW04. Well 351-MW05 located in the source area contained six constituents in excess of GCTLs. Volatile constituents benzene (3.7J µg/L), ethylbenzene (87 µg/L), total xylenes (500 µg/L), and PAH constituents naphthalene (41 µg/L), 1-methylnaphthalene (93 µg/L), and 2-methylnaphthalene (110 µg/L) each exceeded their respective GCTLs. Of these constituents, only total xylenes exceed the FDEP default criteria for NA, which is 200 µg/L. Laboratory analytical reports can be found in Appendix J.

Table 3-5
Groundwater Results - Fixed Based Laboratory

Site Assessment Report for Building 351
Naval Station Mayport
Jacksonville, Florida

Compound	GCTLs1	351-MW01	351-MW02	351-MW03	351-MW04	351-MW05
		6/14/00	6/14/00	6/14/00	6/14/00	1/4/01
Detected Volatile Organic Aromatics (USEPA Method 8260B)(µg/L)						
Acetone	**700**	2.1J	1.1J	1.1J	1.5J	NS
1,2 Dichloroethene (total)	**63**	<1	<1	0.87J	<1	NS
Benzene	**1**	<1	<1	<1	0.29J	**3.7 J**
Toluene	**40**	<1	<1	<1	0.091J	20
Ethylbenzene	**30**	<1	<1	<1	2.8	**87**
Tetrachloroethene	**3**	<1	<1	1.4	<1	NS
Trichloroethene	**3**	<1	<1	1.9	<1	NS
Xylenes (Total)	**20**	<1	<1	<1	<1	**500**
Methyl Tert-Butyl Ether	**50**	<1	<1	<1	<1	<1
Polynuclear Aromatic Hydrocarbons (µg/L)						
Acenaphthylene	**210**	<10	<10	3	1.4	<10
Fluorene	**280**	<10	<10	0.71	<10	6.7
Naphthalene	**20**	<10	<10	<10	5.2	**41**
1- Methylnaphthalene	**20**	<10	<10	4.6	<10	**93**
2- Methylnaphthalene	**20**	<10	<10	2.4	<10	**110**
Inorganics (µg/L)						
Lead	**15**	<1.7	<1.7	<1.7	<1.7	<1.7
Total Recoverable Petroleum Hydrocarbons (µg/L)						
TRPH - FL Pro	**5000**	<100	<100	160	630	5.5
Natural Attenuation Parameters (mg/L)						
Nitrate/Nitrite		NS	<1	<1	NS	NS
Sulfate		NS	53	52	NS	NS
Sulfide		NS	<1	<1	NS	NS
Methane		NS	9.6B	16B	NS	NS

Notes:
B=Detected in Laboratory Blank
J=Reported value below method detection limit
MW = Monitoring Well
ND= Non Detect
NS= Not Sampled
µg/L= micrograms per liter
mg/L= milligrams per liter
[1]Groundwater Clean-up Target Levels [FAC 62-777]

4.0 DISCUSSION

The source of the dissolved hydrocarbons at this site was identified as a leak in an underground diesel fuel line. During line repairs free product and "excessively contaminated" soil, as defined by Chapter 62-770.200, FAC, was detected within the excavation. Free product recovery was initiated along with excavation of the excessively contaminated soil. A total of seven tons of soil was removed and replaced with clean backfill. A closure sample collected from the back of the excavation indicated that no constituents exceeded SCTL or leachability standards for groundwater protection. Following the excavation, four temporary wells were installed in the center of the excavation area for free product recovery. Free product was detected in the wells resulting in a free product removal that yielded 1,140 gallons of fuel oil.

In accordance with FDEP requirements defined in Chapter 62-770, FAC, a Site Assessment was initiated. The assessment included a DPT investigation of the soil and groundwater, followed by the installation of permanent monitoring wells. Excessively contaminated soil was not found in any DPT borings. Laboratory analytical results of soil samples did indicate the presence of petroleum hydrocarbon constituents, however they were below their respective SCTLs. Soil results were also below leachability standards for groundwater. Groundwater results during the DPT investigation revealed the presence of hydrocarbon constituents in three groundwater samples from temporary wells TW-06, TW-12, and TW-13. The constituents were below GCTL's except for benzene that was detected in a groundwater sample from temporary well TW-12 at 2.2 µg/L. Following the DPT investigation, four shallow monitoring wells were installed and sampled in June 2000. Groundwater analytical results of the samples collected from the monitoring wells indicated the presence of KAG constituents, however all KAG constituents were detected at levels below GCTL's.

In November 2000, a temporary monitoring well was installed adjacent release point and sampled for KAG constituents. This well was subsequently completed as a permanent monitoring well. Analytical results indicated the presence of volatile organics (benzene, ethylbenzene, and total xylenes) and PAH constituents (naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene) above GCTL values. Xylene was the only constituent detected in exceedence of NA default criteria. No free product was encountered during either the DPT or monitoring well sampling events.

5.0 CONCLUSIONS AND RECOMMENDATION

The results of the site assessment performed by TtNUS at Building 351 is summarized as follows:

- The site is underlain by a surficial aquifer comprised of fill material and sand. No confining layers were encountered within the upper 13 ft of the surficial aquifer.
- The surficial aquifer qualifies as a G-II aquifer.
- The direction of groundwater flow is to the north and the surficial aquifer flows at a calculated velocity of 0.04-ft/day.
- Free product was not found at the site during the course of this assessment.
- No private potable wells were found within a 0.25-mile radius of the site. No municipal wells were found within a 0.5-mile radius of the site.
- Excessively contaminated soil was not detected at the site during the investigation.
- Analytical results collected from representative soil samples were below the direct exposure residential cleanup target levels and leachability standards for groundwater referenced in 62-777, FAC, Table II.
- Dissolved hydrocarbon constituents were detected in three of the groundwater samples collected during the DPT investigation, with benzene exceeding the GCTL value in one sample.
- Five permanent monitoring wells were installed at the site. Of these wells, well 351-MW05 located in the source area exhibited hydrocarbon constituents above GCTLS. These constituents include benzene, ethylbenzene, total xylenes, naphthalene, 1-methylnapthalene, and 2-methylnaphthalene. Of these constituents, only total xylenes, detected at 500 µg/L, exceeded the default criteria for NA at 200 µg/L.

A source removal was conducted at Building 351 which included removal for excessively contaminated soils and free product. The results of the SA indicate that hydrocarbon constituents were detected in soils and groundwater at the site, however, results exceeding regulatory criteria are limited to groundwater located in the source area. Based on these results, we recommend that a monitoring plan for NA be prepared for the site and that monitoring be conducted for a one year time period. Should the results of monitoring determine that total xylene concentrations in the source area remain above NA default criteria, then a RAP should be prepared for this site.

REFERENCES

Driscoll, F.G., 1986. *Groundwater and Wells, 2nd Edition*, Johnson Filtration Systems, Inc., St. Paul, Minnesota.

FDEP, 1990. *No Further Action and Monitoring Only Guidelines for Petroleum Contaminated Sites*, Guidance document issued by Bureau of Waste Cleanup, Technical Review Section. October.

Leve, G.W., 1966. "*Groundwater in Duval and Nassau Counties, Florida*": Florida Bureau of Geology Report of Investigations No. 43.

Scott, T.M., J.M. Lloyd, and Gary Maddox, 1991. "*Florida Groundwater Quality Monitoring Program - Hydrogeological Framework*": Florida Geological Survey, Special Publication Number 32.

Spechler, R.M., 1994. "*Saltwater Intrusion and Quality of Water in the Floridan Aquifer System, Northeastern Florida*": U.S. Geological Survey Water-Resources Investigations Report 92-4174, p 76.

U. S. Army Corp of Engineers, 1992. *Contamination Assessment Report for Site 1330, NS Mayport*. May.

USEPA, 1997. *Standard Operating Procedures*.

USGS, 1982. Ankona, Florida Quadrangle 7.5 Minute Series, Topographic Quadrangle Maps of Florida: scale 1:24,000.

USGS, 1997. "*Ground-Water Flow in the Surficial Aquifer System and Potential Movement of Contaminants from Selected Waste-Disposal Sites at Naval Station Mayport, Florida*". Water-Resources Investigations Report 97-4262.

APPENDIX A

CAR SUMMARY SHEET

CONTAMINATION ASSESSMENT REPORT SUMMARY SHEET

Facility Name: Building 351, Naval Station Mayport Reimbursement Site: ☐

Location: Mayport, Florida State Contract Site: ☐

EDI #: _____ FAC I.D.# _____ Other: Non-Prog. ☑

Date Reviewed: _____ Local Government: _____

(1) Source of Spill: Break in fuel line Date of Spill: Unknown

(2) Type of Product:

Gasoline Group	Gallons Lost	Kerosene Group	Gallons Lost
☐ Leaded		☐ Kerosene	
☐ Unleaded Regular		☑ Diesel	unknown
☐ Unleaded Premium		☐ JP-4 Jet Fuel	
☐ Gasohol		☐ Heating Fuel	
☐ Undetermined		☐ Unknown	

(3) Description of IRA: soil removed from vicinity of fuel line break. impact to structural integrity of building.

☑ Free product Removal: 1,140 (gals)
☑ Soil Removal: 9.1 (cubic yds)
☐ Soil Incineration: _____ (cubic yds)

(4) Free Product still present (yes/no) No Maximum apparent product thickness: N/A (feet)

(5) Maximum Groundwater contamination levels (ppb): Total VOA: <1 lead: _____ benzene: <1 MTBE: <5.0 EDB: < 0.020 other: TRPH & PAHs

(6) Brief lithologic description: Medium to fine grained sand. No significant lithologic variations across site.

(7) Areal and vertical extent of soils contamination defined (yes/no) Yes

Highest current soil concentration (OVA: 5 ppm) or (EPA method 5030/8020: _____ ppb)

(8) Lower aquifer contaminated? (yes/no) No Depth of vertical contamination: N/A.

(9) Date of last complete round of groundwater sampling: 6/14/00 Date of last soil sampling: 5/24/00

(10) QAPP approved? (yes/no) Date: 8/24/98

(11) Direction (e.g. NNW) of surficial groundwater flow: North (Fig. 3-1 on page _____)

(12) Average depth to groundwater: 5.0 (ft)

(13) Observed range of seasonal groundwater fluctuations: @ 1 _____ (ft) (Based on water level data collected during the CAR investigation)

(14) Estimated rate of groundwater flow: 0.04 (ft/day)

(15) Hydraulic gradient across site: 0.003 (ft/ft)

(16) Aquifer characteristics:

	Values	Units	Method
Hydraulic conductivity	4.34	ft/day	Kasenow & Pare, 1995
Storage coefficient	-	ft/ft	-
Aquifer thickness	40	ft	Literature
Effective soil porosity	30	%	Literature
Transmissivity	10	gal/day/ft	Specific Capacity Tests

(17) Other remarks: None

APPENDIX B
SOURCE REMOVAL REPORT

SOURCE REMOVAL REPORT
DIESEL FUEL DISCHARGE
MAYPORT NAVAL AIR STATION
FLEET TRAINING FACILITY-#351
(BUILDING DISCHARGE)
JACKSONVILLE, FLORIDA
ERI JOB NUMBER: 1495

PREPARED FOR:

Environmental Recovery, Inc
251 Levy Road
Atlantic Beach, Florida 32233

PREPARED BY:

Aerostar Environmental Services, Inc.
11200-1 St. Johns Industrial Parkway
Jacksonville, Florida
(904) 565-2820

Brady J. Smith, Project Scientist — Date 8/3/99

Leon J. Carrero, P.G.; Manager, Environmental Services — Date 8/3/99

F:\Data\PROJECTS\ACT\ERI\1495\mayport building spill.wpd

TABLE OF CONTENTS

SECTION	PAGE
INTRODUCTION	1
PROJECT BACKGROUND AND CLEANUP ACTIVITIES	1
CONCLUSIONS AND RECOMMENDATIONS	2

TABLES

TABLE 1	Summary of OVA-PID Screening
TABLE 2	Soil Laboratory Analytical Results

FIGURES

FIGURE 1	Topographic Site Location Map
FIGURE 2	Soil Boring / Temporary Well Location Map

APPENDICES

APPENDIX A	OVA-PID/OVA-FID Correlation Chart
APPENDIX B	Transportation Manifests
APPENDIX C	Photographic Documentation
APPENDIX D	Laboratory Analytical Results

INTRODUCTION

Environmental Recovery, Inc. (ERI) retained Aerostar Environmental Services, Inc. (AEROSTAR) to perform Source Removal activities associated with a diesel fuel surface spill reported on July 2, 1999, at the Fleet Training Facility, Building #351, Mayport Naval Air Station, Duval County, Florida. The Source Removal was conducted in accordance with the guidelines established in "Implementation Guidance with Respect to Immediate Responses" document from the Florida Department of Environmental Protection (FDEP) dated December 11, 1998.

PROJECT BACKGROUND AND CLEANUP ACTIVITIES

According to Mr. Rick McLeod, ERI, the cause of the discharge was reported to be a leaking 1.5-inch diameter, plastic, underground distribution pipe containing diesel. The quantity of diesel fuel released is unknown. The fuel released into the soil, impacting an area approximately 14 feet long by 8 feet wide. A Topographic Site Location Map is included as Figure 1. A site plan showing the area of the hydrocarbon impacted soils is included as Figure 2. Emergency response and cleanup activities were initiated by ERI on July 2, 1999, following the discharge.

On July 2, 1999, hydrocarbon impacted soil was excavated by ERI personnel using shovels. Initially, soils with evidences of contamination such as petroleum odors and stains were excavated. Soil samples were subsequently collected and screened throughout soil removal activities with a calibrated portable Microtip MP-1000 Organic Vapor Analyzer with a Photo Ionization Detector (OVA-PID). The OVA-PID responses were subsequently correlated to the equivalent response to an OVA- Flame Ionization Detector (OVA-FID) to comply with Chapter 62-770 FAC requirements. A copy of the OVA-PID/OVA-FID correlation chart, provided by the manufacturer, is included in Appendix A. Soil sample collection and screening procedures were conducted in accordance with the guidelines established in Chapter 62-770, Florida Administrative Code (FAC) and AEROSTAR's FDEP approved Comprehensive Quality Assurance Project Plan (CQAPP) #940023G. The horizontal extent of the excavation was limited due to the presence of ornamental landscaping and a concrete walkway bordering the excavation area. Soil was excavated along these structures, but was minimized to assure the structural integrity.

Impacted soil was excavated laterally until results of the soil screening showed hydrocarbon vapors below 10 parts per million (ppm). A site map showing the soil boring locations is included as Figure 2. The depth of the excavation ranged from approximately 3.5 feet to 4 feet BLS. Groundwater was encountered at approximately 4.5 feet during source removal activities. The results of the OVA-PID screening are presented in Table 1. The sample locations are shown in Figure 2. The OVA-PID/OVA-FID correlation chart is provided in Appendix A.

On July 2, 1999, a temporary monitor well (TW-1) was installed at the center of the excavation area to evaluate groundwater quality. The temporary well was installed using a three-inch diameter steel hand auger to a completion depth of approximately seven feet BLS. The temporary well was constructed with seven feet of two-inch diameter, Schedule 40, 0.010-inch, machine slotted PVC well screen. The annular space between the well screen and the borehole was filled with a standard 20/30 silica sand to surface grade. Accumulation of liquid phase hydrocarbons (LPHs) were measured in TW-1 on July 7, 1999 using a Keck Interface Probe, Model KIR. Approximately two feet of LPHs were measured in TW-1.

The excavated soils were placed in 55-gallon drums and transported by ERI to their facility located in Atlantic Beach, Florida on July 12, 1999 for subsequent treatment at a state approved facility. According to the transportation manifests, a total of 7.26 tons (twenty-three (23) 55-gallon drums) of hydrocarbon impacted soils were manifested for treatment. A copy of the soil transportation manifests is included in Appendix B. Photographic documentation of the cleanup activities is included in Appendix C.

Soil Sample Collection and Results of Laboratory Analyses

On July 7, 1999, a confirmatory sample (CS-2) was collected for laboratory analysis from the bottom of the excavation area. The location of the confirmatory sample is included in figure 2. A pre-disposal soil sample (P-2) was also collected from the drummed hydrocarbon impacted soils for laboratory analyses. The samples were stored in laboratory supplied containers, placed on ice, and transported to Advanced Environmental Laboratories, Inc. in Jacksonville, Florida for analyses. The

confirmatory sample was analyzed for the parameters listed in EPA Method 5035/8021 for Volatile Organic Aromatics (VOAs), EPA Method 8310 for Polynuclear Aromatic Hydrocarbons (PAHs), and Total Recoverable Petroleum Hydrocarbons (TRPH) by the FL-PRO Method,. The pre-disposal sample was analyzed for the parameters listed in the EPA Method 5035/8021 for VOAs, EPA Method 8310 for PAHs, the TCLP Eight RCRA Metals, and TRPH via FL-PRO Method. A copy of the laboratory data sheets with appropriate chain of custody records is included in Appendix D. Results of the confirmatory soil sample analyses showed hydrocarbon vapor concentrations above the leachability and direct exposure levels established in Chapter 62-770, FAC. The results of the soil analyses are summarized in Table 2.

CONCLUSIONS AND RECOMMENDATIONS

Results of the soil screening indicated that hydrocarbon impacted soil was removed from the spill area to the water table surface. Accumulations of LPHs and hydrocarbon impacted groundwater were observed in the spill area. Results of the confirmatory soil analyses showed hydrocarbon vapor concentrations below State cleanup target levels. A LPH source removal is currently being conducted by the Mayport Naval Air Station. Results of the additional LPH source removal activities will be documented in a separate Source Removal Report with appropriate recommendations.

TABLES

TABLE 1
SUMMARY OF OVA-PID SCREENING

MAYPORT NAVAL AIR STATION
FLEET TRAINING FACILITY - #351 (BUILDING DISCHARGE)
JACKSONVILLE, FLORIDA

SOIL SAMPLE LOCATION	DATE	DEPTH (feet)	OVA-PID READING (ppm)	CORRECTED OVA-FID READING (ppm)
SB-1	7-2-99	1.0 2.0	293.0 406.0	397.0 585.0
SB-2	7-2-99	1.0 3.0	165.0 402.0	193.0 578.0
SB-3	7-2-99	1.0 3.0	132.0 415.0	146.0 600.0
SB-4	7-2-99	1.0 3.0	91.0 420.0	90.0 608.0
SB-5	7-2-99	1.0 3.0	117.0 124.0	124.0 134.0
SB-6	7-2-99	1.0 3.0	9.9 328.0	<1 455.0
SB-7	7-2-99	1.0 3	72.5 20.8	69.0 14.0
SB-8	7-2-99	1.0	9.1 37.4	<1 35.0
SB-9	7-2-99	1.0 3.0	21.3 37.5	15.0 35.0
SB-10	7-2-99	1.0 3.0	52.4 18.0	55.0 10.0
SB-11	7-2-99	1.0 3.0	74.6 38.5	72.0 37.0
SB-12	7-2-99	1.0 3.0	56.5 282.0	52.0 378.0
SB-13	7-2-99	1.0 3.0	5.1 32.5	<1 29.0
SB-14	7-2-99	1.0 3.0	5.6 44.0	<1 44.0

<10 Less Than 10 ppm
- Not Screened
ppm Parts per million

TABLE 1-CONTINUED
SUMMARY OF OVA-PID SCREENING

MAYPORT NAVAL AIR STATION
FLEET TRAINING FACILITY - #351 (BUILDING DISCHARGE)
JACKSONVILLE, FLORIDA

SOIL SAMPLE LOCATION	DATE	DEPTH (feet)	OVA-PID READING (ppm)	CORRECTED OVA-FID READING (ppm)
SB-15	7-2-99	1.0 3.0	4.5 7.0	<1 <1
SB-16	7-2-99	1.0	3.8 4.3	<1 <1
SB-17	7-2-99	1.0 3.0	5.0 5.7	<1 <1
SB-18	7-2-99	1.0 3.0	3.6 13.6	<1 5.0
SB-19	7-2-99	1.0 3.0	11.5 331.0	2.0 460.0
SB-20	7-2-99	1.0 3.0	263.0 294.0	347.0 398.0

<10 Less Than 10 ppm
- Not Screened
ppm Parts per million

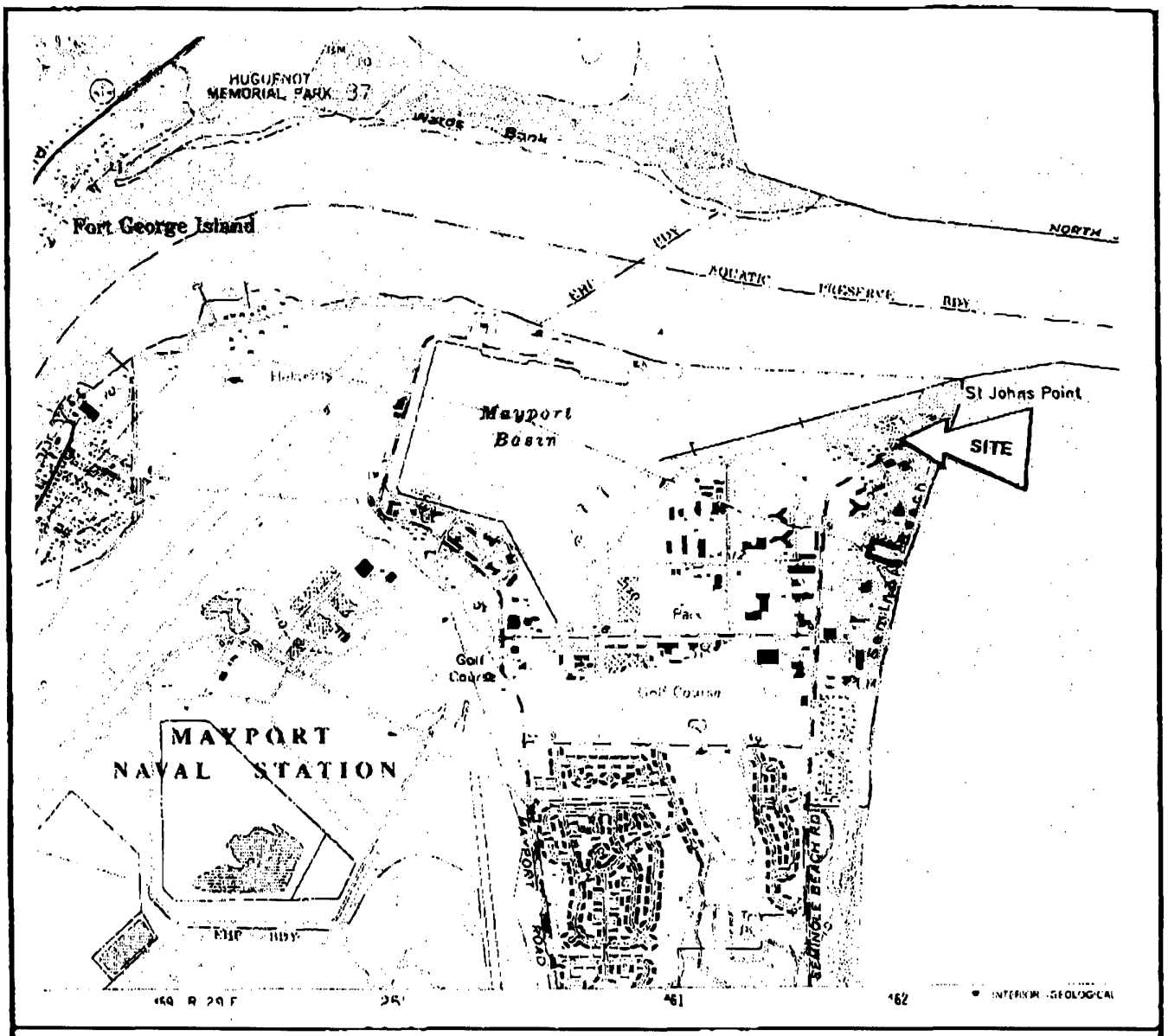
TABLE 2
SUMMARY OF SOIL LABORATORY ANALYSES

MAYPORT NAVAL AIR STATION
FLEET TRAINING FACILITY - #351 (BUILDING DISCHARGE)
JACKSONVILLE, FLORIDA

PARAMETER	DATE	CS-2 (µg/Kg)	SSCTL D.E. (µg/Kg)	SSCTL L. (µg/Kg)
Toluene	7-7-99	20.5	300,000	400
Ethylbenzene	7-7-99	25.5	240,000	400
Total Xylenes	7-7-99	93.5	290,000	300
2-Methylnaphthalene	7-7-99	478.0	N/R	N/R
1-Methylnaphthalene	7-7-99	524.0	N/R	N/R
Anthracene	7-7-99	257.0	19,000,000	2,000,000
Decane	7-7-99	138.0	N/R	N/R
Dodecane	7-7-99	1276.0	N/R	N/R
Tetradecane	7-7-99	1004.0	N/R	N/R
Hexadecane	7-7-99	382.0	N/R	N/R
Octadecane	7-7-99	607.0	N/R	N/R
Eicosane	7-7-99	543.0	N/R	N/R
Docosane	7-7-99	423.0	N/R	N/R
Tetracosane	7-7-99	160.0	N/R	N/R

CS-2	Confirmatory soil sample
µg/Kg	Micrograms per kilogram
BDL	Below reported laboratory detection limit
SSCTL	Select soil cleanup target level as indicated in Chapter 62-770, FAC
D.E.	Direct Exposure as indicated in Chapter 62-770, FAC
L	Leachability as indicated in Chapter 62-770, FAC
N/R	Not Regulated in 62-770, FAC.

FIGURES



MAYPORT, FLORIDA QUADRANGLE

30081-D4-TF-024
1964
PHOTOREVISED 1992

7.5 MINUTE SERIES
(TOPOGRAPHIC)

CONTOUR INTERVAL 10 FEET

FLORIDA

QUADRANGLE LOCATION

SCALE:
1:24000

DMA 4744 IV NW-SERIES V847

NATIONAL GEODETIC VERTICAL DATUM OF 1929

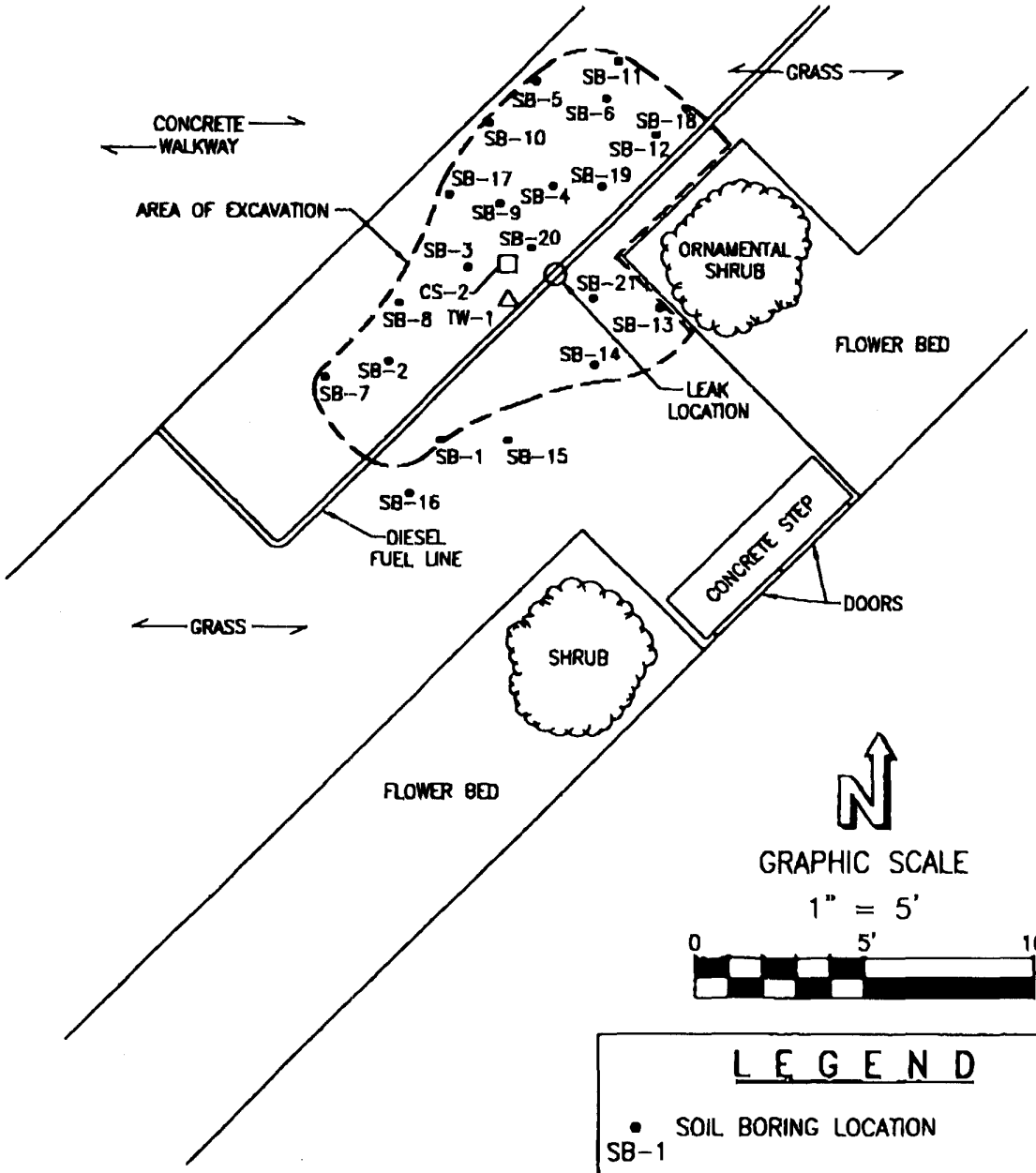
FIGURE 1 - TOPOGRAPHIC SITE LOCATION MAP

AEROSTAR
ENVIRONMENTAL SERVICES, INC.

NAS - MAYPORT
FLEET TRAINING FACILITY
BUILDING 351
JACKSONVILLE, FLORIDA

DRAWN BY: MTB

REFERENCE: MAP OF
MAYPORT, FLORIDA.
PREPARED BY: U.S.
GEOLOGICAL SURVEY



GRAPHIC SCALE

1" = 5'

0 5' 10'

LEGEND

- ● SB-1 SOIL BORING LOCATION
- □ CS-2 CONFIRMATORY SAMPLE LOCATION
- △ TW-1 TEMPORARY WELL LOCATION

JOB #99-163

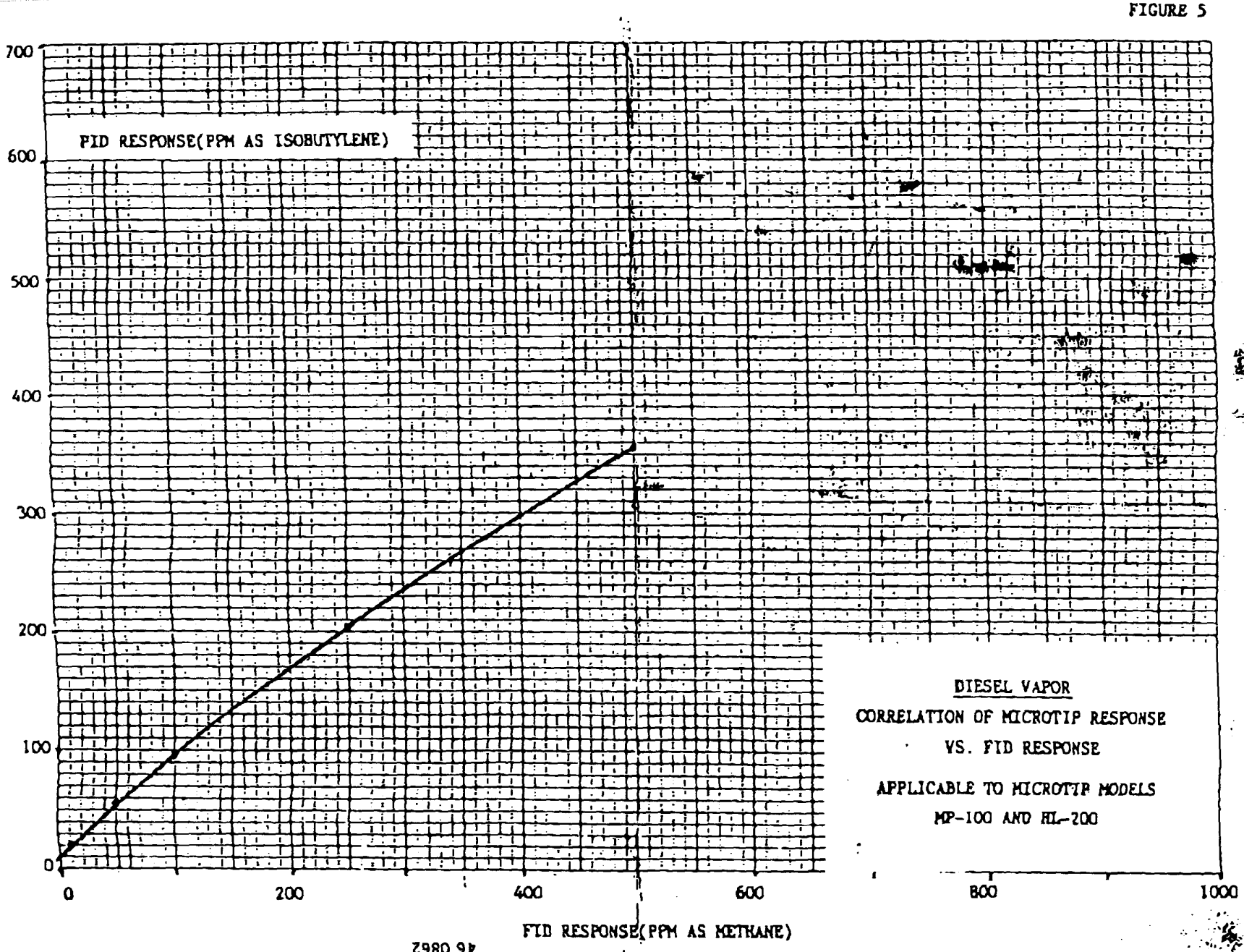
FIGURE 2. SOIL BORING LOCATION MAP

AEROSTAR ENVIRONMENTAL SERVICES, INC.	NAS-MAYPORT FLEET TRAINING FACILITY, BLDG #351 JACKSONVILLE, FLORIDA	DRAWN BY: KJS DATE: 07/29/99

APPENDIX A

OVA-PID/OVA-FID CORRELATION CHART

FIGURE 5



46 0862

APPENDIX B

TRANSPORTATION MANIFESTS

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N/A

Manifest Document No. 143999

2. Page 1 of 1

DATE: 16Jul99

3. Generator's Name and Mailing Address

Environmental Division
NS Mayport, Mayport, Florida 32228

4. Generator's Phone (904) 270-6730 ATTN: Cheryl Mitchell

ERI JOB No: 1495

5. Transporter 1 Company Name: ENVIRONMENTAL RECOVERY INC.

6. US EPA ID Number: FLD 092 718 576

A. Transporter's Phone: PH: (904) 241-2200

7. Transporter 2 Company Name:

8. US EPA ID Number:

B. Transporter's Phone:

9. Designated Facility Name and Site Address

ENVIRONMENTAL RECOVERY, INC.
251 LEVY ROAD
ATLANTIC BEACH, FLORIDA 32233

10. US EPA ID Number: FLD 092 718 576

C. Facility's Phone: PH: (904) 241-2200

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. DIESEL FUEL CONTAMINATED SOIL	1	20M	60000	
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
(A) ERI Approval # 99-07-0340

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

ERI PROJECT No: 1495
24 HR EMERGENCY RESPONSE NUMBER: (904) 241-2200
(800) 359-3740

GENERATOR

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name: Richard L. Hicks | Signature: [signature] | Month 07 Day 12 Year 99

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Robert W Burley | Signature: [signature] | Month 07 Day 12 Year 99

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name: | Signature: | Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: John W Childs | Signature: [signature] | Month 07 Day 12 Year 99

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: N / A

Manifest Tracking No.: [illegible]

2. Page 1 of 1

DATE: 16Jul99

3. Generator's Name and Mailing Address
ENVIRONMENTAL DIVISION
NS Mayport, Mayport, Florida 32228

ERI JOB No: 1495

4. Generator's Phone (904) 270-6730 ATTN: Cheryl Mitchell

5. Transporter 1 Company Name: ENVIRONMENTAL RECOVERY INC.

6. US EPA ID Number: FLD 092 718 576

A. Transporter 1 Phone: PH: (904) 241-2200

7. Transporter 2 Company Name

8. US EPA ID Number

B. Transporter's Phone

9. Designated Facility Name and Site Address
ENVIRONMENTAL RECOVERY, INC.
251 LEVY ROAD
ATLANTIC BEACH, FLORIDA 32233

10. US EPA ID Number: FLD 092 718 576

C. Facility's Phone: PH: (904) 241-2200

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. DIESEL FUEL CONTAMINATED SOIL	11	DM	55.00	P
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
ERI Approval # 99-07-0340

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

ERI PROJECT No: 1495
24 HR EMERGENCY RESPONSE NUMBER: (904) 241-2200
(800) 359-3740

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Richard L. Hicks	[signature]	07	12	99

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
ROBERT W BUALOY	[signature]	07	12	99

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
John W Childs	[signature]	07	12	99

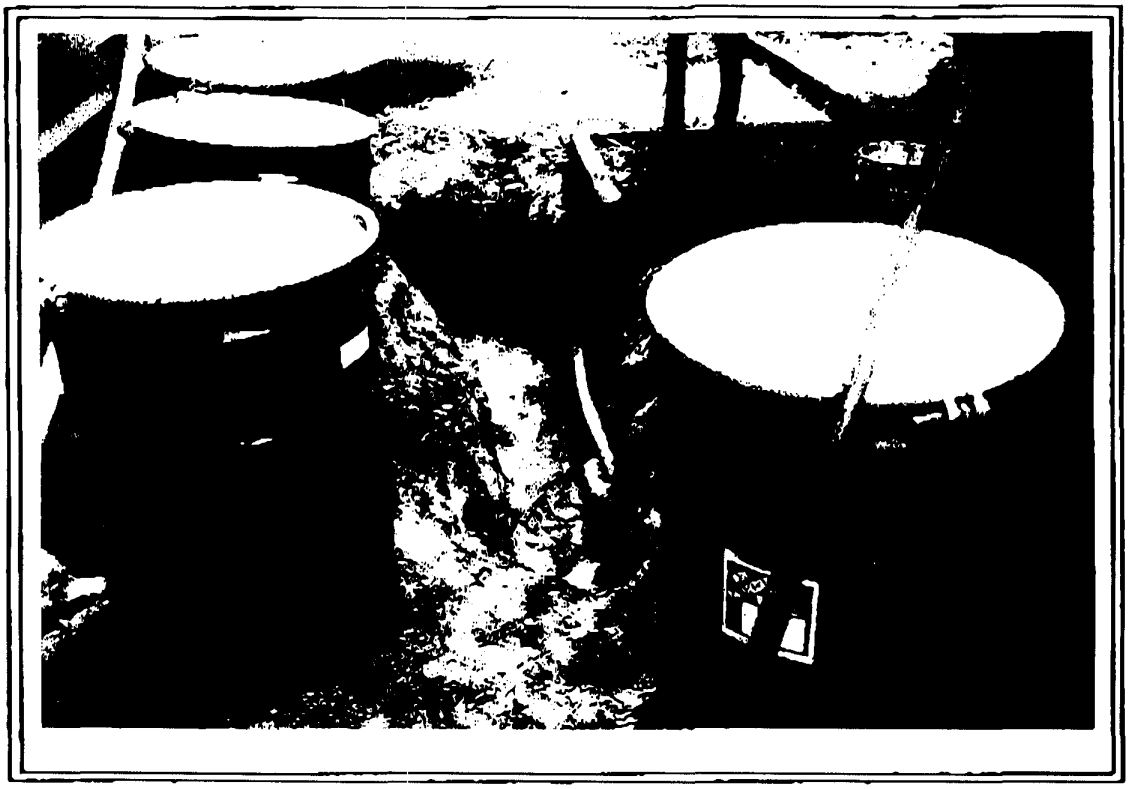
GENERATOR

TRANSPORTER

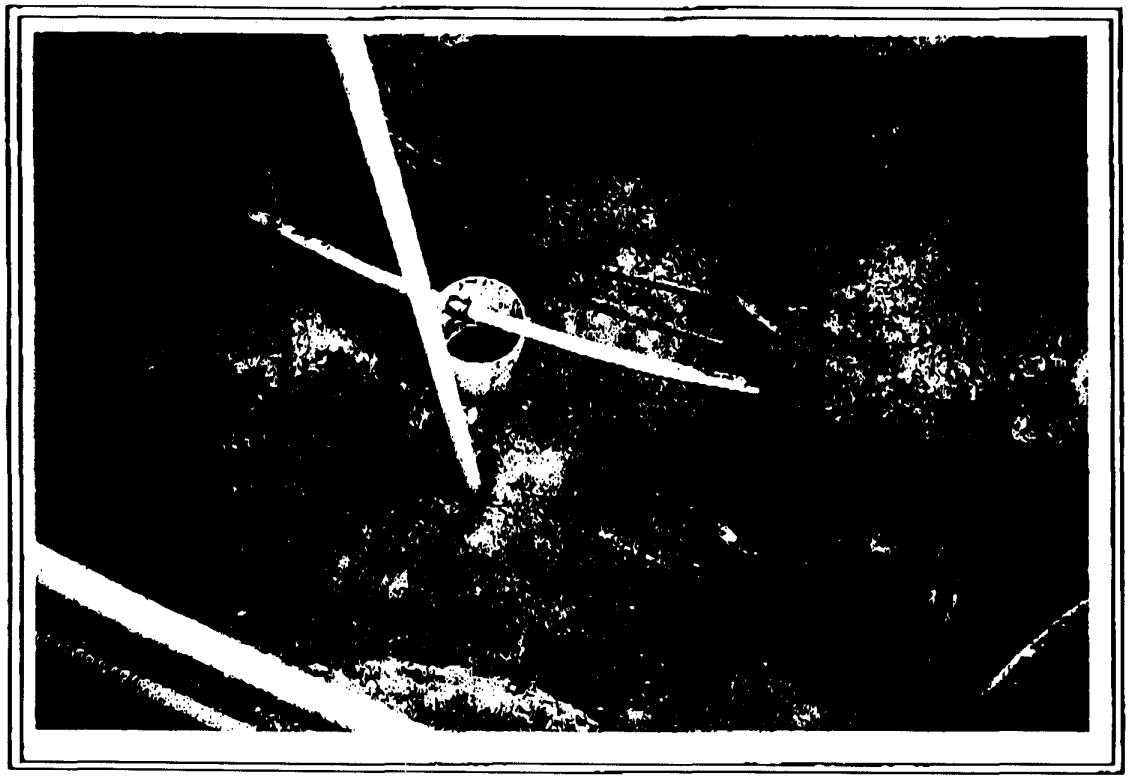
FACILITY

APPENDIX C

PHOTOGRAPHIC DOCUMENTATION



1) Area of discharge; early stages of excavation; Notice one inch product line.



2) Excavation area showing location of TW-1 and discharge point along product line.

APPENDIX D

LABORATORY DATA SHEETS

Advanced
Environmental Laboratories, Inc.

8936 Western Way • Suite 7
Jacksonville, Florida 32256
(904) 363-9350
FAX (904) 363-9354

Client:	Environmental Recovery, Inc.	**Report No.:**	J991299
Project Name:		**Date Sampled:**	7/7/99
Project No.:	1495	**Date Submitted:**	7/7/99
		Date Reported	7/13/99
Address:	251 Levy Rd. Atlantic Beach, FL 32233	**Project Chemist:**	Chuck Ged
		Page No.:	1 of 5
Attention:	Rick McLeod		

Sample Description

The following soil samples were submitted by Environmental Recovery, Inc. on 7/7/99 for analysis outlined on the attached Chain of Custody:

Project #: 1495

1. P-2 @ 10:30
2. CS-2 @ 10:45

Approved by: Jolene C. Warnke, Project Manager

FRS# 82533,E82574
DEP# 940242

Advanced Environmental Laboratories, Inc.

Analytical Report

Client:	Environmental Recovery, Inc.	**Report No.:**	J991299
Project No.:	1495	**Date Sampled:**	7/7/99
Matrix:	Soil	**Date Submitted:**	7/7/99
		Date Reported:	7/13/99
		Page No.:	2 of 5

Volatile Aromatics Hydrocarbons
EPA Method 5035/8021
Units: µg/Kg

		Lab Code:	991299-1	991299-2	991298-mb
		Dilution Factor:	1	1	1
		Date Analyzed:	7/8/99	7/8/99	7/8/99
Analytes	**MRL**	**Sample Name:**	**P-1**	**CS-2**	**Method Blank**
Methyl-*tert*-butyl ether	5		U	U	U
Benzene	5		23.5	U	U
Toluene	5		375	20.5	U
Chlorobenzene	5		U	U	U
Ethylbenzene	5		385	25.5	U
m&p- Xylenes	5		455	44.0	U
o-Xylenes	5		710	49.5	U
1,3-Dichlorobenzene	5		U	U	U
1,4-Dichlorobenzene	5		U	U	U
1,2-Dichlorobenzene	5		U	U	U

Surrogates	**Acceptance Limits**	**Percent Recovery**	**Percent Recovery**	**Percent Recovery**
Bromofluorobenzene	70-135	106	134	100

U Not detected above the MRL
MRL Method Reporting Limit

HRS# 82533,E82574
DEP# 940242

Advanced Environmental Laboratories, Inc.

Analytical Report

Client:	Environmental Recovery, Inc.	**Report No.:**	J991299
Project No.:	1495	**Date Sampled:**	7/7/99
Matrix:	Soil	**Date Submitted:**	7/7/99
		Date Reported:	7/13/99
		Page No.:	3 of 5

Polynuclear Aromatic Hydrocarbons
EPA Methods 3550A/8270
Units: µg/Kg

	Lab Code:	991298-mb	991299-1	991299-2
	Dilution Factor:	1	1	1
	Date Extracted:	7/10/99	7/10/99	7/10/99
	Date Analyzed:	7/10/99	7/10/99	7/10/99
	Sample Name:	**Method**		
Analytes	**MRL**	**Blank**	**P-2**	**CS-2**
Naphthalene	200	U	U	U
2-Methylnaphthalene	200	U	**556**	**478**
1-Methylnaphthalene	200	U	**611**	**524**
Acenaphthylene	200	U	U	U
Acenaphthene	200	U	U	U
Fluorene	200	U	U	U
Phenanthrene	200	U	U	U
Anthracene	200	U	**278**	**257**
Fluoranthene	200	U	U	U
Pyrene	200	U	U	U
Benzo(a)anthracene	200	U	U	U
Chrysene	200	U	U	U
Benzo(b)fluoranthene	200	U	U	U
Benzo(k)Fluoranthene	200	U	U	U
Benzo(a)pyrene	200	U	U	U
Indeno-1,2,3(cd)pyrene	200	U	U	U
Dibenzo(ah)anthracene	200	U	U	U
Benzo(ghi)perylene	200	U	U	U

Surrogate	**Acceptance Limit**	**Percent Recovery**	**Percent Recovery**	**Percent Recovery**
2-Fluorobiphenyl	43-130	92	101	89

U Not detected above the MRL
MRL Method Reporting Limit
HRS# 82533,E82574
DEP# 940242

Advanced Environmental Laboratories, Inc.

Analytical Report

Client:	Environmental Recovery, Inc.	**Report No.:**	J991299
Project No.:	1495	**Date Sampled:**	7/7/99
Matrix:	Soil	**Date Submitted:**	7/7/99
		Date Reported:	7/13/99
		Page No.:	4 of 5

Florida Petroleum Residual Organics
EPA Methods 3550/FL-PRO
Units: µg/Kg

	Lab Code:	991299-1[a]	991299-2[a]
	Dilution Factor:	5	5
	Date Extracted:	7/7/99	7/7/99
	Date Analyzed:	7/12/99	7/12/99
	Sample Name:		
Analytes	**MRL**	**P-2**	**CS-2**
Octane (C_8)	250	U	U
Decane (C_{10})	250	**766**	**138**
Dodecane (C_{12})	250	**1565**	**1276**
Tetradecane (C_{14})	250	**916**	**1004**
Hexadecane (C_{16})	250	**347**	**382**
Octadecane (C_{18})	250	**593**	**607**
Eicosane(C_{20})	250	**525**	**543**
Docosane (C_{22})	250	**455**	**423**
Tetracosane (C_{24})	250	**167**	**160**
Hexacosane (C_{26})	250	U	U
Octacosane (C_{28})	250	U	U
Triacosane (C_{30})	250	U	U
Dotriacontane (C_{32})	250	U	U
Tetratriacontane (C_{34})	250	U	U
Hexatriacotane (C_{36})	250	U	U
Octatriacotane (C_{38})	250	U	U
Tetracotane (C_{40})	250	U	U
TOTAL PHS	4000	**5334**	**4533**

Surrogate	**Acceptance Limits**	**Percent Recovery**	**Percent Recovery**
Ortho-terphenyl	(OTP)	128	126

A Analyzed by Multiple Dilutions
U Not detected above the MRL
MRL Method Reporting Limit

HRS# 82533,E82574
DEP# 940242

Advanced Environmental Laboratories, Inc.

Analytical Report

Client:	Environmental Recovery, Inc.	**Report No.:**	J991299
Project No.:	1495	**Date Sampled:**	7/7/99
Matrix:	Soil	**Date Submitted:**	7/7/99
		Date Reported:	7/13/99
		Page No.:	5 of 5

TCLP Metals
Units: mg/L

Lab Code: 991299-1 991277-1mb

Analyte	Method	MRL	TCLP Limits	Date Analyzed	P-2	Method Blank
Arsenic	7060	0.005	5.0	7/9/99	U	U
Barium	7080	1.0	100.0	7/9/99	U	U
Cadmium	7130	0.05	1.0	7/9/99	U	U
Chromium	7190	0.25	5.0	7/9/99	U	U
Lead	7420	0.25	5.0	7/9/99	U	U
Mercury	7471	0.002	0.2	7/9/99	U	U
Selenium	7740	0.005	1.0	7/9/99	U	U
Silver	7760	0.10	5.0	7/9/99	U	U

U Not detected above the MRL
MRL Method Reporting Limit

HRS# 82533,E82574
DEP# 940242

APPENDIX C

INVESTIGATION DERIVED WASTE MANIFESTS

Please print or type.

NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. FLCESQG06730	Manifest Doc. No. 1680	2. Page 1 of 1

GENERATOR

3. Generator's Name and Mailing Address
UNITED STATES NAVY
Naval Station Mayport
Jacksonville, FL 32228
4. Generator's Phone (904)-270-6730

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
CHEMICAL CONSERVATION CORP.	FLD980559728	407-859-4441
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone

9. Designated Facility Name and Site Address	10. US EPA ID Number	C. Facility's Phone
CHEMICAL CONSERVATION CORP. 10100 Rocket Boulevard Orlando, FL 32824	FLD980559728	407-859-4441

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Non Regulated Material (Soil cuttings)	44	DM	0000	G
b. Non Regulated Material (Soil cuttings) Purge Water	016	DM	0000	G
c. Non Regulated Material (PPE)	001	DM	0000	G
d.				

D. Additional Descriptions for Materials Listed Above
(a) UNIF6261 (OCB0006022)(NHAZS)
(b) UNIF6261 (OCB0006022)(NHAZS) UNIF 6263
(c) UNIF6262 (OCB0006022)(NHAZS)(IDW-Decon Refuse)
(d)

E. Handling Codes for Wastes Listed Above
M141

15. Special Handling Instructions and Additional Information
EMERGENCY RESPONSE: Chem-Trec 1-800-424-9300
EMERGENCY CONTACT: 904 270-6730

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
JAN B. BOVIER	Jan B Bovier	01	28	00

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Michael Moe	[illegible]			

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

COPY

APPENDIX D

SOIL BORING LOGS

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: NS MAYPORT
PROJECT NUMBER:
DRILLING COMPANY: US Drilling
DRILLING RIG:

BORING No.: 351-MW1
DATE: 5/24/00
GEOLOGIST: GB + AP
DRILLER: Mark Sanders

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**
							sand, light brown fine grained well sorted			0ppm			
		5					sand, gray brown med. to coarse grained, well sorted angular			1ppm			
		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): 0

Converted to Well: Yes ✓ No ___ Well I.D. #: ___

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: NS MAYPORT
PROJECT NUMBER:
DRILLING COMPANY: US Drilling
DRILLING RIG:

BORING No.: 351-MW2
DATE: 5/24/00
GEOLOGIST: GB + AP
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**
							sand, some surface gravel, light brown poorly sorted.			1ppm			
		5					sand, grey brown medium to fine grained, angular well sorted			0ppm			
		10											

* 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

Page ___ of ___

PROJECT NAME: NS MAYPORT
PROJECT NUMBER:
DRILLING COMPANY: U.S. Drilling
DRILLING RIG: CME

BORING No.: 35I-MW-3
DATE: 5/24/00
GEOLOGIST: GB + AP
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**
							Sand, fine grained, brown some shell fragments poorly sorted						
		5					↓						
							Sand, gray/brown fine to medium grained well sorted, angular						
		10					↓						

* 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

Page ___ of ___

PROJECT NAME: NS MAYPORT
PROJECT NUMBER:
DRILLING COMPANY: US Drilling
DRILLING RIG:

BORING No.: 351-MW-4
DATE: 5/24/00
GEOLOGIST: GB + AP
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**
							Concrete			5 ppm			
							sand, fine to						
							medium grained						
							light brown.						
		5								1 ppm			
							sand, grey brown						
							med to fine grained						
							angular well						
							sorted						
		10					↓						

* 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:

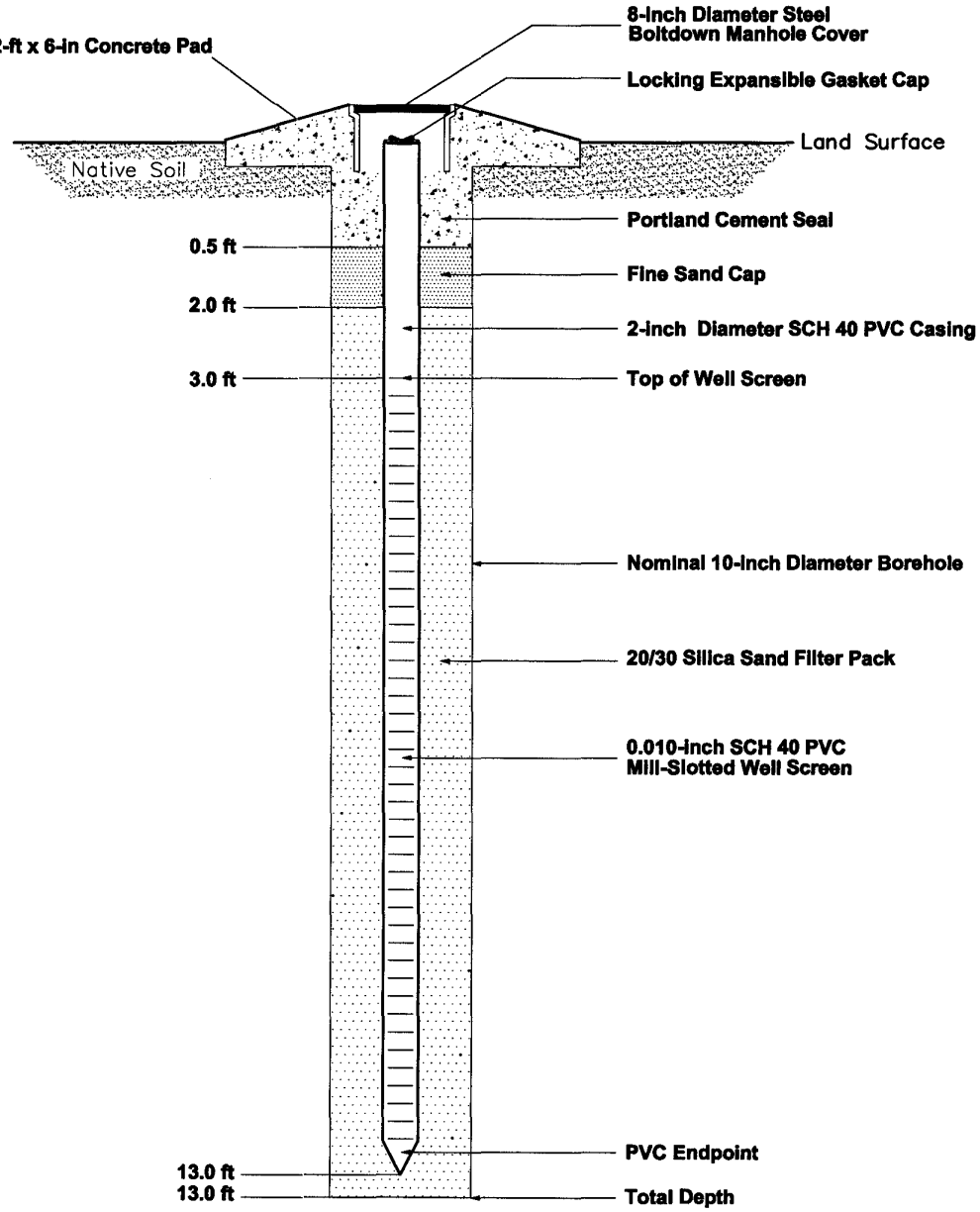
Converted to Well: Yes ✓ No ___ Well I.D. #:

APPENDIX E

WELL COMPLETION LOGS

S:\PROJECTS\MAYPORT\CAD\0123\BLDG. 0351\MW_sh_fm

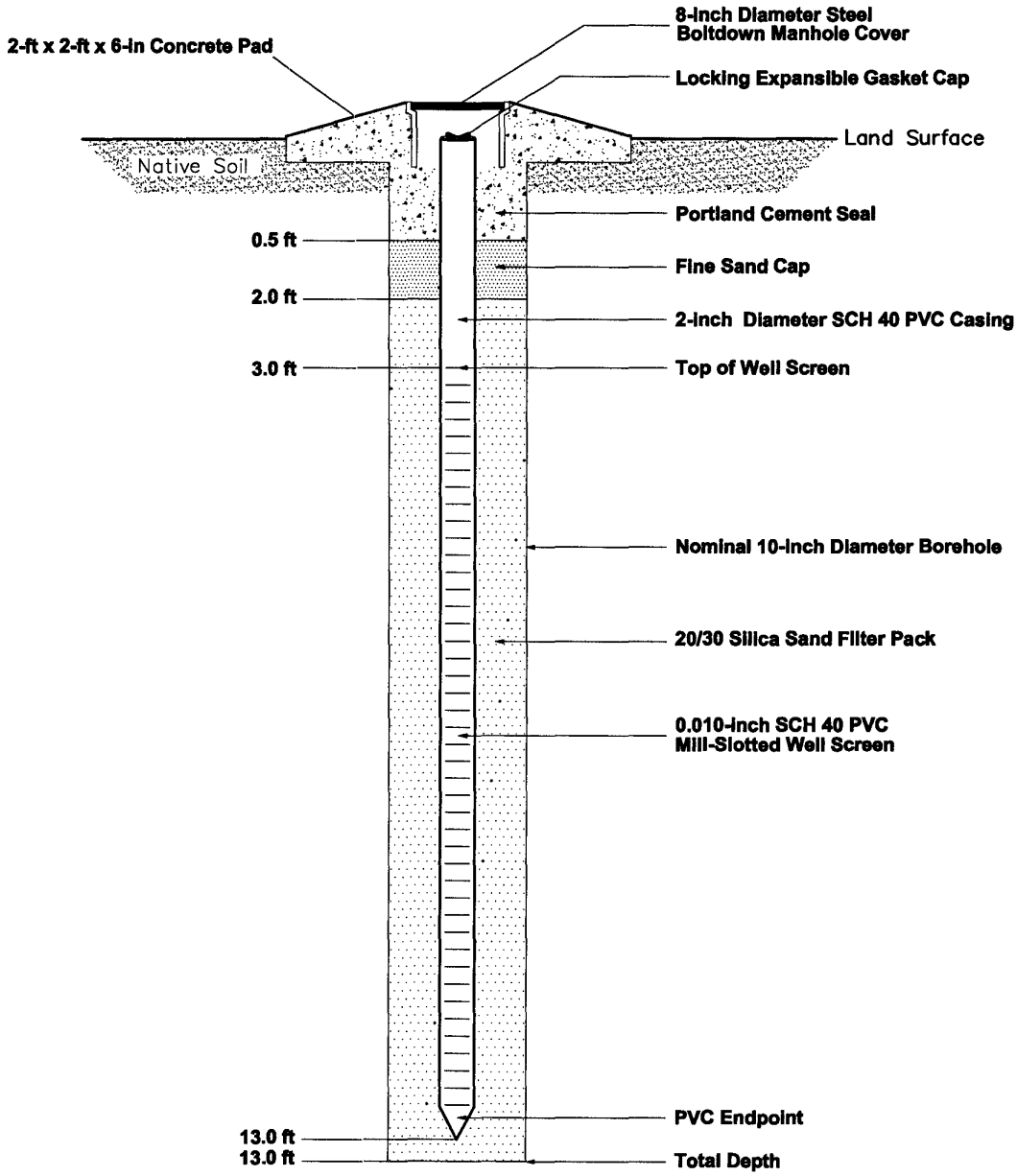
SITE	NS Mayport	DRILLER	US Drill
LOCATION	Building 351	DRILLING METHOD	Hollow Stem Auger
PROJECT NUMBER	0500	INSTALLATION DATE(S)	May 24, 2000
TtNUS GEOLOGIST	Alan Pate	DEVELOPMENT METHOD	Centrifugal Pump



DRAWN BY LLK DATE 01/18/01	WELL CONSTRUCTION DIAGRAM	CONTRACT NO. 0500	
CHECKED BY DATE	351-MW-01	APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE NOT TO SCALE		DRAWING NO.	REV. 0

S:\PROJECTS\MAYPORT\CAD\0123\BLDG. 0351\MW_sh_fm

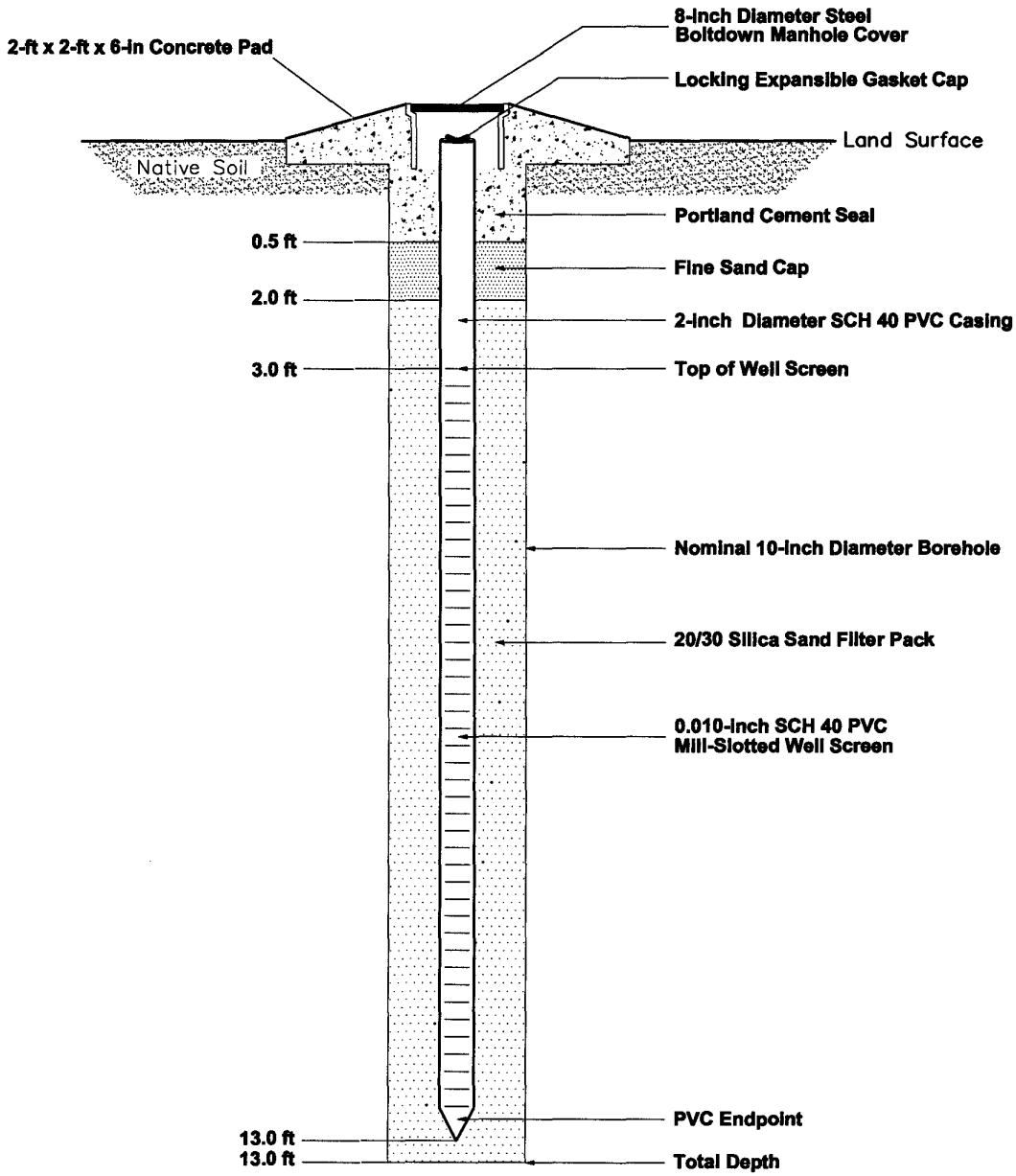
SITE	NS Mayport	DRILLER	US Drill
LOCATION	Building 351	DRILLING METHOD	Hollow Stem Auger
PROJECT NUMBER	0500	INSTALLATION DATE(S)	May 24, 2000
TtNUS GEOLOGIST	Alan Pate	DEVELOPMENT METHOD	Centrifugal Pump



DRAWN BY LLK DATE 01/18/01		WELL CONSTRUCTION DIAGRAM	CONTRACT NO. 0500
CHECKED BY DATE		351-MW-02	APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE NOT TO SCALE			DRAWING NO. REV. 0

S:\PROJECTS\MAYPORT\CAD\0123\BLDG. 0351\MW_sh_fm

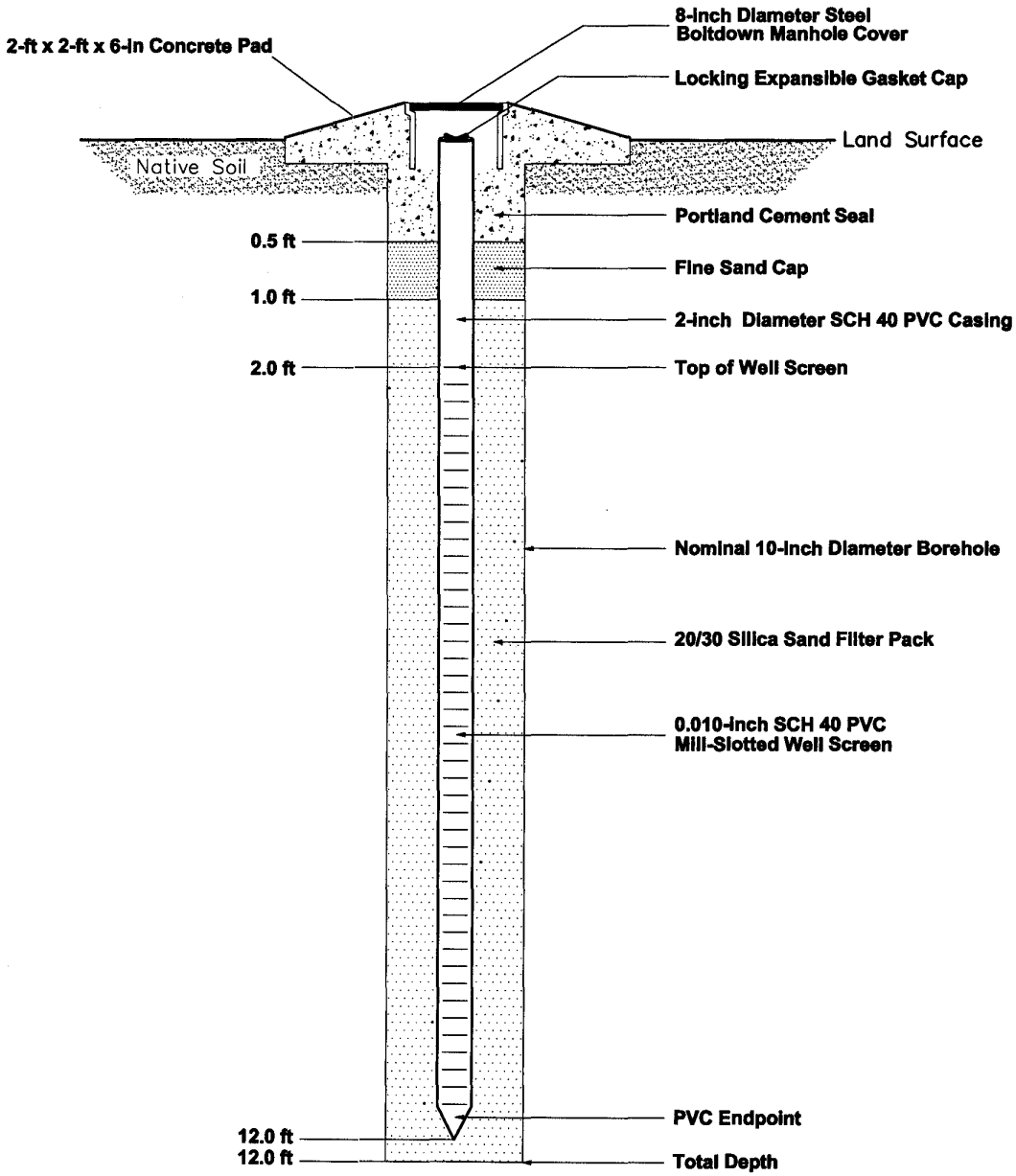
SITE	NS Mayport	DRILLER	US Drill
LOCATION	Building 351	DRILLING METHOD	Hollow Stem Auger
PROJECT NUMBER	0500	INSTALLATION DATE(S)	May 24, 2000
TtNUS GEOLOGIST	Alan Pate	DEVELOPMENT METHOD	Centrifugal Pump



DRAWN BY LLK DATE 01/18/01	WELL CONSTRUCTION DIAGRAM	CONTRACT NO. 0500	
CHECKED BY DATE	351-MW-03	APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE NOT TO SCALE		DRAWING NO.	REV. 0

S:\PROJECTS\MAYPORT\CAD\0123\BLDG. 0351\MW_sh_fm

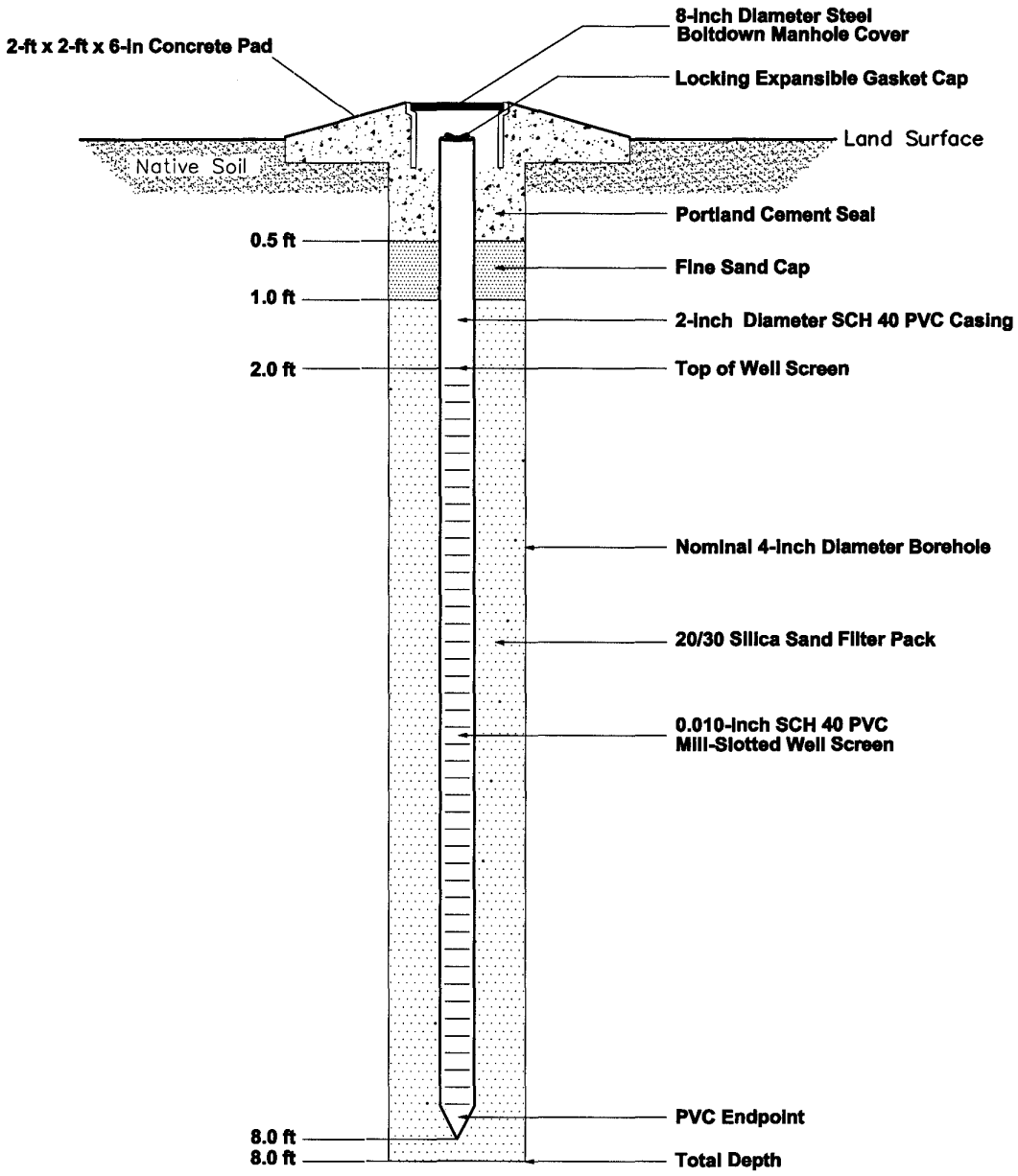
SITE	NS Mayport	DRILLER	US Drill
LOCATION	Building 351	DRILLING METHOD	Hollow Stem Auger
PROJECT NUMBER	0500	INSTALLATION DATE(S)	May 24, 2000
TtNUS GEOLOGIST	Alan Pate	DEVELOPMENT METHOD	Centrifugal Pump



DRAWN BY LLK DATE 01/18/01	WELL CONSTRUCTION DIAGRAM	CONTRACT NO. 0500	
CHECKED BY DATE	351-MW-04	APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE NOT TO SCALE		DRAWING NO.	REV. 0

S:\PROJECTS\MAYPORT\CAD\0123\BLDG. 0351\MW_sh_fm

SITE	NS Mayport	DRILLER	N/A
LOCATION	Building 351	DRILLING METHOD	Hand Auger
PROJECT NUMBER	0500	INSTALLATION DATE(S)	November 17, 2000
TtNUS GEOLOGIST	Alan Pate	DEVELOPMENT METHOD	Teflon Bailer



DRAWN BY LLK DATE 01/18/01	WELL CONSTRUCTION DIAGRAM	CONTRACT NO. 0500	
CHECKED BY DATE	351-MW-05	APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE NOT TO SCALE		DRAWING NO.	REV. 0

APPENDIX F

GROUNDWATER SAMPLE LOG SHEETS

Groundwater Purging and Sampling Log

Date _____ **Tetra Tech NUS** Page 1 of ___

Project Site Name:
Project No.: 7457/

Sample Location: MW-1

[ ] Domestic Well Data

Flow-Thru Cell
Make\Model: HORIBA U-22

Sample ID No.: 357-GW-MW01-001

[X] Monitoring Well Data

Sampled By: _____

Serial Nos.: _____

[ ] Other Well Type: _____

C-O-C No.: _____

PURGING DATA

Casing Size (in.)	~~Gals.~~ per ft. of Water	~~Liters~~ per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	7.57	7.7	50	22.4	6	2.0	16		
1	0.041	0.155		7.1	50	22.2	8	0.4	-32		
2	0.163	0.617		7.1	50	22.2	-3	0.3	-36		
4	0.653	2.47		7.1	50	22.4	1	0.4	-41		
6	1.469	5.56		7.1	50	22.4	-1	0.3	-43		
8	2.611	9.88		7.1	50	22.4	-1	0.3	-48		
10	4.08	15.44		7.2	50	22.4	0	0.3	-53		
	[1 gal. = 3.785 L]			7.3	50	22.5	-1	0.3	-57		

PID Reading (ppm):

Well Casing Diameter: 2"
Total Well Depth: 12.00
Static Water Level: 3.57
Tube Intake Depth:

Start Purge (hr): 10:22
End Purge (hr):
Total Purge Time (min):
Total Vol. Purged:

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date:									
Time:									

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	1	1-liter	amber glass	
Herbicides	8151	None	1	1-liter	amber glass	
X-tra Organic	8XXX	None	1 or 2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	
Antimony	6010B	HNO_3	1	0.5-liter	HDPE	

ADDITIONAL INFORMATION

Comments:

Method:
[ ] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[ ] Teflon
[ ] Teflon-lined Polyethylene

QA/QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NS Mayport
Project No.: 0500

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 351-GW-MW-01-001
Sample Location: 351-MW04
Sampled By: GB
C.O.C. No.:
Type of Sample:
[✓] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 6/14/00	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO (mg/L) Meter	DO (mg/L) Titration	~~CO_2~~ ORP	H_2S	Fe +2
Time: 11:00										
Method: low flow		7.3	50	22.5	-1	0.3		-57		

PURGE DATA

Date:	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity			
Method:	Initial	7.3								
Monitor Reading (ppm):	1									
Well Casing Diameter:	2									
Well Casing Material:	3									
Total Well Depth (TD):										
Static Water Level (WL):										
One Casing Volume(gal/L):										
Start Purge (hrs):										
End Purge (hrs):										
Total Purge Time (min):										
Total Vol. Purged (gal/L):										

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected

OBSERVATIONS / NOTES

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: ~~NAS CECIL FIELD~~ Mayport
PROJECT NUMBER: ~~0039~~ N0508

WELL ID.: 35D-MW2
DATE: 6-14-00

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP ~~Sal.~~ (mV)	Comments
10:32	5.36	—	—	—	—	—	—	—	
1042	5.36	—	7.46	0.531	3.2	0.76	22.3	-103	Clear
1047	5.36	—	7.45	0.533	-3.3	0.68	22.2	-102	Clear
1052	5.36	—	7.44	0.534	-3.5	0.69	22.2	-101	Clear
1057	5.36	—	7.44	0.537	-5.7	0.69	22.3	-100	Clear
1102	5.36		7.43	0.538	-7.4	0.67	22.3	-100	Clear
END PURGE									
1105									sample

SIGNATURE(S): _____

PAGE ___ OF ___

Page___ of ___

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: Mapport
Project No.: NB506

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 351-GW-MW2-0001
Sample Location: 351-MW2
Sampled By:
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 6-14-00 / Time: 11:05	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	Other ORP(mV)
Method: Low Flow Peristaltic	Clear	7.43	0.538	22.3	-7.4	0.67		-100

PURGE DATA

Date: 6-14-00	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): 12.7								
Static Water Level (WL): 5.31								
One Casing Volume(gal/L): 1.1								
Start Purge (hrs): 10:32								
End Purge (hrs): 11:02								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 3.3								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOC's	HCl		
PAH			
EDB	HCl		
TRPH			
Lead	HNO3		
Methanol	HCl		
Sulfide	NaOH/Zn Acetate		
Anions			

OBSERVATIONS / NOTES

Circle If Applicable

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Mayport
PROJECT NUMBER: N0506

WELL ID.: 351-MW-3
DATE: 6-14-00

Time (Hrs)	Water Level (ft. Below TOC)	Flow (ml/min)	pH (SU)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
09:35	5.23	—	—	—	—	—	—	—	
09:40	5.22		7.34	0.600	14.1	0.58	22.3	-144	clear
09:45	5.22		7.32	0.597	9.2	0.58	22.4	-161	clear
09:50	5.22		7.30	0.598	12.1	0.61	22.4	-169	clear
09:55	5.22		7.28	0.593	-3.5	1.36	22.4	-173	clear
10:00	5.22		7.28	0.594	-2.3	0.56	22.4	-181	clear
10:05	5.22		7.27	0.595	-1.8	0.57	22.5	-187	clear
10:10	5.22		7.26	0.596	-0.5	0.53	22.5	-192	clear
10:10									end purge & sample

Page___ of ___

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: MAYPORT
Project No.: N0506

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 351-GW-MW3-0001
Sample Location: 351-MW3
Sampled By: AP/ER
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 6-14-00 Time: 10:10	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	Other ORP (mV)
Method: Low Flow Peristaltic	Clear	7.26	0.576	22.5	-0.5	0.53		-192

PURGE DATA

Date: 6-14-00	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): 12.85								
Static Water Level (WL): 5.16								
One Casing Volume (gal/L): 1.2								
Start Purge (hrs): 09:35								
End Purge (hrs): 10:10								
Total Purge Time (min): 35								
Total Vol. Purged (gal/L): 3.6								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
PAH			
TRPH			
VOC	HCl		
EDB	HCl		
Pb	HNO_3		
Sulfide	NaOH/Zn Acetate		
Anions			
Methane			

OBSERVATIONS / NOTES

Circle If Applicable:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Mayport
PROJECT NUMBER: N05066

WELL ID.: 351-MW-04
DATE: 6-14-00

Time (Hr:Min)	Water Level (ft. below TOC)	Flow (ml/min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
08:35	5.97	—	—	—	—	—	—	—	
08:45	6.01		7.37	0.500	-2.2	0.71	22.9	-106	clear
08:50	6.02		7.34	0.488	-2.9	0.57	23.0	-132	clear
08:55	6.02		7.33	0.487	-2.8	0.49	23.0	-145	clear
09:00	6.03		7.33	0.486	-3.1	0.48	23.0	-151	clear
09:08									end purge sample

Page___ of ___

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: MAYPORT
Project No.: N0506

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: 351-GW-MW4-001
Sample Location: 351-MW4
Sampled By: AP/GR
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 6-14-00 / Time: 09:02	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	Other ORP(mV)
Method: Low Flow Peristaltic	Clear	7.33	0.486	23.0	-3.1	0.48		-151

PURGE DATA

Date: 6-14-00	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter:								
Well Casing Material: PVC								
Total Well Depth (TD): 10.9								
Static Water Level (WL): 5.97								
One Casing Volume (gal/L): 0.8								
Start Purge (hrs): 08:35								
End Purge (hrs): 09:02								
Total Purge Time (min): 27								
Total Vol. Purged (gal/L): 2.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
PAH			
VOC's	HCl		
TRPH			
EDB	HCl		
Pb	HNO_3		

OBSERVATIONS / NOTES

well sampled in duplicate
351-GW-DUP1-001
351-GW-MW4-001

Circle if Applicable:

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NAS MAYPORT
Project No.: N0506
Location: 351
Personnel: AP/EE/GD
Weather Conditions: overcast, 80°
Measuring Device:
Tidally Influenced: Yes ___ No ___
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments Well vol. G/L
351-MW1	6-14-00	08:20	8.94	12.9	5.37		3.57	1.2/4.6
351-MW2	6-14-00	08:20	8.90	12.7	5.31		3.59	1.1/4.3
351-MW3	6-14-00	08:20	8.76	12.85	5.16		3.60	1.2/4.6
351-MW4	6-14-00	08:20	9.52	10.9	5.97		3.55	0.9/3.7

* All measurements to the nearest 0.01 foot

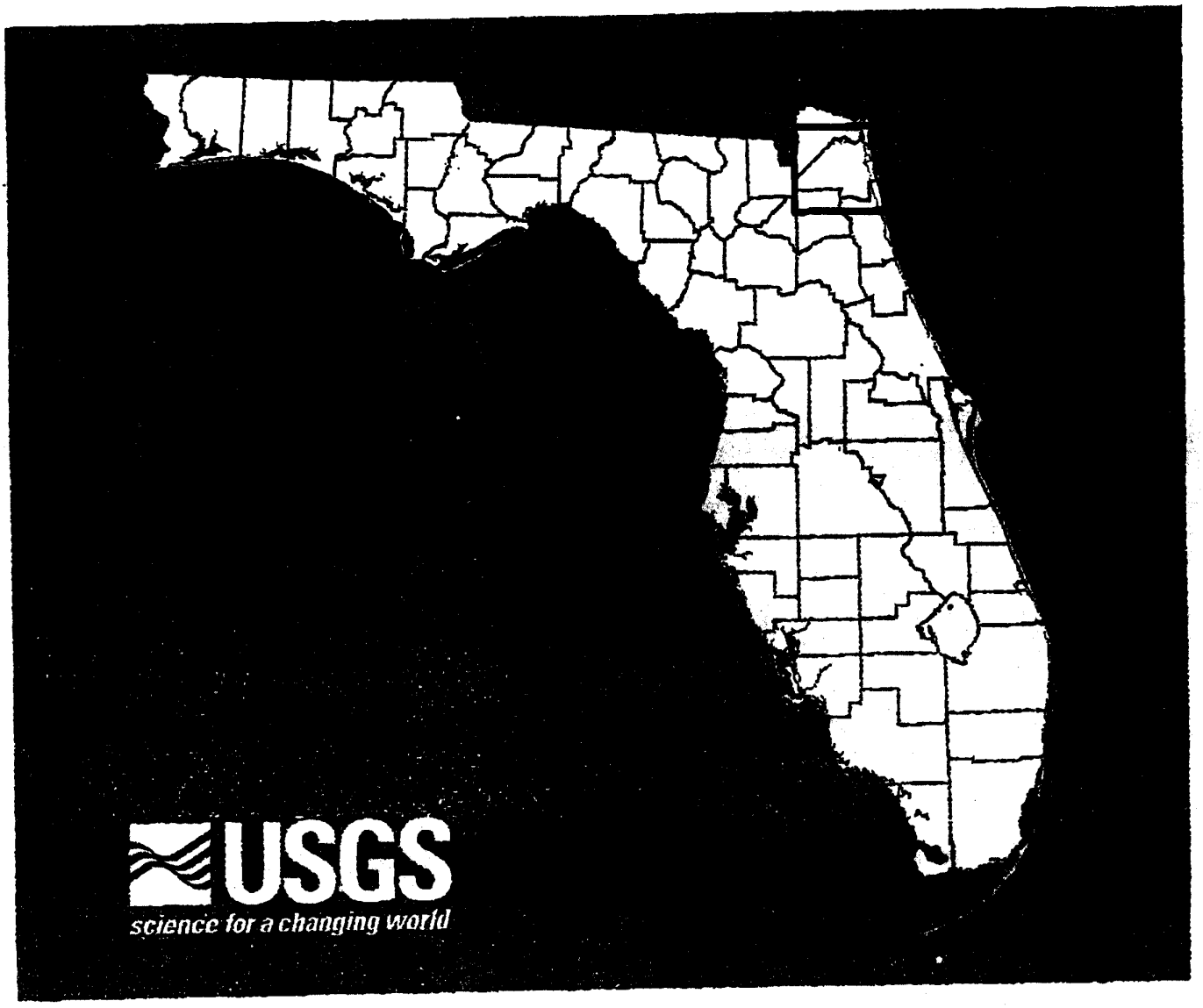
APPENDIX G

U.S. GEOLOGICAL SURVEY REPORT 97-4262

Ground-Water Flow in the Surficial Aquifer System and Potential Movement of Contaminants from Selected Waste-Disposal Sites at Naval Station Mayport, Florida

U.S. Geological Survey
Water-Resources Investigations Report 97-4262

Prepared in cooperation with the
Southern Division, Naval Facilities Engineering Command, U.S. Navy



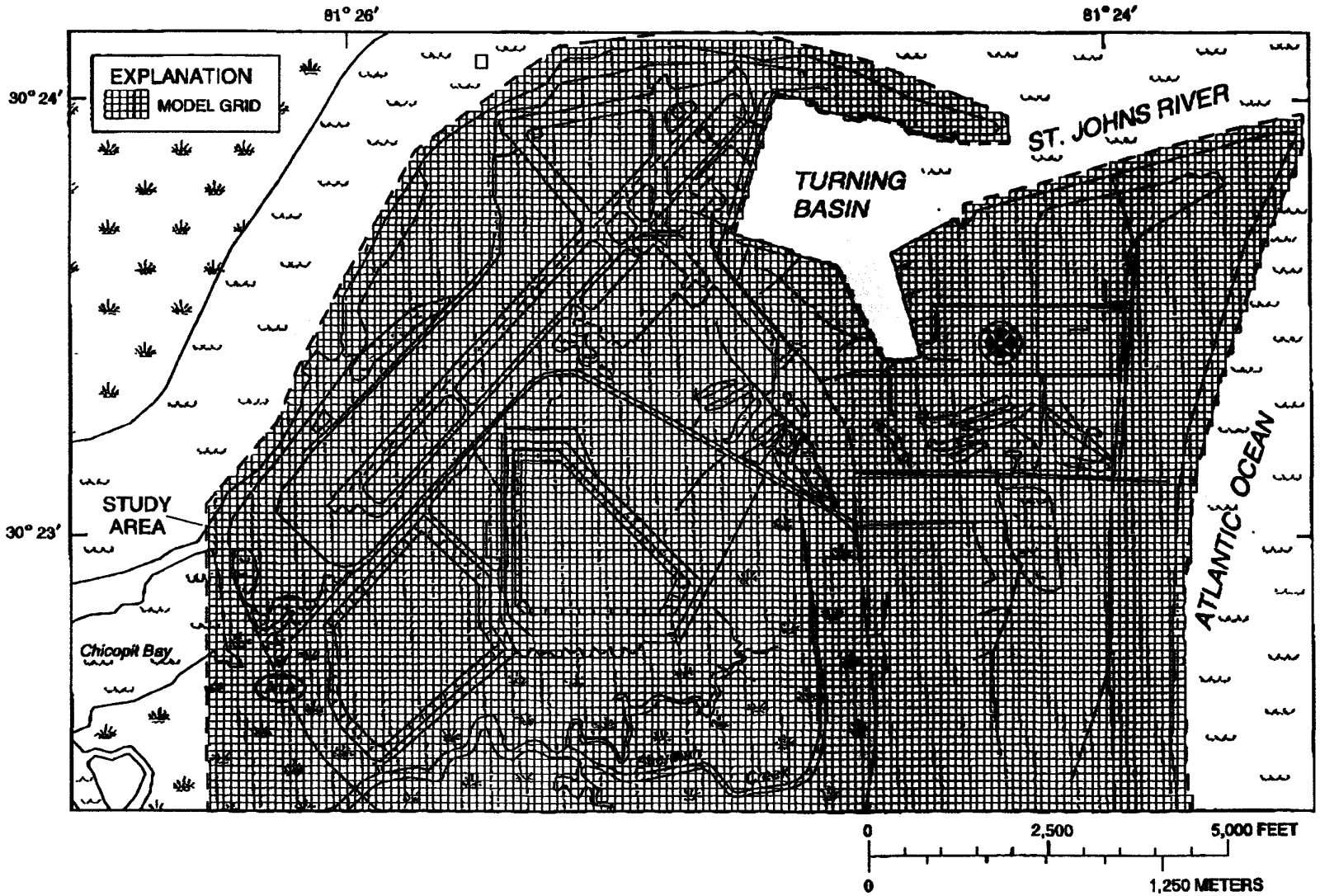


Figure 12. Active model grid.

of lateral hydraulic conductivity estimates, the single-well tests and slug tests can be executed in less time and at a lower cost than the multi-well aquifer tests. About 15 to 20 single-well tests were conducted and analyzed in the same amount of time it took to conduct one multi-well aquifer test at NAVSTA Mayport. Although greater uncertainty is associated with estimates based on data collected during single-well tests and slug tests, the improved efficiencies associated with these tests facilitate an increase in spatial coverage and provide a better description of the spatial variability of the lateral hydraulic conductivity.

Lateral hydraulic conductivities were estimated from the multi-well aquifer tests by fitting a model to the measured drawdowns. The appropriate flow model was dictated by the geology and ground-water flow conditions at the site and the configuration of the pumped well and observation wells. The drawdown response in a single, confined aquifer can be described by the analytical Theis (1935) model. The Theis model was used to analyze the drawdown in well 8-3 which was affected by a nearby sump screened across both the S-zone and the I-zone (table 2). Most of the other multi-well aquifer tests were better described by the numerical model VS2DT (Lappala and others, 1987; Healy, 1990) that accounts for an unconfined aquifer and vertical flow within the aquifer. Six of the multi-well aquifer tests were analyzed by fitting results computed with a variably saturated, radially symmetric, numerical model, VS2DT, to the measured drawdowns (Halford, 1997). Aquifer tests conducted at wells B-1S and B-1I were analyzed with a three-dimensional MODFLOW model to account for the asymmetric effects of Lake Wonder Wood and a nearby drainage canal.

Where the marsh-muck confining unit was about 1 ft thick or less at the test site, the aquifer-test model (either VS2DT or MODFLOW) spanned both the S-zone and the I-zone of the surficial aquifer system. The entire vertical section was simulated for these tests to avoid prescribing boundary conditions within the section. Where the marsh-muck confining unit was more than 1 ft thick, vertical leakage across the confining unit was generally ignored.

Lateral hydraulic conductivity estimates were constrained in all aquifer test analyses by assuming that one value could characterize the entire thickness of either the S-zone or the I-zone at the test site.

Table 2. Lateral and vertical hydraulic conductivity estimates determined from multi-well aquifer tests

[Well locations are shown in figure 3; ft/d, feet per day; gpm, gallons per minute; ft, feet; <, less than; --, not applicable]

Well identifier[a]	Lateral hydraulic conductivity (K_{XY}), ft/d			Vertical hydraulic conductivity (K_Z), ft/d	Vertical anisotropy (K_Z/K_{XY})	Flow rate, gpm	Test duration hour:minute	Maximum drawdown, ft	Initial wetted screen, ft	Aquifer thickness, ft	Marsh-muck confining unit thickness, ft
	Multi-well	Single well[b]	Slug test[c]								
2-17S	8	15	11	8	1	4.6	6:45	4.0	9	18	4
2-38S	80	135	65	12 < 0.002[f]	0.15	5.0	2:15	3.5	10	6	10
8-3S[d]	15	--	--	--	.13	1.0	5:00	--	25	40	0
13-5S	13	33	--	13	1	1.9	7:15	4.0	9	7	1
20-2S	27	35	27	10	0.38	1.7	5:30	2.4	8	8	4
B-1S[e]	30	41	--	--	--	5.4	6:00	3.0	9	24	2
BE-7S	32	58	--	3	.09	4.5	3:10	2.3	8	49	0
B-1I[e]	70	--	--	< 1[f]	--	5.4	6:00	1.2	5	18	2
F-80I[g]	34	48	--	2	.07	20	5:00	12.2	10	49	0

[a] Suffix denotes zone tested.

[b] All single-well tests were analyzed with no more than the first hour of drawdown data.

[c] Lateral hydraulic conductivity estimates from slug tests were reported in U.S. Department of the Navy (1995).

[d] Aquifer was stressed by a 4-ft diameter sump with 25 ft of screen. The drawdown response was simulated with the Theis (1935) solution. Vertical anisotropy was determined by a nearby test in the unsaturated zone. An unspecified air flow rate was induced near the water table (about 7 ft below land surface) and six drawdowns were measured at 10, 20, and 30 ft from the pumped well and 2 and 4 ft below land surface. The maximum drawdown was equivalent to 0.58 ft of water and the compressibility effects of air could be ignored.

[e] Observed drawdowns were fitted to a three-dimensional model that accounted for the effects of Lake Wonder Wood and a nearby canal. The model was simulated with the MODFLOW code.

[f] Maximum vertical hydraulic conductivity of the marsh-muck confining unit at test sites. Based on both the S-zone and I-zone tests.

[g] Aquifer test was performed in 1979 and originally reported by Franks (1980).

Estimates of vertical hydraulic conductivity across the marsh-muck confining unit or within the S-zone were similarly constrained. Preliminary results of aquifer tests in vertically adjacent zones were applied iteratively until "best fit" results were achieved for tests in both zones (table 2).

The single-well aquifer tests were analyzed with the Cooper-Jacob (1946) approximation of the Theis solution. The Cooper-Jacob model of aquifer response can be described by a straight line on a plot of drawdown as a function of the logarithm of time. Lateral hydraulic conductivity (K) values are estimated from flow rate and drawdown measurements by:

$$K = \frac{2.3 Q_{Pump}}{4\pi b s_{\log cycle}}, \qquad (5)$$

where

Q_{Pump} is the rate the well is pumped, in cubic feet per day;

b is the thickness of the aquifer, in feet; and

$s_{\log cycle}$ is the measured rate of drawdown increase, in feet per log-cycle.

For all of the aquifer tests conducted at NAVSTA Mayport, the drawdowns observed in the pumped wells increased semi-logarithmically after the initial well-bore effects dissipated. Using equation 5, a lateral hydraulic conductivity estimate was determined at most of the single-well aquifer test sites (table 3). The limited drawdown data could have been fitted to more sophisticated models but no more than one hydraulic characteristic could have been reasonably estimated.

Although the Cooper-Jacob method provides a simple method of analysis, many of the inherent assumptions of the method are not met or are only partially satisfied at NAVSTA Mayport because a leaky confining unit is present and the surficial aquifer system is unconfined. The combined result of neglecting these factors was that lateral hydraulic conductivity estimates based on single-well tests, K_{single}, were consistently greater than corresponding estimates based on multi-well tests, K_{multi} (table 2).

Table 3. Lateral hydraulic conductivity estimates determined from single-well aquifer tests

[Well locations are shown in figure 3; gpm, gallons per minute; ft, feet; --, not applicable]

Well identifier[a]	Lateral hydraulic conductivity, ft/d: Corrected single-well[b]	Single well	Slug test[c]	Flow rate, gpm	Test duration hour:minute	Maximum drawdown, ft	Initial wetted screen, ft	Aquifer thickness, ft	Marsh-muck confining unit thickness, ft
2-32S	58	98	--	1.9	0:09	1.0	7	6	7
2-34S	28	48	--	2.1	0:08	2.4	6	6	14
2-35S	9	15	--	1.2	2:45	6.2	7	7	5
2-36S	15	25	54	3.5	0:06	4.9	9	6	10
2-37S	1	2	--	1.8	0:04	3.0	10	13	10
8-5S	2	4	1.2	0.7	0:06	3.6	9	7	1
15-P2	5	9	5.5	2.0	0:07	2.3	10	50	0
16-4S	34	58	--	1.8	0:16	0.8	4	10	1
23-3S	6	11	2	1.8	0:18	5.1	8	9	5
23-5S[d]	7	12	9	2.0	0:15	.8	8	21	11
23-7S	8	14	1.5	.9	0:16	3.0	8	6	4
CU-4S	5	8	--	1.8	0:14	1.0	6	49	0
1-1I	9	16	--	4.6	0:11	5.0	5	41	2
2-11I	55	92	--	4.6	0:13	2.4	5	44	6
2-12I	47	79	45	5.0	0:15	2.4	5	42	5
2-17I	72	120	93	4.3	2:35	4.6	5	25	4
2-18I	13	22	29	4.8	5:00	2.2	5	58	1
2-23I	49	83	--	4.5	0:21	2.4	5	48	6
2-32I	14	25	--	4.8	0:07	1.0	5	40	7
2-34I[e]	--	--	--	.6	0:07	26.0	5	45	14
2-35I	10	18	--	4.8	6:15	4.0	5	21	5
2-36I	70	117	46	4.8	0:13	2.0	5	13	10
2-37I	3	5	--	1.8	0:12	2.6	5	28	10
2-38I	.6	11	1.4	2.4	2:00	19.0	5	46	10
8-5I	14	24	--	4.6	0:11	3.3	5	40	1
16-1I	56	95	--	4.5	0:15	1.9	5	42	0
23-5I	1.1	2	1.3	1.6	0:18	7.8	5	17	11
CU-8I	15	26	--	4.0	0:17	2.9	5	49	0

[a] Suffix denotes zone tested.

[b] The single-well lateral hydraulic conductivity estimates were corrected by equation 6.

[c] Lateral hydraulic conductivity estimates from slug tests were reported in U.S. Department of the Navy (1995).

[d] Pumped for 15 minutes but only the first minute was analyzed due to proximity of St. Johns River.

[e] Specific capacity was less than 0.02 gallon per minute per foot.

A log-log graph of K_{multi} versus K_{single} suggests a linear relation exists between the logarithms of the two variables (fig. 13), which can be described by:

$$K_{Multi} = 0.53 K_{Single}^{1.03} . \qquad (6)$$

Equation 6 adequately corrects the initial estimates from single-well aquifer tests, as indicated by the regression coefficient ($r^2 = 0.89$), and is considered to provide the best estimate of lateral hydraulic conductivity at NAVSTA Mayport. The corrected values of lateral hydraulic conductivity from the single-well tests were used in the calibrated model (table 3).

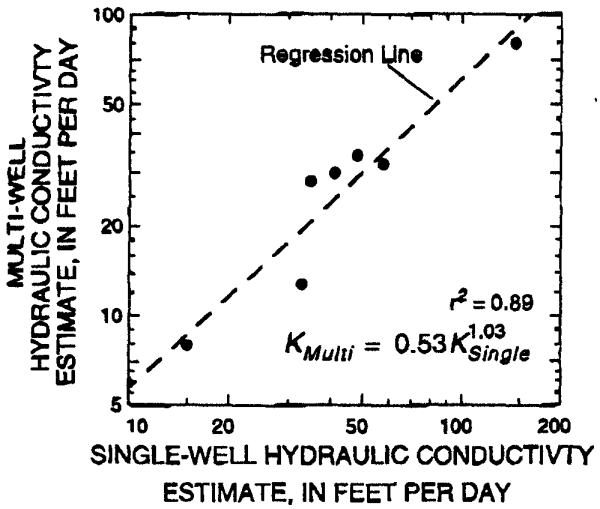


Figure 13. Relation between lateral hydraulic conductivity values estimated by single-well tests and multi-well tests.

Additional lateral hydraulic conductivity estimates at NAVSTA Mayport were determined from slug tests (U.S. Department of the Navy, 1995), 59 in the S-zone and 5 in the I-zone (table 4). The slug tests were analyzed by the Bouwer and Rice (1976) method which empirically corrects for the effects of partially penetrating wells in an unconfined aquifer.

Table 4. Lateral hydraulic conductivity estimates determined from slug tests

[Lateral hydraulic conductivity in feet per day; all other values in feet; <, less than; well locations are shown in figure 3]

Well identifier[a]	Lateral hydraulic conductivity[b]	Initial wetted screen	Aquifer thickness	Marsh-muck confining unit thickness
1-P1	20	5	18	3
1-P2	25	5	15	1
1-P3	18	8	14	7
2-18S	5	10	8	1
2-22S	7	10	6	3
2-25S	3	10	18	5
2-26S	10	10	18	5
2-31S	29	10	9	11
2-33S	34	10	9	5
2-P11	8	4	7	2
2-P2	8	5	11	3
2-P4	13	5	10	4
2-P5	6	5	6	2
2-P6	6	5	2	3
2-P8	5	5	5	5

[a] Suffix denotes zone tested.

[b] Lateral hydraulic conductivity estimates were reported in U.S. Department of the Navy (1995).

Table 4. Lateral hydraulic conductivity estimates determined from slug tests–(Continued)

[Lateral hydraulic conductivity in feet per day; all other values in feet; <, less than; well locations are shown in figure 3]

Well identifier[a]	Lateral hydraulic conductivity[b]	Initial wetted screen	Aquifer thickness	Marsh-muck confining unit thickness
2-P9	18	5	9	1
8-4S	7	6	43	0
8-6S	2	7	44	0
8-7S	2	7	44	0
8-8S	1.0	6	8	< 1
8-P2	7	5	44	0
8-P3	0.8	5	45	< 1
8-P4	10	7	10	3
13-8S	45	10	7	5
13-P1	18	5	8	5
13-P4	16	5	61	0
13-P5	1.3	5	4	3
14-3S	13	9	47	0
14-4S	10	9	47	0
14-5S	11	8	47	0
14-6S	11	9	47	0
14-7S	8	9	47	0
14-8S	11	8	47	0
14-9S	8	9	47	0
14-10S	18	9	47	0
14-11S	21	9	48	0
14-12S	14	6	48	0
14-13S	9	9	47	0
14-14S	13	9	47	0
14-P1	12	5	47	0
14-P2	22	5	46	0
15-1S	3	9	9	1
15-P3	6	10	9	3
16-2S	5	7	43	0
17-P2	23	5	51	0
18-1S	14	8	48	0
18-2S	9	8	47	0
18-3S	17	8	47	0
23-1S	2	9	8	3
23-2S	1.0	10	8	4
23-4S	5	9	15	8
23-6S	3	7	12	5
24-1S	2	10	8	3
44-1S	5	7	14	3
44-2S	1.0	6	12	3
44-3S	5	7	17	7
45-2S	8	8	19	9
56-1S	36	10	5	3
CU-5S	6	6	47	0
2-15I	12	10	50	5
2-25I	50	5	46	5
2-31I	9	5	23	11
2-33I	7	5	49	5
15-5I	15	5	55	0

[a] Suffix denotes zone tested.

[b] Lateral hydraulic conductivity estimates were reported in U.S. Department of the Navy (1995).

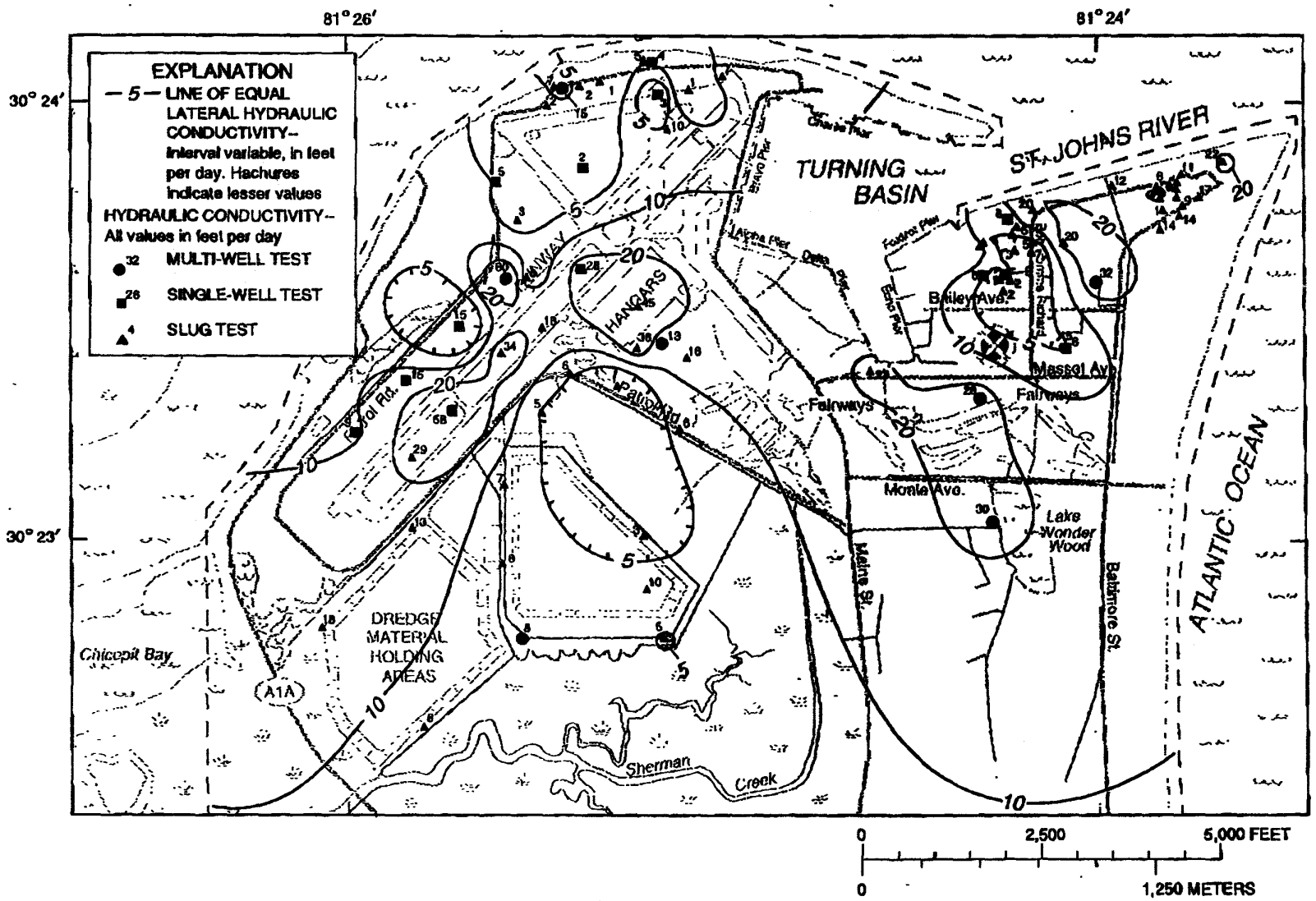


Figure 15. Lateral hydraulic conductivity of the S-zone (layer 1).

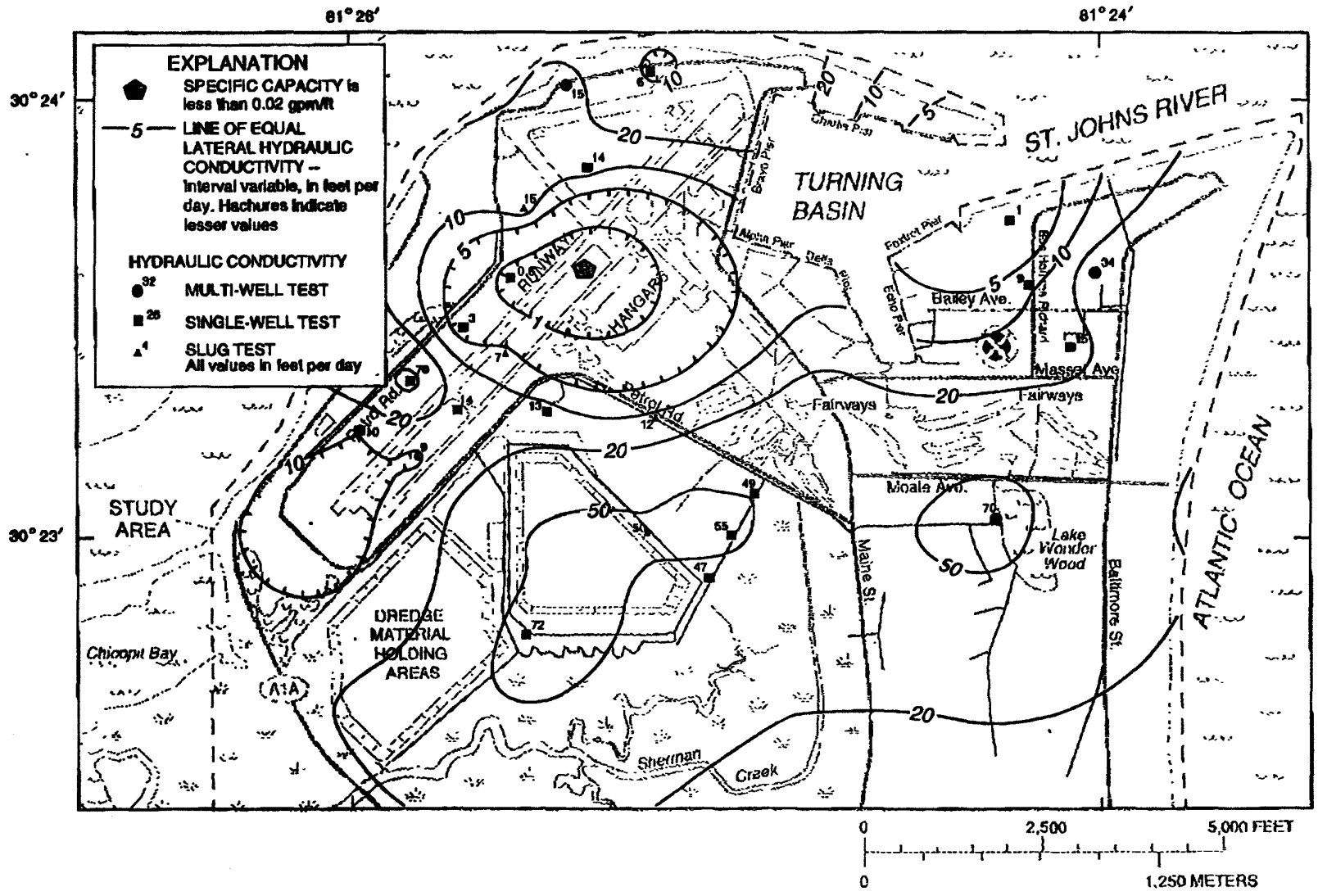


Figure 16. Lateral hydraulic conductivity of the I-zone (layer 2).

Chicopit Bay, Sherman Creek, and the unnamed canals that drain Lake Wonder Wood and the golf course area along Patrol Road also are tidally-influenced. The tidal range varies from about 6 ft at Sherman Creek and SR A1A to about 2 ft at the far reaches of the unnamed canals that drain Lake Wonder Wood and the golf course area along Patrol Road. The average stage of these features is also about 1 ft above sea level.

Measurable tidal effects propagate throughout most of the surficial aquifer system (fig. 17). Within 200 ft of the St. Johns River, vertical tidal displacements of 0.5 ft or more were observed in the S-zone near SWMU-6/7 and in the I-zone east of the turning basin. Tidal displacements decreased away from the shoreline but were still measurable in wells 8-5S and 8-5I by the runways and near the F-80 aquifer test site (fig. 17). East of the dredge material holding area and west of Lake Wonder Wood, ground-water displacements of more than 0.1 ft were responses to tidal fluctuations in the adjacent canals, not in the St. Johns River or the Atlantic Ocean (fig. 17).

The tidal displacement data can be used to independently evaluate the lateral hydraulic conductivity of the surficial aquifer system. If the tidal displacements do not significantly change the saturated thickness, then an analytical solution that describes the displacements in a one-dimensional, confined aquifer due to tidal forcing (Cooper and others, 1964) can be described by:

$$\Delta h_{Tide} = \frac{h_0}{2} e^{-x\sqrt{\frac{\pi S}{t_0 Kb}}} \sin\left(2\pi \frac{t}{t_0} - x\sqrt{\frac{\pi S}{t_0 Kb}}\right) , \quad (9)$$

where

h_0 is the amplitude of the tidal signal, in feet;
x is the distance from the tidal signal, in feet;
t_0 is the period of the tidal cycle, in days (about 0.52 day or 12.5 hours); and
t is the elapsed time since the beginning of a tidal cycle.

Equation 9 shows that the amplitude of water-level displacement in a given well is a function of the distance from the tidal signal and of the aquifer diffusivity, *Kb/S*.

Hydraulic characteristic estimates imposed by equation 9 tend to be qualitative because the appropriate specific yield or storage coefficient is unknown and can vary over three orders of magnitude or more. Specific yield estimates from multi-well aquifer tests of the S-zone ranged from 0.04 to 0.12 at clean sites and was about 0.004 near SWMU-6/7, where free product occurs at the water table. Storage coefficient estimates from multi-well tests of the I-zone ranged from 3×10^{-4} to 6×10^{-4}. Quantitative analysis is further complicated by the vertical transmission of the tidal signal between the I-zone and S-zone which causes diffusivity estimates from equation 9 to reflect a composite storage coefficient for both zones.

Relative differences between lateral and vertical hydraulic conductivity can be inferred between sites if the spatial variability of specific yield and storage coefficient are assumed to be minimal. Average diffusivities in the areas near wells 8-5S, 8-5I, and the F-80 aquifer test site (fig. 17) are about 500,000 feet squared per day (ft^2/d) based on an attenuation of the tidal amplitude to about 0.01 of the source and distances of between 1,000 and 1,500 ft (table 5). The differences in tidal displacements in the S-zone and I-zone at these three sites suggest that the vertical hydraulic conductivity near wells 8-5S and 8-5I is much less than near the F-80 aquifer-test site (fig. 17). The diffusivity of the area between the southwestern end of the runway and the St. Johns River is about 100,000 ft^2/d which suggests the transmissivity of the surficial aquifer system in this area should be about five times less than near well 8-5I or the F-80 aquifer-test site.

Vertical ground-water displacements were greater in the S-zone than in the I-zone east of the dredge material holding area and west of Lake Wonder Wood because the tidal signal originated in the adjacent canals (fig. 17). The vertical displacement in the I-zone at these sites probably was the result of the loading effect of the canals on the marsh-muck confining unit. The similar range of displacement in the S-zone and I-zone east of the dredge material holding area suggests that the leakance between the two zones is less in this area than west of Lake Wonder Wood.

Tidal fluctuation affects ground-water movement but does not affect the average ground-water flow rate or direction. Tidal fluctuation increases the potential for dispersion when the maximum tidally driven component of flow is greater than the topographically driven component of lateral ground-water flow. In areas near the shoreline, flow paths and dispersion are increased because shallow flow paths can be reversed and deeper flow paths along the freshwater/saltwater interface oscillate. Away from the shoreline and canals, the maximum

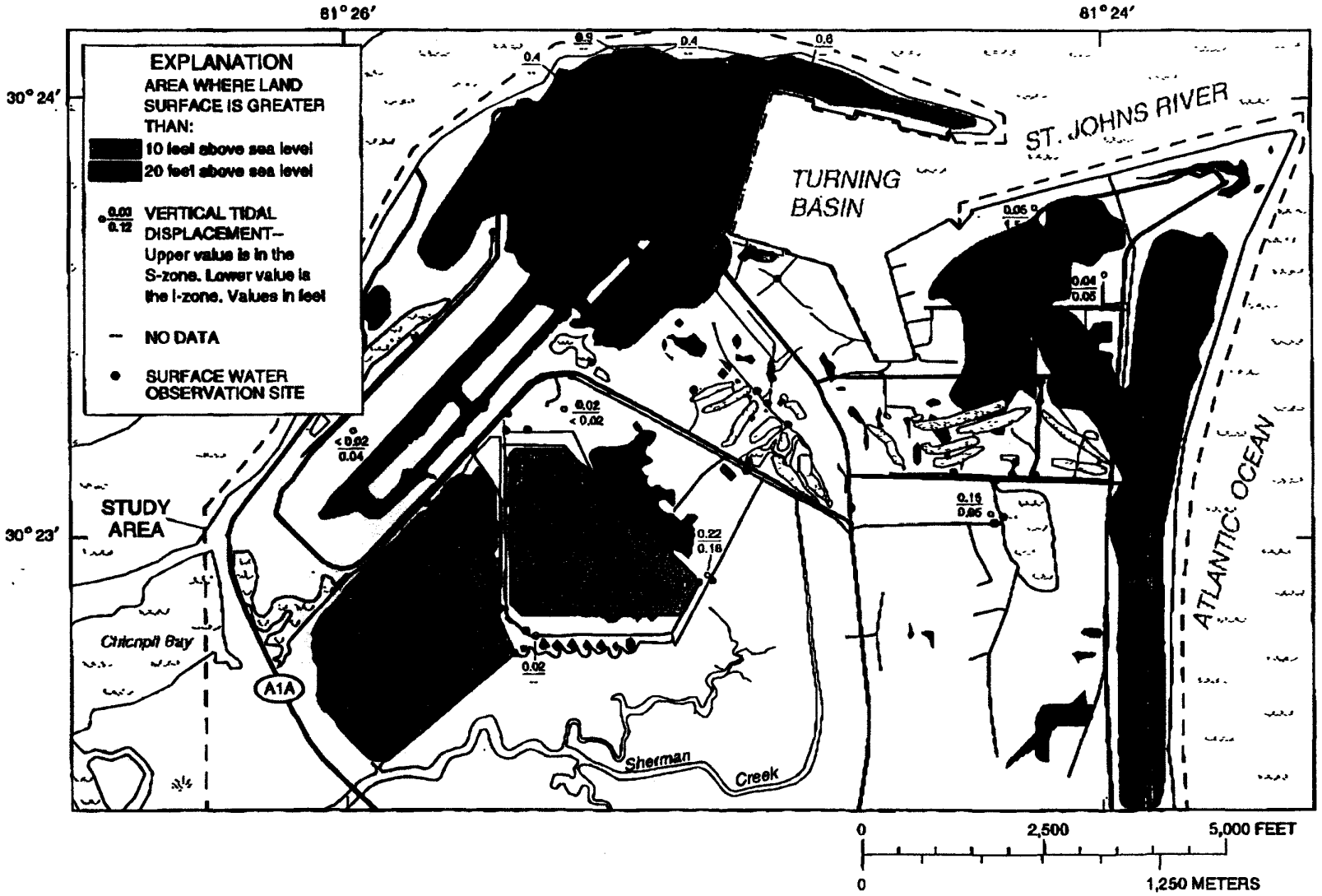


Figure 17. Generalized land surface altitudes in the study area, surface-water observation sites, and vertical tidal displacement measurement sites.

Lateral hydraulic conductivity estimates based on slug test results are reported to be within 25 percent of actual value (Bouwer and Rice, 1976) under ideal conditions, but the discrepancy is expected to be greater in practice.

Lateral hydraulic conductivity values were estimated using results from pumping tests and slug tests at 15 wells. Values based on the pumping tests and slug tests ranged from 0.4 to 80 feet per day (ft/d) and from 1.2 to 93 ft/d, respectively. The geometric averages of the two sets of estimates are the same (10 ft/d) but the median discrepancy between any two estimates was about 50 percent of the greater estimate. The maximum discrepancies between values at a single site resulted from tests at wells 23-7S and 2-36S. The slug test underestimated the single-well test results at 23-7S by a factor of 4 (1.5 ft/d compared to 7 ft/d), and overestimated the single-well test results at 2-36S by a factor of 4 (54 ft/d compared to 13 ft/d).

The areal distribution of lateral hydraulic conductivity in the S-zone (layer 1) and the I-zone (layer 2) were estimated by kriging the log of the test estimates of hydraulic conductivity. Ordinary kriging was used to interpolate and extrapolate from the test site locations (point values) to the model nodes because it provides the best linear, unbiased estimate (Isaaks and Srivastava, 1989). Ordinary kriging can be used because no spatial trends exist in the log-hydraulic conductivity values of either the S-zone or the I-zone.

Spatial interpolation by kriging is based on the internal structure of the data set (autocorrelation). This structure, if present, is examined by plotting the squared difference in measured values, γ_{ij}, against the distance between locations i and j. A scatter plot of γ_{ij} as a function of distance will show a general increase in γ_{ij} as pairs become further apart. An overall structure, however, is hard to determine because of the variability which exists at any given point (Isaaks and Srivastava, 1989).

An underlying internal structure is made more apparent by averaging γ_{ij} over intervals (lags) to obtain:

$$\gamma(h) = \frac{1}{2N(h)} \sum_{(i,j)|h_{ij}=h} (Y_i - Y_j)^2 \quad , \qquad (7)$$

where

- h is the average distance between log-hydraulic conductivity values in an interval;
- $N(h)$ is the number of pairs in an interval; and
- Y is a measured log-hydraulic conductivity value.

A plot of $\gamma(h)$ versus h produces an empirical variogram (fig. 14). Variograms of log-hydraulic conductivity differences showed little uncertainty (nugget effect) associated with the measured values relative to the variance of Y in either the S-zone or the I-zone (fig. 14). For about the first 1,000 to 1,500 ft, $\gamma(h)$ increased rapidly with distance. Beyond about 4,000 ft, $\gamma(h)$ remained near the variance of Y in both the S-zone and the I-zone which was 0.25 and 0.62 log (ft/d)^2, respectively (fig. 14). The variability in γ_{ij} as a function of data pair orientation was not considered because the available data were insufficient to define anisotropic variograms.

Exponential variograms (fig. 14) provide the functional form of the relation between $\gamma(h)$ and distance. The empirical variograms of Y in the S-zone and the I-zone were approximated by:

$$\tilde{\gamma}_{ij} = \sigma^2\left(1 - \exp\frac{-3h}{a}\right) \quad , \qquad (8)$$

where

- σ^2 is the variance of log-hydraulic conductivity, in log (ft/d)^2, and
- a is the range, in feet.

Range is the primary variogram parameter that affects kriging estimates. As range increases, more measured values influence the estimate. Both the S-zone and the I-zone exponential variograms were defined by a range of 3,000 ft.

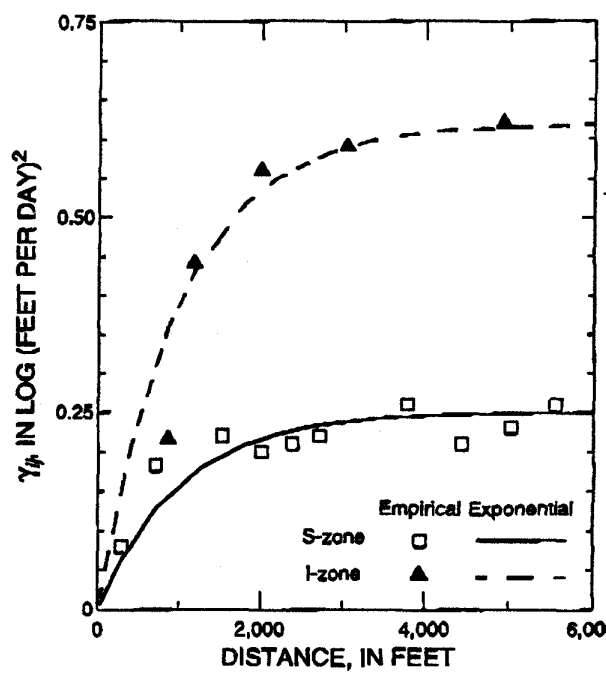


Figure 14. Empirical and exponential variograms of log hydraulic conductivity in the S-zone (layer 1) and the I-zone (layer 2).

Kriging estimates for each model node were generated from a weighted linear combination of the point estimates of log-hydraulic conductivity. The weights were determined by solving the kriging system of equations that minimizes the estimation error, subject to the constraints of unbiasedness (Isaaks and Srivastava, 1989). When solving the kriging system of equations, the exponential variogram placed more emphasis on measurements (point values) that were closer to a node location.

The hydraulic conductivity distribution of the S-zone (layer 1) was kriged from 79 measurements (7 multi-well aquifer tests, 13 single-well tests, and 59 slug tests) and the S-zone exponential variogram (fig. 14). Many measurements were along the runways and north of the golf course (fig. 15). A few measurements were near the dredge material holding areas; no measurements were available south of Lake Wonder Wood. Three principal areas of relatively low hydraulic conductivity in the S-zone were identified near SWMU-6/7, between the hangars and the eastern dredge material holding area, and north of the baseball fields (fig. 15).

The hydraulic conductivity distribution of the I-zone (layer 2) was kriged from 23 point estimates from 2 multi-well aquifer tests, 15 single-well tests, 5 slug tests, and a specific capacity test. The specific capacity test was less than 0.02 gallons per minute per foot (gal/min)/ft at well 2-34I and a hydraulic conductivity of 0.1 ft/d was assigned to this site. The I-zone exponential variogram (fig. 14) described the spatial structure of the lateral hydraulic conductivity measurements. Most of the measurements were near the runways and around the eastern dredge material holding area (fig. 16). There were no measurements beneath the golf course areas, along the Atlantic Ocean, or south of Lake Wonder Wood. Two areas of relatively low hydraulic conductivity in the I-zone were identified near the center of the runways and near Foxtrot pier (fig. 16).

The transmissivity (T) distribution of the I-zone (layer 2) was used in place of the hydraulic conductivity distribution in the flow model because the thickness of the I-zone is not a function of the water table. The transmissivity distribution of the I-zone was calculated by multiplying the lateral hydraulic conductivity distribution (fig. 16) by the corresponding thickness for layer 2 (fig. 8).

The initial areal distribution of leakance between layers 1 and 2 was defined by the presence or absence of the marsh-muck confining unit. Where the marsh-muck confining unit was 1 ft thick or greater (fig. 6), the marsh-muck confining unit was assumed to control the vertical movement of water. The initial leakance estimate for these areas was calculated by dividing the preliminary estimate of vertical hydraulic conductivity of the confining unit (0.001 ft/d) by the thickness of the marsh-muck confining unit (fig. 6). The vertical hydraulic conductivity of the aquifer was assumed to control the vertical movement of water where the marsh-muck confining unit was less than 1 ft thick (fig. 6). The initial leakance estimate for areas where the marsh-muck confining unit was thin or missing was calculated by multiplying the lateral hydraulic conductivity of the S-zone (fig. 15) by the vertical anisotropy determined from multi-well test results (table 2) and dividing it by the average internode distance between layers 1 and 2 (30 ft). A vertical anisotropy of $K_Z/K_{XY} = 0.1$ was applied consistently and is the rounded average of the non-unity values listed in table 2.

Different vertical leakances were assigned beneath Sherman Creek and Lake Wonder Wood. Sherman Creek is about 10 ft deep at SR A1A and was dredged between 1969 and 1972 from south of the dredge material holding areas to the canal along Patrol Road (fig. 1). Because the marsh-muck confining unit was assumed to be breached along the length of Sherman Creek, the leakance beneath the creek was arbitrarily set 1,000 times greater than the leakance of the surrounding marsh-muck confining unit in order to simulate the breach. Lake Wonder Wood, created between 1960 and 1965, was dredged to about 20 ft below sea level, and is well connected with the I-zone. Leakance below the lake was estimated during model calibration.

Tidal Effects and Surface-Water Features

The dominant surface-water features surrounding NAVSTA Mayport are the St. Johns River and the Atlantic Ocean along the northern and eastern edges, respectively (fig. 1). Both features are deep, tidally-influenced, saltwater bodies that communicate directly with the S-zone and the I-zone of the surficial aquifer system. The typical tidal range is about 6 ft but can be as much as 10 ft (U.S. Department of the Navy, 1995). The average stage of the St. Johns River and the Atlantic Ocean near NAVSTA Mayport is about 1 ft above sea level.

$$\nabla \cdot (Kb\nabla h) + q + (P - Q_S) - ET = S\frac{\partial h}{\partial t} \quad , \quad (4)$$

where

∇ is del, the vector differential operator;
K is hydraulic conductivity, in feet per day;
b is thickness, in feet;
h is hydraulic head, in feet;
q is a source or sink, in feet per day;
Q_S is precipitation minus surface runoff, in feet per day;
ET is evapotranspiration, in feet per day;
S is storage coefficient in confined aquifers and the specific yield in unconfined aquifers, dimensionless; and
t is time, in days.

Description of the Ground-Water Flow Model

To implement a finite-difference model, the study area was discretized into a rectangular grid of cells by row and column. The active model grid covered an area of about 4.4 mi^2 and was divided into 107 rows of 152 columns (fig. 12). Uniform, square cells that measured 100 ft on a side were used throughout the simulated area. Of the 32,528 model cells, 8,126 cells were inactive beyond the study area and in areas covered by the St. Johns River, the turning basin, and the Atlantic Ocean.

The grid was oriented along a north-south axis for convenience. Neither a majority of known stresses or boundary conditions were aligned along any particular axis. No measurements of anisotropy were available and a lateral anisotropy ratio of 1:1 was used for simulation. Values of aquifer and confining-unit hydraulic properties were assigned to the center of each cell, defined as a node, by interpolation from observed point values.

The model was vertically discretized into two layers to simulate the S-zone and I-zone of the surficial aquifer system (fig. 9). Vertical impedance to flow within the surficial aquifer system was simulated by assigning leakance values at each cell between model layers. The leakance is the average vertical hydraulic conductivity of the aquifer or confining unit material between nodes divided by the vertical distance between corresponding nodes in adjacent model layers and is in units of feet per day per foot (d^{-1}). Leakage between the S-zone and the I-zone primarily is controlled by the thickness of the marsh-muck confining unit in areas where the confining unit is more than 1 ft thick. Vertical movement of water was assumed to be controlled by the vertical hydraulic conductivity of the aquifer where the confining unit is 1 ft thick or less.

Hydraulic Characteristics

Multi-well aquifer tests, single-well aquifer tests, and slug tests were conducted at NAVSTA Mayport to estimate the hydraulic properties of the surficial aquifer system. The lateral hydraulic conductivities estimated by these tests were the final values used in the ground-water flow model. Because there is no pumpage from the surficial aquifer and the surface-water features are tidally influenced, ground-water discharge could not be independently quantified and the lateral hydraulic conductivity distribution could not be reasonably estimated by model calibration.

An aquifer test consists of applying a known stress to an aquifer; measuring the change in water level, drawdown or recovery, due to that stress; and inferring the hydraulic properties of the aquifer. For the multi-well and the single-well aquifer tests, the aquifer was stressed by pumping at a constant, known rate. The principal difference between the multi-well tests and the single-well tests is the measurement of drawdowns in observation wells in addition to the pumped well. For slug tests, the aquifer was stressed by removing a known volume from a well and measuring the water level recovery.

Lateral hydraulic conductivity estimates from multi-well tests are considered most representative of aquifer hydraulic characteristics because the amount of water exchanged and, therefore, the volume of aquifer affected usually are greater than during slug tests or single-well tests. The median volumes removed during the multi-well, single-well, and slug tests at NAVSTA Mayport were about 900, 40, and 0.4 gallons (gal), respectively. Hydraulic conductivity estimates generally are averaged over a greater volume of aquifer by the inclusion of drawdown measurements from several observation wells. An increased number of observation well locations also increases the uniqueness of hydraulic conductivity estimates, even when fitting the test data to more complex models that account for unconfined conditions and vertical flow within the aquifer.

In addition to multi-well aquifer tests, single-well tests and slug tests were used to estimate lateral hydraulic conductivities. Although the multi-well aquifer tests provide the most representative estimates

APPENDIX H

LABORATORY ANALYTICAL REPORTS FOR SOIL

Tetra Tech NUS, Inc. **Internal Correspondence**

TO: **Mr. Rick Ofsanko** **DATE: July 26, 2000**

FROM: **William Howard Engle** **CC: File**

SUBJECT: **Inorganic Data Validation –TCLP Metals and TOC**
CTO123 – NS Mayport
SDG MP008

SAMPLES: **3/Leachates**

351-SS-SB02-05
425-SS-SB11-05
436-SS-SB01-05

1/Soil

351-SS-SB07-05

OVERVIEW

The sample set for CTO123, SDG MP008; Naval Station Mayport, Jacksonville, Florida consists of three (3) leachates and one (1) soil environmental samples. The leachates were analyzed for TCLP metals using SW-846 6010B. The soil sample was analyzed for FOC using ASTM D2974-84.

The samples were collected by Tetra Tech NUS on May 24, 2000 and analyzed by STL-No. Canton (formerly Quanterra) Laboratory. 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 6010B, 7470A, 1311, and ASTM D2974-84 analytical and reporting protocols. The data in this SDG was validated with regard to the following parameters:

- * Data Completeness
- * Holding Times
- * Initial/continuing calibrations
- Laboratory method/field quality control blank results

The symbol (*) indicates that all quality control criteria were met for this parameter. Supporting documentation is presented in Appendix C. Qualified analytical results are presented in Appendix A. The original laboratory data is contained in Appendix B.

TCLP Metals Fraction

Laboratory Blank Analysis

Affected leachates: all

Analyte	Maximum Concentration (ug/L)	Action Level (ug/L)
Barium	29.1 [1]	145.5
Chromium	3.8 [1]	19
Lead	3.9 [1]	19.5
Mercury	0.061 [1]	0.305

[1] Contamination in the preparation blank.

An action level of 5x the maximum concentration has been used to evaluate the sample for contamination in continuing calibration blank and preparation blank. Dilution factors and sample aliquots were taken into consideration when evaluating for blank contamination. Positive results < action level were qualified nondetected "U" due to contamination in the preparation blank.

All other quality control criteria were met.

Total Organic Carbon Fraction

All quality control criteria were met for this parameter.

Notes

The initial sampling effort had to be reconducted because the samples were received outside of the temperature control limits.

Executive Summary

Laboratory performance: Several analytes were detected in the laboratory blanks. Positive results < action levels were qualified "U" due to lab blank contamination

Other factors affecting data quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Inorganic Data Validation (February, 1994), and the NFESC guidelines "Navy IRCQM" (September, 1999). The text of the report has been formulated to address only those problems affecting data quality.

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

William Howard Engle

Project Chemist
Tetra Tech NUS, Inc.

Joseph A. Samchuck

Data Validation Quality Assurance Officer
Tetra Tech NUS, Inc.

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B – Results as reported by the laboratory
3. Appendix C – Supporting 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

MP008

HOLDING TIME
07/07/00

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/KG	351-SS-SB02-05	A0E260112001	NORMAL	MP008	OS	05/24/00	05/30/00	06/01/00	6	2	8
UG/KG	351-SS-SB05-05	A0E260112002	NORMAL	MP008	OS	05/24/00	05/30/00	06/01/00	6	2	8
UG/KG	351-SS-SB07-05RE	A0E260112003	NORMAL	MP008	OS	05/24/00	06/05/00	06/09/00	12	4	16
UG/KG	351-SS-SB02-05	A0E260112001	NORMAL	MP008	OV	05/24/00	06/06/00	06/06/00	13	0	13
UG/KG	351-SS-SB05-05	A0E260112002	NORMAL	MP008	OV	05/24/00	06/06/00	06/06/00	13	0	13
UG/KG	351-SS-SB07-05	A0E260112003	NORMAL	MP008	OV	05/24/00	06/06/00	06/06/00	13	0	13
UG/KG	351-SS-SB02-05	A0E260112001	NORMAL	MP008	PAH	05/24/00	06/03/00	06/08/00	10	5	15
UG/KG	351-SS-SB05-05	A0E260112002	NORMAL	MP008	PAH	05/24/00	06/03/00	06/12/00	10	9	19
UG/KG	351-SS-SB07-05	A0E260112003	NORMAL	MP008	PAH	05/24/00	06/03/00	06/08/00	10	5	15
UG/L	351-SS-SB02-05	A0E260112001	NORMAL	MP008	TCLPM	05/24/00	06/01/00	06/02/00	8	1	9
UG/L	425-1-SS-SB11-05	A0E260115001	NORMAL	MP008	TCLPM	05/24/00	06/01/00	06/02/00	8	1	9
UG/L	436-SS-SB01-05	A0E260115002	NORMAL	MP008	TCLPM	05/24/00	06/01/00	06/02/00	8	1	9
MG/L	425-1-SS-SB11-05	A0E260115001	NORMAL	MP008	TCLPS	05/24/00	06/01/00	06/02/00	8	1	9
MG/L	436-SS-SB01-05	A0E260115002	NORMAL	MP008	TCLPS	05/24/00	06/01/00	06/02/00	8	1	9
MG/L	351-SS-SB02-05	A0E260112001	NORMAL	MP008	TCLPT	05/24/00	06/08/00	06/12/00	15	4	19
MG/L	425-1-SS-SB11-05	A0E260115001	NORMAL	MP008	TCLPT	05/24/00	06/08/00	06/12/00	15	4	19
MG/L	436-SS-SB01-05	A0E260115002	NORMAL	MP008	TCLPT	05/24/00	06/08/00	06/12/00	15	4	19
MG/L	351-SS-SB02-05	A0E260112001	NORMAL	MP008	TCLPV	05/24/00	06/02/00	06/02/00	9	0	9
MG/L	425-1-SS-SB11-05	A0E260115001	NORMAL	MP008	TCLPV	05/24/00	06/02/00	06/02/00	9	0	9
MG/L	436-SS-SB01-05	A0E260115002	NORMAL	MP008	TCLPV	05/24/00	06/02/00	06/02/00	9	0	9
%	351-SS-SB07-05	A0E260112003	NORMAL	MP008	TOC	05/24/00	05/30/00	05/31/00	6	1	7
UG/L	351-SS-SB02-05	A0E260112001	NORMAL	MP008	TPAH	05/24/00	06/08/00	06/14/00	15	6	21
UG/L	425-1-SS-SB11-05	A0E260115001	NORMAL	MP008	TPAH	05/24/00	06/08/00	06/14/00	15	6	21
UG/L	436-SS-SB01-05	A0E260115002	NORMAL	MP008	TPAH	05/24/00	06/08/00	06/14/00	15	6	21
MG/KG	351-SS-SB02-05	A0E260112001	NORMAL	MP008	TPH	05/24/00	06/01/00	06/05/00	8	4	12

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	351-SS-SB05-05	A0E260112002	NORMAL	MP008	TPH	05/24/00	06/01/00	06/05/00	8	4	12
MG/KG	351-SS-SB07-05	A0E260112003	NORMAL	MP008	TPH	05/24/00	06/01/00	06/05/00	8	4	12

CTO123-NS MAYPORT
TCLP DATA
QUANTERRA
SDG: MP008

SAMPLE NUMBER:	351-SS-SB02-05			425-1-SS-SB11-05			436-SS-SB01-05					
SAMPLE DATE:	05/24/00			05/24/00			05/24/00			/ /		
LABORATORY ID:	A0E260112001			A0E260115001			A0E260115002					
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
INORGANICS												
ARSENIC	2.9	U		2.9	U		2.9	U				
BARIUM	48.6	~~B~~ U	A	28.9	~~B~~ U	A	104	~~B~~ U	A			
CADMIUM	0.30	U		0.37	~~B~~		0.90	~~B~~				
CHROMIUM	2.5	~~B~~ U	A	2.3	~~B~~ U	A	9.7	~~B~~ U	A			
LEAD	1.3	U		1.3	U		1.9	~~B~~ U	A			
MERCURY	1.4	~~B~~		2.3			13.4					
SELENIUM	8.9	~~B~~		7.7	~~B~~		6.9	~~B~~				
SILVER	1.0	U		1.0	U		1.0	U				

CTO123-NS MAYPORT
SOIL DATA
QUANTERRA
SDG: MP008

SAMPLE NUMBER:	351-SS-SB07-05			
SAMPLE DATE:	05/24/00	/ /	/ /	/ /
LABORATORY ID:	A0E260112003			
QC_TYPE:	NORMAL			
% SOLIDS:	93.5 %	100.0 %	100.0 %	100.0 %
UNITS:	%			
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
TOTAL ORGANIC CARBON	5.4											

APPENDIX B

Results as Reported by the Laboratory

STL North Canton

Metals Data Reporting Form

Sample Results

Lab Sample ID: DDR70 **Client ID:** 351-SS-SB02-05

Matrix: Water **Units:** ug/L **Prep Date:** 6/1/00 **Prep Batch:** 0153104

Weight: NA **Volume:** 50 **Percent Moisture:** NA

Element	WL/ Mass	IDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Arsenic	189.04	2.9	500	2.9	U	1	ICPST	6/2/00	19:58
Barium	493.41	0.3	10000	48.6	B	1	ICPST	6/2/00	19:58
Cadmium	226.50	0.3	100	0.3	U	1	ICPST	6/2/00	19:58
Chromium	267.72	0.8	500	2.5	B	1	ICPST	6/2/00	19:58
Lead	220.35	1.3	500	1.3	U	1	ICPST	6/2/00	19:58
Mercury	253.7	0.037	2	1.4	B	1	CVAA	6/5/00	12:08
Selenium	196.03	4.9	250	8.9	B	1	ICPST	6/2/00	19:58
Silver	328.07	1	500	1	U	1	ICPST	6/2/00	19:58

Comments: Lot #: A0E260112 Sample #: 1

Version 3.62.1

U Result is less than the IDL
B Result is between IDL and RL

Form 1 Equivalent

TETRA TECH NUS, INC.

Client Sample ID: 351-SS-SB02-05

General Chemistry

Lot-Sample #...: A0E230114-001 Work Order #...: DDJL1 Matrix.....: SO
Date Sampled...: 05/05/00 08:00 Date Received..: 05/08/00
% Moisture.....: 5.0

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Solids	95.0	0.10	%	MCANW 160.3 MOD	05/24-05/25/00	0145340

Dilution Factor: 1

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

TETRA TECH NUS, INC.

Client Sample ID: 351-SS-SB07-05

General Chemistry

Lot-Sample #...: A0E260112-003 Work Order #...: DDR7M Matrix.....: SO
Date Sampled...: 05/24/00 16:00 Date Received..: 05/25/00
% Moisture.....: 6.5

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Solids	93.5	10.0	%	MCAWW 160.3 MOD	06/06-06/07/00	0157401
	Dilution Factor: 1					
Total Organic Carbon	5.4		%	ASTM D2974-84	05/30-05/31/00	0151242
	Dilution Factor: 1					

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

STL North Canton

Metals Data Reporting Form

Instrument Runlog

Instrument: ICPST **Chart Number:** i50602a.arc

Sample Name	Date of Analysis	Time of Analysis
STD1-Blank	6/2/00	9:01 AM
CALSTD	6/2/00	9:06 AM
CAL 2	6/2/00	9:11 AM
ICV	6/2/00	9:15 AM
ICB	6/2/00	9:20 AM
CRI	6/2/00	9:25 AM
ZZZZZZ	6/2/00	9:30 AM
ZZZZZZ	6/2/00	9:35 AM
ICSA	6/2/00	9:40 AM
ICSAB	6/2/00	9:46 AM
CCV	6/2/00	9:51 AM
CCB	6/2/00	9:57 AM
ZZZZZZ	6/2/00	10:32 AM
ZZZZZZ	6/2/00	10:37 AM
ZZZZZZ	6/2/00	10:42 AM
ZZZZZZ	6/2/00	10:47 AM
ZZZZZZ	6/2/00	10:53 AM
ZZZZZZ	6/2/00	10:58 AM
ZZZZZZ	6/2/00	11:04 AM
ZZZZZZ	6/2/00	11:09 AM
ZZZZZZ	6/2/00	11:14 AM
ZZZZZZ	6/2/00	11:19 AM
CCV	6/2/00	11:26 AM
CCB	6/2/00	11:32 AM
ZZZZZZ	6/2/00	11:37 AM
ZZZZZZ	6/2/00	11:42 AM
ZZZZZZ	6/2/00	11:47 AM
ZZZZZZ	6/2/00	11:53 AM
ZZZZZZ	6/2/00	11:58 AM
ZZZZZZ	6/2/00	12:03 PM
ZZZZZZ	6/2/00	12:09 PM
ZZZZZZ	6/2/00	12:14 PM
ZZZZZZ	6/2/00	12:20 PM
ZZZZZZ	6/2/00	12:25 PM
CCV	6/2/00	12:32 PM
CCB	6/2/00	12:38 PM
ZZZZZZ	6/2/00	12:43 PM
ZZZZZZ	6/2/00	12:48 PM
ZZZZZZ	6/2/00	12:54 PM
ZZZZZZ	6/2/00	12:59 PM
ZZZZZZ	6/2/00	1:04 PM

Version 3.62.1 *Form 14 Equivalent*

STL North Canton

Metals Data Reporting Form

Instrument Runlog

Instrument: ICPST **Chart Number:** i50602a.arc

Sample Name	Date of Analysis	Time of Analysis
ZZZZZZ	6/2/00	1:10 PM
ZZZZZZ	6/2/00	1:15 PM
ZZZZZZ	6/2/00	1:20 PM
ZZZZZZ	6/2/00	1:25 PM
ZZZZZZ	6/2/00	1:30 PM
CCV	6/2/00	1:37 PM
CCB	6/2/00	1:43 PM
ZZZZZZ	6/2/00	1:48 PM
ZZZZZZ	6/2/00	1:53 PM
ZZZZZZ	6/2/00	1:58 PM
ZZZZZZ	6/2/00	2:03 PM
ZZZZZZ	6/2/00	2:08 PM
ZZZZZZ	6/2/00	2:13 PM
ZZZZZZ	6/2/00	2:18 PM
ZZZZZZ	6/2/00	2:23 PM
ZZZZZZ	6/2/00	2:28 PM
ZZZZZZ	6/2/00	2:33 PM
CCV	6/2/00	2:40 PM
CCB	6/2/00	2:46 PM
ZZZZZZ	6/2/00	3:03 PM
ZZZZZZ	6/2/00	3:08 PM
ZZZZZZ	6/2/00	3:13 PM
ZZZZZZ	6/2/00	3:22 PM
ZZZZZZ	6/2/00	3:27 PM
ZZZZZZ	6/2/00	3:32 PM
ZZZZZZ	6/2/00	3:38 PM
ZZZZZZ	6/2/00	3:43 PM
ZZZZZZ	6/2/00	3:49 PM
ZZZZZZ	6/2/00	3:54 PM
CCV	6/2/00	4:00 PM
CCB	6/2/00	4:06 PM
ZZZZZZ	6/2/00	4:11 PM
ZZZZZZ	6/2/00	4:16 PM
ZZZZZZ	6/2/00	4:23 PM
ZZZZZZ	6/2/00	4:28 PM
ZZZZZZ	6/2/00	4:33 PM
ZZZZZZ	6/2/00	4:38 PM
ZZZZZZ	6/2/00	4:43 PM
ZZZZZZ	6/2/00	4:48 PM
ZZZZZZ	6/2/00	4:54 PM
ZZZZZZ	6/2/00	5:00 PM

Version 3.62.1

Form 14 Equivalent

STL North Canton

Metals Data Reporting Form

Instrument Runlog

Instrument: ICPST **Chart Number:** i50602a.arc

Sample Name	Date of Analysis	Time of Analysis
CCV	6/2/00	5:05 PM
CCB	6/2/00	5:11 PM
ZZZZZZ	6/2/00	5:16 PM
ZZZZZZ	6/2/00	5:22 PM
ZZZZZZ	6/2/00	5:27 PM
ZZZZZZ	6/2/00	5:32 PM
ZZZZZZ	6/2/00	5:37 PM
ZZZZZZ	6/2/00	5:43 PM
ZZZZZZ	6/2/00	5:49 PM
ZZZZZZ	6/2/00	5:54 PM
ZZZZZZ	6/2/00	5:59 PM
ZZZZZZ	6/2/00	6:04 PM
CCV	6/2/00	6:10 PM
CCB	6/2/00	6:17 PM
ZZZZZZ	6/2/00	6:22 PM
ZZZZZZ	6/2/00	6:27 PM
ZZZZZZ	6/2/00	6:32 PM
ZZZZZZ	6/2/00	6:37 PM
ZZZZZZ	6/2/00	6:42 PM
ZZZZZZ	6/2/00	6:48 PM
ZZZZZZ	6/2/00	6:53 PM
ZZZZZZ	6/2/00	6:58 PM
ZZZZZZ	6/2/00	7:03 PM
ZZZZZZ	6/2/00	7:08 PM
CCV	6/2/00	7:14 PM
CCB	6/2/00	7:20 PM
ZZZZZZ	6/2/00	7:25 PM
ZZZZZZ	6/2/00	7:30 PM
ZZZZZZ	6/2/00	7:35 PM
DE0JJBT	6/2/00	7:42 PM
DE1F9B	6/2/00	7:47 PM
DE1F9C	6/2/00	7:52 PM
DDR70	6/2/00	7:58 PM
DDR70L	6/2/00	8:03 PM
DDR70S	6/2/00	8:08 PM
DDR70D	6/2/00	8:13 PM
CCV	6/2/00	8:19 PM
CCB	6/2/00	8:26 PM
DDR7X	6/2/00	8:31 PM
DDR83	6/2/00	8:36 PM
ZZZZZZ	6/2/00	8:41 PM

Version 3.62.1 *Form 14 Equivalent*

STL North Canton

Metals Data Reporting Form

Instrument Runlog

Instrument: ICPST **Chart Number:** i50602a.arc

Sample Name	Date of Analysis	Time of Analysis
CCV	6/2/00	8:47 PM
CCB	6/2/00	8:53 PM

STL North Canton

Metals Data Reporting Form

Instrument Runlog

Instrument: CVAA **Chart Number:** hg10605c.prn

Sample Name	Date of Analysis	Time of Analysis
Std1Rep1	6/5/00	11:05 AM
Std2Rep1	6/5/00	11:06 AM
Std3Rep1	6/5/00	11:07 AM
Std4Rep1	6/5/00	11:08 AM
Std5Rep1	6/5/00	11:10 AM
Std6Rep1	6/5/00	11:11 AM
Ck5ICV	6/5/00	11:12 AM
Ck4ICB	6/5/00	11:14 AM
Ck3CRA	6/5/00	11:15 AM
Ck2CCV	6/5/00	11:16 AM
Ck1CCB	6/5/00	11:18 AM
ZZZZZZ	6/5/00	11:19 AM
ZZZZZZ	6/5/00	11:20 AM
ZZZZZZ	6/5/00	11:21 AM
ZZZZZZ	6/5/00	11:22 AM
ZZZZZZ	6/5/00	11:24 AM
ZZZZZZ	6/5/00	11:25 AM
ZZZZZZ	6/5/00	11:26 AM
ZZZZZZ	6/5/00	11:28 AM
ZZZZZZ	6/5/00	11:30 AM
ZZZZZZ	6/5/00	11:31 AM
Ck2CCV	6/5/00	11:32 AM
Ck1CCB	6/5/00	11:34 AM
ZZZZZZ	6/5/00	11:35 AM
ZZZZZZ	6/5/00	11:36 AM
ZZZZZZ	6/5/00	11:37 AM
ZZZZZZ	6/5/00	11:39 AM
ZZZZZZ	6/5/00	11:40 AM
ZZZZZZ	6/5/00	11:41 AM
ZZZZZZ	6/5/00	11:42 AM
ZZZZZZ	6/5/00	11:44 AM
ZZZZZZ	6/5/00	11:45 AM
ZZZZZZ	6/5/00	11:46 AM
Ck2CCV	6/5/00	11:47 AM
Ck1CCB	6/5/00	11:49 AM
ZZZZZZ	6/5/00	11:50 AM
ZZZZZZ	6/5/00	11:51 AM
ZZZZZZ	6/5/00	11:52 AM
ZZZZZZ	6/5/00	11:54 AM
ZZZZZZ	6/5/00	11:55 AM
ZZZZZZ	6/5/00	11:56 AM

Version 3.62.1 *Form 14 Equivalent*

STL North Canton

Metals Data Reporting Form

Instrument Runlog

Instrument: CVAA **Chart Number:** hg10605c.prn

Sample Name	Date of Analysis	Time of Analysis
ZZZZZZ	6/5/00	11:58 AM
ZZZZZZ	6/5/00	11:59 AM
ZZZZZZ	6/5/00	12:01 PM
DE0JJB	6/5/00	12:02 PM
Ck2CCV	6/5/00	12:03 PM
Ck1CCB	6/5/00	12:04 PM
DE1F9B	6/5/00	12:05 PM
DE1F9C	6/5/00	12:06 PM
DDR70	6/5/00	12:08 PM
DDR70S	6/5/00	12:09 PM
DDR70D	6/5/00	12:10 PM
DDR7X	6/5/00	12:11 PM
ZZZZZZ	6/5/00	12:12 PM
ZZZZZZ	6/5/00	12:14 PM
Ck2CCV	6/5/00	12:15 PM
Ck1CCB	6/5/00	12:17 PM
Ck2CCV	6/5/00	12:50 PM
Ck1CCB	6/5/00	12:51 PM
DDR83	6/5/00	12:52 PM
Ck2CCV	6/5/00	12:54 PM
Ck1CCB	6/5/00	12:55 PM

STL North Canton

Metals Data Reporting Form

Initial Calibration Blank Results

Instrument: CVAA **Units:** ug/L

Chart Number: hg10605c.prn

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	Ck4ICB 6/5/00 11:14 AM									
			Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Mercury	253.7	2	-0.044	B								

Version 3.62.1

U Result is less than the IDL
B Result is between IDL and RL

Form 3 Equivalent

STL North Canton

Metals Data Reporting Form

Initial Calibration Blank Results

Instrument: ICPST **Units:** ug/L

Chart Number: i50602a.arc

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	ICB 6/2/00 9:20 AM Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Arsenic	189.042	500	2.9	U								
Barium	493.409	10000	0.52	B								
Cadmium	226.502	100	0.3	U								
Chromium	267.716	500	0.8	U								
Lead	220.353	500	1.3	U								
Selenium	196.026	250	4.9	U								
Silver	328.068	500	1	U								

Version 3.62.1

U Result is less than the IDL
B Result is between IDL and RL

Form 3 Equivalent

STL North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: CVAA **Units:** ug/L

Chart Number: hg10605c.prn

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	Ck1CCB 6/5/00 11:18 AM		Ck1CCB 6/5/00 11:34 AM		Ck1CCB 6/5/00 11:49 AM		Ck1CCB 6/5/00 12:04 PM		Ck1CCB 6/5/00 12:17 PM	
			Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Mercury	253.7	2	-0.049	B	-0.046	B	-0.051	B	-0.076	B	-0.058	B

Version 3.62.1

U Result is less than the IDL
B Result is between IDL and RL

Form 3 Equivalent

STL North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: CVAA **Units:** ug/L

Chart Number: hg10605c.prn

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	Ck1CCB 6/5/00 12:51 PM		Ck1CCB 6/5/00 12:55 PM							
			Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Mercury	253.7	2	-0.089	B	0.037	U						

STL North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: ICPST **Units:** ug/L

Chart Number: i50602a.arc

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	CCB 6/2/00 9:57 AM		CCB 6/2/00 11:32 AM		CCB 6/2/00 12:38 PM		CCB 6/2/00 1:43 PM		CCB 6/2/00 2:46 PM	
			Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Arsenic	189.042	500	2.9	U	2.9	U	2.9	U	2.9	U	2.9	U
Barium	493.409	10000	0.44	B	0.65	B	0.41	B	0.51	B	0.4	B
Cadmium	226.502	100	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Chromium	267.716	500	0.8	U	0.8	U	0.8	U	0.8	U	0.8	U
Lead	220.353	500	1.3	U	-2.2	B	-2	B	1.3	U	-1.5	B
Selenium	196.026	250	4.9	U	4.9	U	4.9	U	4.9	U	4.9	U
Silver	328.068	500	1	U	1	U	1	U	1	U	1	U

Version 3.62.1

U Result is less than the IDL
B Result is between IDL and RL

Form 3 Equivalent

STL North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: ICPST **Units:** ug/L

Chart Number: i50602a.arc

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	CCB 6/2/00 4:06 PM		CCB 6/2/00 5:11 PM		CCB 6/2/00 6:17 PM		CCB 6/2/00 7:20 PM		CCB 6/2/00 8:26 PM	
			Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Arsenic	189.042	500	2.9	U	2.9	U	2.9	U	2.9	U	-3.2	B
Barium	493.409	10000	0.67	B	0.68	B	0.61	B	0.57	B	1.2	B
Cadmium	226.502	100	0.37	B	0.3	U	0.3	U	0.3	U	0.3	U
Chromium	267.716	500	1.1	B	0.8	U	0.8	U	0.8	U	0.8	U
Lead	220.353	500	1.3	U	-1.8	B	1.3	U	1.3	U	1.3	U
Selenium	196.026	250	4.9	U	4.9	U	4.9	U	4.9	U	4.9	U
Silver	328.068	500	1	U	1	U	1	U	1	U	1	U

Version 3.62.1

U Result is less than the IDL
B Result is between IDL and RL

Form 3 Equivalent

STL North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: ICPST **Units:** ug/L

Chart Number: i50602a.arc

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	CCB 6/2/00 8:53 PM Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Arsenic	189.042	500	2.9	U								
Barium	493.409	10000	0.54	B								
Cadmium	226.502	100	0.3	U								
Chromium	267.716	500	1.2	B								
Lead	220.353	500	1.3	U								
Selenium	196.026	250	4.9	U								
Silver	328.068	500	1	U								

Version 3.62.1

U Result is less than the IDL
B Result is between IDL and RL

Form 3 Equivalent

STL North Canton

Metals Data Reporting Form

Preparation Blank Results

Lab Sample ID: DE0JJB

Matrix: Water **Units:** ug/L **Prep Date:** 6/1/00 **Prep Batch:** 0153104

Weight: NA **Volume:** 50 **Percent Moisture:** NA

Element	WL/ Mass	IDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Arsenic	189.042	2.9	500	-3.2	B	1	ICPST	6/2/00	19:42
Barium	493.409	0.3	10000	29.1	B	1	ICPST	6/2/00	19:42
Cadmium	226.502	0.3	100	0.3	U	1	ICPST	6/2/00	19:42
Chromium	267.716	0.8	500	3.8	B	1	ICPST	6/2/00	19:42
Lead	220.353	1.3	500	3.9	B	1	ICPST	6/2/00	19:42
Mercury	253.7	0.037	2	0.061	B	1	CVAA	6/5/00	12:02
Selenium	196.026	4.9	250	4.9	U	1	ICPST	6/2/00	19:42
Silver	328.068	1	500	1	U	1	ICPST	6/2/00	19:42

Comments: Lot #: A0E260115

Version 3.62.1

U Result is less than the IDL
B Result is between IDL and RL

Form 3 Equivalent

STL North Canton

Metals Data Reporting Form

Preparation Blank Results

Lab Sample ID: DE1F9B

Matrix: Water **Units:** ug/L **Prep Date:** 6/1/00 **Prep Batch:** 0153104

Weight: NA **Volume:** 50 **Percent Moisture:** NA

Element	WL/ Mass	IDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Arsenic	189.042	2.9	500	2.9	U	1	ICPST	6/2/00	19:47
Barium	493.409	0.3	10000	0.3	U	1	ICPST	6/2/00	19:47
Cadmium	226.502	0.3	100	0.3	U	1	ICPST	6/2/00	19:47
Chromium	267.716	0.8	500	0.8	U	1	ICPST	6/2/00	19:47
Lead	220.353	1.3	500	1.3	U	1	ICPST	6/2/00	19:47
Mercury	253.7	0.037	2	0.037	U	1	CVAA	6/5/00	12:05
Selenium	196.026	4.9	250	4.9	U	1	ICPST	6/2/00	19:47
Silver	328.068	1	500	1	U	1	ICPST	6/2/00	19:47

Comments: Lot #: A0E260115

Version 3.62.1

U Result is less than the IDL
B Result is between IDL and RL

Form 3 Equivalent

CASE NARRATIVE
GENERAL CHEMISTRY
MP008

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

Holding Time Violation

All samples were prepared and analyzed within the method-specified holding time requirements.

Method Blank Contamination

All analytes in the method blank were less than the associated reporting limits.

MS/MSD/LCS/DCS/Sample Duplicate Outside of QC Criteria

All spike recovery and RPD data met method-specific quality control criteria.

Calibrations

All calibrations and calibration verifications met method-specific quality control criteria.

Tetra Tech NUS, Inc.

Internal Correspondence

TO: Mr. Mark Peterson

Date: August 11, 2000

FROM: William Howard Engle

CC: File

SUBJECT: Organic Data Validation – VOA, SVOA, PAHs, and TRPHs,
CTO123 – NS Mayport
SDG MP008

SAMPLES: 3/Soil

351-SS-SB02-05
351-SS-SB05-05
351-SS-SB07-05

3/Leachates

351-SS-SB02-05
425-1-SS-SB11-05
436-SS-SB01-05

OVERVIEW

The sample set for CTO123, SDG MP008; Naval Station Mayport, Jacksonville, Florida consists of three (3) soil environmental samples and three (3) leachates. Samples 351-SS-SB02-05, 351-SS-SB05-05 were analyzed for volatile organics (VOAs), semi-volatile organics (SVOAs), polycyclic aromatic hydrocarbons (PAHs), and total recoverable petroleum hydrocarbons (TRPHs). Sample 351-SS-SB07-05 and the leachates were analyzed for all parameters, except FOC.

The samples were collected by Tetra Tech NUS on May 24, 2000 and analyzed by STL - North Canton (formerly Quanterra, Inc.). 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 (VOAs), 8270C (SVOAs), and 8310 (PAHs), and FL-PRO (TRPHs) analytical and reporting protocols. The data in this SDG was validated with regard to the following parameters:

* • Data Completeness
* • Holding Times
* • Initial/ continuing calibrations
  • Laboratory method/ field quality control blank results
* • Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Supporting documentation is presented in Appendix C. Qualified analytical results are presented in Appendix A. The original laboratory data is contained in Appendix B.

Volatile Fraction

Laboratory Blank Analyses

Affected samples: 351-SS-SB02-05
351-SS-SB05-05
351-SS-SB07-05

Compound	Maximum Concentration(ug/kg)	Action Level(ug/kg)
methylene chloride	0.74	7.4
2-butanone	1.2	6.0

An action level of 5X (10X for methylene chloride and acetone) the maximum concentration has been used to evaluate the sample for blank contamination. Dilution factors, percent solid, and sample aliquot were taken into consideration when evaluating for blank contamination. Positive results, < the action level for methylene chloride and 2-butanone, were qualified as nondetects (U) as a result of blank contamination.

All other quality control criteria was met for this fraction.

Semi-Volatile Fraction

Sample 351-SS-SB05-05 had one surrogate outside of the acceptance limits. No action was taken.

Laboratory Blank Analyses

Affected samples: All Soils

Compound	Maximum Concentration(ug/kg)	Action Level(ug/kg)
Bis (2-Ethylhexyl) phthalate	42	420

An action level of 10x the maximum concentration has been used to evaluate the sample for blank contamination. Dilution factors, percent solid, and sample aliquot were taken into consideration when evaluating for blank contamination. No action was taken.

Polynuclear Aromatic Hydrocarbons

Laboratory Blank Analyses

Affected samples: Leachates

Compound	Maximum Concentration(ug/L)	Action Level(ug/L)
Anthracene	7.5	37.5

An action level of 5x the maximum concentration has been used to evaluate the sample for blank contamination. Dilution factors and sample aliquots were taken into consideration when evaluating for blank contamination. Positive results, < the action level for anthracene, were qualified as nondetects (U) as a result of blank contamination.

Total Recoverable Petroleum Hydrocarbons

Laboratory Blank Analyses

Affected leachates: All

Compound	Maximum Concentration(mg/L)	Action Level(mg/L)
TRPH	1.3	6.5

An action level of 5X the maximum concentration has been used to evaluate the sample for blank contamination. Dilution factors and sample aliquots were taken into consideration when evaluating for blank contamination. Positive results, < the action level for TRPH, were qualified as nondetects (U) as a result of blank contamination.

Note

PAHs were reported in both the 8270C and 8310 analyses for the soil samples. Since the reprting limit are lower in the 8310 analysis these results should be used instead of the 8270C PAH results.

Executive Summary

Laboratory performance: Several blanks contained contamination. Positive results above the action levels were qualified "U".

Other factors affecting data quality: None.

The data for these analyzes were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (February 1994). The text of the report has been formulated to address only those problems affecting data quality.

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

William Howard Engle
Project Chemist
Tetra Tech NUS, Inc.

for:
Joseph A. Samchuck
Data Validation Quality Assurance Officer
Tetra Tech NUS, Inc.

Attachments:
1. Appendix A – Qualified analytical results
2. Appendix B – Results as reported by the laboratory
3. Appendix C – Supporting 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

MP008

HOLDING TIME
07/07/00

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/KG	351-SS-SB02-05	A0E260112001	NORMAL	MP008	OS	05/24/00	05/30/00	06/01/00	6	2	8
UG/KG	351-SS-SB05-05	A0E260112002	NORMAL	MP008	OS	05/24/00	05/30/00	06/01/00	6	2	8
UG/KG	351-SS-SB07-05RE	A0E260112003	NORMAL	MP008	OS	05/24/00	06/05/00	06/09/00	12	4	16
UG/KG	351-SS-SB02-05	A0E260112001	NORMAL	MP008	OV	05/24/00	06/06/00	06/06/00	13	0	13
UG/KG	351-SS-SB05-05	A0E260112002	NORMAL	MP008	OV	05/24/00	06/06/00	06/06/00	13	0	13
UG/KG	351-SS-SB07-05	A0E260112003	NORMAL	MP008	OV	05/24/00	06/06/00	06/06/00	13	0	13
UG/KG	351-SS-SB02-05	A0E260112001	NORMAL	MP008	PAH	05/24/00	06/03/00	06/08/00	10	5	15
UG/KG	351-SS-SB05-05	A0E260112002	NORMAL	MP008	PAH	05/24/00	06/03/00	06/12/00	10	9	19
UG/KG	351-SS-SB07-05	A0E260112003	NORMAL	MP008	PAH	05/24/00	06/03/00	06/08/00	10	5	15
UG/L	351-SS-SB02-05	A0E260112001	NORMAL	MP008	TCLPM	05/24/00	06/01/00	06/02/00	8	1	9
UG/L	425-1-SS-SB11-05	A0E260115001	NORMAL	MP008	TCLPM	05/24/00	06/01/00	06/02/00	8	1	9
UG/L	436-SS-SB01-05	A0E260115002	NORMAL	MP008	TCLPM	05/24/00	06/01/00	06/02/00	8	1	9
MG/L	425-1-SS-SB11-05	A0E260115001	NORMAL	MP008	TCLPS	05/24/00	06/01/00	06/02/00	8	1	9
MG/L	436-SS-SB01-05	A0E260115002	NORMAL	MP008	TCLPS	05/24/00	06/01/00	06/02/00	8	1	9
MG/L	351-SS-SB02-05	A0E260112001	NORMAL	MP008	TCLPT	05/24/00	06/08/00	06/12/00	15	4	19
MG/L	425-1-SS-SB11-05	A0E260115001	NORMAL	MP008	TCLPT	05/24/00	06/08/00	06/12/00	15	4	19
MG/L	436-SS-SB01-05	A0E260115002	NORMAL	MP008	TCLPT	05/24/00	06/08/00	06/12/00	15	4	19
MG/L	351-SS-SB02-05	A0E260112001	NORMAL	MP008	TCLPV	05/24/00	06/02/00	06/02/00	9	0	9
MG/L	425-1-SS-SB11-05	A0E260115001	NORMAL	MP008	TCLPV	05/24/00	06/02/00	06/02/00	9	0	9
MG/L	436-SS-SB01-05	A0E260115002	NORMAL	MP008	TCLPV	05/24/00	06/02/00	06/02/00	9	0	9
%	351-SS-SB07-05	A0E260112003	NORMAL	MP008	TOC	05/24/00	05/30/00	05/31/00	6	1	7
UG/L	351-SS-SB02-05	A0E260112001	NORMAL	MP008	TPAH	05/24/00	06/08/00	06/14/00	15	6	21
UG/L	425-1-SS-SB11-05	A0E260115001	NORMAL	MP008	TPAH	05/24/00	06/08/00	06/14/00	15	6	21
UG/L	436-SS-SB01-05	A0E260115002	NORMAL	MP008	TPAH	05/24/00	06/08/00	06/14/00	15	6	21
MG/KG	351-SS-SB02-05	A0E260112001	NORMAL	MP008	TPH	05/24/00	06/01/00	06/05/00	8	4	12

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	351-SS-SB05-05	A0E260112002	NORMAL	MP008	TPH	05/24/00	06/01/00	06/05/00	8	4	12
MG/KG	351-SS-SB07-05	A0E260112003	NORMAL	MP008	TPH	05/24/00	06/01/00	06/05/00	8	4	12

CTO123-MS MAYPORT
TCLP DATA
QUANTERRA
SDG: MP008

SAMPLE NUMBER:	351-SS-SB02-05	425-1-SS-SB11-05	436-SS-SB01-05	
SAMPLE DATE:	05/24/00	05/24/00	05/24/00	/ /
LABORATORY ID:	A0E260112001	A0E260115001	A0E260115002	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	0.0 %	0.0 %	0.0 %	100.0 %
UNITS:	MG/L	MG/L	MG/L	
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1-DICHLOROETHENE	0.07	U		0.07	U		0.07	U				
1,2-DICHLOROETHANE	0.025	U		0.025	U		0.025	U				
BENZENE	0.025	U		0.025	U		0.025	U				
CARBON TETRACHLORIDE	0.025	U		0.025	U		0.025	U				
CHLOROBENZENE	0.025	U		0.025	U		0.025	U				
CHLOROFORM	0.025	U		0.025	U		0.025	U				
METHYL ETHYL KETONE	20	U		20	U		20	U				
TETRACHLOROETHENE	0.07	U		0.07	U		0.07	U				
TRICHLOROETHENE	0.05	U		0.05	U		0.05	U				
VINYL CHLORIDE	0.05	U		0.05	U		0.05	U				

CTO123-MS MAYPORT
SOIL DATA
QUANTERRA
SDG: MP008

SAMPLE NUMBER:	351-SS-SB02-05			351-SS-SB05-05			351-SS-SB07-05			/ /		
SAMPLE DATE:	05/24/00			05/24/00			05/24/00					
LABORATORY ID:	A0E260112001			A0E260112002			A0E260112003					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	95.8 %			91.0 %			93.5 %			100.0 %		
UNITS:	UG/KG			UG/KG			UG/KG					
FIELD DUPLICATE OF:												
VOLATILES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
1,1,1,2-TETRACHLOROETHANE	5.7	U		5.7	U		6.2	U				
1,1,1-TRICHLOROETHANE	5.7	U		5.7	U		6.2	U				
1,1,2,2-TETRACHLOROETHANE	5.7	U		5.7	U		6.2	U				
1,1,2-TRICHLOROETHANE	5.7	U		5.7	U		6.2	U				
1,1-DICHLOROETHANE	5.7	U		5.7	U		6.2	U				
1,1-DICHLOROETHENE	5.7	U		5.7	U		6.2	U				
1,2,3-TRICHLOROPROPANE	5.7	U		5.7	U		6.2	U				
1,2-DIBROMO-3-CHLOROPROPANE	11	U		11	U		12	U				
1,2-DIBROMOETHANE	5.7	U		5.7	U		6.2	U				
1,2-DICHLOROETHANE	5.7	U		5.7	U		6.2	U				
1,2-DICHLOROETHENE (TOTAL)	5.7	U		5.7	U		6.2	U				
1,2-DICHLOROPROPANE	5.7	U		5.7	U		6.2	U				
2-BUTANONE	1.6	J		23	U		25	U				
2-CHLOROETHYL VINYL ETHER	57	U		57	U		62	U				
2-HEXANONE	23	U		23	U		25	U				
4-METHYL-2-PENTANONE	23	U		23	U		25	U				
ACETONE	6	J		23	U		25	U				
ACETONITRILE	110	U		110	U		120	U				
ACROLEIN	110	U		110	U		120	U				
ACRYLONITRILE	110	U		110	U		120	U				
ALLYL CHLORIDE	11	U		11	U		12	U				
BENZENE	5.7	U		5.7	U		6.2	U				
BROMODICHLOROMETHANE	5.7	U		5.7	U		6.2	U				
BROMOFORM	5.7	U		5.7	U		6.2	U				
BROMOMETHANE	11	U		11	U		12	U				
CARBON DISULFIDE	5.7	U		5.7	U		6.2	U				
CARBON TETRACHLORIDE	5.7	U		5.7	U		6.2	U				
CHLOROBENZENE	5.7	U		5.7	U		6.2	U				
CHLOROETHANE	11	U		11	U		12	U				
CHLOROFORM	5.7	U		5.7	U		6.2	U				
CHLOROMETHANE	11	U		11	U		12	U				
CHLOROPRENE	5.7	U		5.7	U		6.2	U				
CIS-1,2-DICHLOROETHENE	2.9	U		2.9	U		3.1	U				
CIS-1,3-DICHLOROPROPENE	5.7	U		5.7	U		6.2	U				

CTO123-MS MAYPORT
SOIL DATA
QUANTERRA
SDG: MP008

SAMPLE NUMBER:	351-SS-SB02-05			351-SS-SB05-05			351-SS-SB07-05					
SAMPLE DATE:	05/24/00			05/24/00			05/24/00			/ /		
LABORATORY ID:	A0E260112001			A0E260112002			A0E260112003					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	95.8 %			91.0 %			93.5 %			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												
DIBROMOCHLOROMETHANE	5.7	U		5.7	U		6.2	U				
DIBROMOMETHANE	5.7	U		5.7	U		6.2	U				
DICHLORODIFLUOROMETHANE	11	U		11	U		12	U				
ETHYL METHACRYLATE	5.7	U		5.7	U		6.2	U				
ETHYLBENZENE	5.7	U		5.7	U		6.2	U				
IODOMETHANE	5.7	U		5.7	U		6.2	U				
ISOBUTYL ALCOHOL	230	U		230	U		250	U				
METHACRYLONITRILE	5.7	U		5.7	U		6.2	U				
METHYL METHACRYLATE	5.7	U		5.7	U		6.2	U				
METHYL TERT-BUTYL ETHER	23	U		23	U		25	U				
METHYLENE CHLORIDE	1.3	J		1.3	J		0.89	J				
PROPIONITRILE	23	U		23	U		25	U				
STYRENE	5.7	U		5.7	U		6.2	U				
TETRACHLOROETHENE	5.7	U		5.7	U		6.2	U				
TOLUENE	5.7	U		5.7	U		6.2	U				
TRANS-1,2-DICHLOROETHENE	2.9	U		2.9	U		3.1	U				
TRANS-1,3-DICHLOROPROPENE	5.7	U		5.7	U		6.2	U				
TRANS-1,4-DICHLORO-2-BUTENE	5.7	U		5.7	U		6.2	U				
TRICHLOROETHENE	5.7	U		5.7	U		6.2	U				
TRICHLOROFLUOROMETHANE	11	U		11	U		12	U				
VINYL ACETATE	11	U		11	U		12	U				
VINYL CHLORIDE	11	U		11	U		12	U				
XYLENES, TOTAL	11	U		11	U		12	U				

CTO123-MS MAYPORT
TCLP DATA
QUANTERRA
SDG: MP008

SAMPLE NUMBER:	351-SS-SB02-05	425-1-SS-SB11-05	436-SS-SB01-05	
SAMPLE DATE:	05/24/00	05/24/00	05/24/00	/ /
LABORATORY ID:	A0E260112001	A0E260115001	A0E260115002	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	0.0 %	0.0 %	0.0 %	100.0 %
UNITS:	MG/L	MG/L	MG/L	
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,2-DICHLOROETHANE	0.025	U		0.025	U		0.025	U				
BENZENE	0.025	U		0.025	U		0.025	U				
CARBON TETRACHLORIDE	0.025	U		0.025	U		0.025	U				
CHLOROBENZENE	0.025	U		0.025	U		0.025	U				
CHLOROFORM	0.025	U		0.025	U		0.025	U				
METHYL ETHYL KETONE	20	U		20	U		20	U				
VINYL CHLORIDE	0.05	U		0.05	U		0.05	U				

CTO123-NS MAYPORT
TCLP DATA
QUANTERRA
SDG: MP008

SAMPLE NUMBER:	425-1-SS-SB11-05	436-SS-SB01-05		
SAMPLE DATE:	05/24/00	05/24/00	/ /	/ /
LABORATORY ID:	A0E260115001	A0E260115002		
QC_TYPE:	NORMAL	NORMAL		
% SOLIDS:	0.0 %	0.0 %	100.0 %	100.0 %
UNITS:	MG/L	MG/L		
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,4-DICHLOROBENZENE	0.05	U		0.05	U							
2,4,5-TRICHLOROPHENOL	0.05	U		0.05	U							
2,4,6-TRICHLOROPHENOL	0.05	U		0.05	U							
2,4-DINITROTOLUENE	0.05	U		0.05	U							
HEXACHLOROBENZENE	0.05	U		0.05	U							
HEXACHLOROBUTADIENE	0.05	U		0.05	U							
HEXACHLOROETHANE	0.05	U		0.05	U							
M & P-CRESOL	0.1	U		0.1	U							
NITROBENZENE	0.05	U		0.05	U							
O-CRESOL				0.05	U							
PENTACHLOROPHENOL	0.1	U		0.1	U							
PYRIDINE	0.1	U		0.1	U							

CTO123-NS MAYPORT
SOIL DATA
QUANTERRA
SDG: MP008

SAMPLE NUMBER:	351-SS-SB02-05			351-SS-SB05-05			351-SS-SB07-05RE					
SAMPLE DATE:	05/24/00			05/24/00			05/24/00			/ /		
LABORATORY ID:	A0E260112001			A0E260112002			A0E260112003					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	95.8 %			91.0 %			93.5 %			100.0 %		
UNITS:	UG/KG			UG/KG			UG/KG					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4,5-TETRACHLOROBENZENE	340	U		360	U		350	U				
1,2,4-TRICHLOROBENZENE	340	U		360	U		350	U				
1,2-DICHLOROBENZENE	340	U		360	U		350	U				
1,2-DIPHENYLHYDRAZINE	340	U		360	U		350	U				
1,3,5-TRINITROBENZENE	1700	U		1800	U		1700	U				
1,3-DICHLOROBENZENE	340	U		360	U		350	U				
1,3-DINITROBENZENE	340	U		360	U		350	U				
1,4-BENZENEDIAMINE	3400	U		3600	U		3500	U				
1,4-DICHLOROBENZENE	340	U		360	U		350	U				
1,4-DIOXANE	340	U		360	U		350	U				
1,4-NAPHTHOQUINONE	1700	U		1800	U		1700	U				
1-NAPHTHYLAMINE	340	U		360	U		350	U				
2,2'-OXYBIS(1-CHLOROPROPANE)	340	U		360	U		350	U				
2,3,4,6-TETRACHLOROPHENOL	1700	U		1800	U		1700	U				
2,4,5-TRICHLOROPHENOL	340	U		360	U		350	U				
2,4,6-TRICHLOROPHENOL	340	U		360	U		350	U				
2,4-DICHLOROPHENOL	340	U		360	U		350	U				
2,4-DIMETHYLPHENOL	340	U		360	U		350	U				
2,4-DINITROPHENOL	1700	U		1800	U		1700	U				
2,4-DINITROTOLUENE	340	U		360	U		350	U				
2,6-DICHLOROPHENOL	340	U		360	U		350	U				
2,6-DINITROTOLUENE	340	U		360	U		350	U				
2-ACETYLAMINOFLUORENE	3400	U		3600	U		3500	U				
2-CHLORONAPHTHALENE	340	U		360	U		350	U				
2-CHLOROPHENOL	340	U		360	U		350	U				
2-METHYLNAPHTHALENE	340	U		360	U		350	U				
2-METHYLPHENOL	340	U		360	U		350	U				
2-NAPHTHYLAMINE	340	U		360	U		350	U				
2-NITROANILINE	1700	U		1800	U		1700	U				
2-NITROPHENOL	340	U		360	U		350	U				
2-PICOLINE	690	U		730	U		710	U				
2-SEC-BUTYL-4,6-DINITROPHENOL	690	U		730	U		710	U				
3,3'-DICHLOROBENZIDINE	1700	U		1800	U		1700	U				
3,3'-DIMETHYLBENZIDINE	1700	U		1800	U		1700	U				

CTO123-NS MAYPORT
SOIL DATA
QUANTERRA
SDG: MP008

SAMPLE NUMBER:	351-SS-SB02-05	351-SS-SB05-05	351-SS-SB07-05RE	
SAMPLE DATE:	05/24/00	05/24/00	05/24/00	/ /
LABORATORY ID:	A0E260112001	A0E260112002	A0E260112003	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	95.8 %	91.0 %	93.5 %	100.0 %
UNITS:	UG/KG	UG/KG	UG/KG	
FIELD DUPLICATE OF:				

SEMIVOLATILES	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
3-METHYLCHOLANTHRENE	690	U		730	U		710	U				
3-METHYLPHENOL	340	U		360	U		350	U				
3-NITROANILINE	1700	U		1800	U		1700	U				
4,6-DINITRO-2-METHYLPHENOL	1700	U		1800	U		1700	U				
4-AMINOBIPHENYL	1700	U		1800	U		1700	U				
4-BROMOPHENYL PHENYL ETHER	340	U		360	U		350	U				
4-CHLORO-3-METHYLPHENOL	340	U		360	U		350	U				
4-CHLOROANILINE	340	U		360	U		350	U				
4-CHLOROPHENYL PHENYL ETHER	340	U		360	U		350	U				
4-METHYLPHENOL	340	U		360	U		350	U				
4-NITROANILINE	1700	U		1800	U		1700	U				
4-NITROPHENOL	1700	U		1800	U		1700	U				
4-NITROQUINOLINE-1-OXIDE	3400	U		3600	U		3500	U				
5-NITRO-O-TOLUIDINE	690	U		730	U		710	U				
7,12-DIMETHYLBENZ(A)ANTHRACENE	690	U		730	U		710	U				
A,A-DIMETHYLPHENETHYLAMINE	1700	U		1800	U		1700	U				
ACENAPHTHENE	340	U		360	U		350	U				
ACENAPHTHYLENE	340	U		360	U		350	U				
ACETOPHENONE	340	U		360	U		350	U				
ANILINE	340	U		360	U		350	U				
ANTHRACENE	340	U		360	U		350	U				
ARAMITE	690	U		730	U		710	U				
BENZIDINE	3400	U		3600	U		3500	U				
BENZO(A)ANTHRACENE	340	U		360	U		350	U				
BENZO(A)PYRENE	340	U		360	U		350	U				
BENZO(B)FLUORANTHENE	340	U		360	U		350	U				
BENZO(G,H,I)PERYLENE	340	U		360	U		350	U				
BENZO(K)FLUORANTHENE	340	U		360	U		350	U				
BENZYL ALCOHOL	340	U		360	U		350	U				
BIS(2-CHLOROETHOXY)METHANE	340	U		360	U		350	U				
BIS(2-CHLOROETHYL)ETHER	340	U		360	U		350	U				
BIS(2-ETHYLHEXYL)PHTHALATE	340	U		360	U		350	U				
BUTYLBENZYL PHTHALATE	340	U		360	U		350	U				
CARBAZOLE	340	U		360	U		350	U				

CTO123-NS MAYPORT
SOIL DATA
QUANTERRA
SDG: MP008

SAMPLE NUMBER:	351-SS-SB02-05	351-SS-SB05-05	351-SS-SB07-05RE	
SAMPLE DATE:	05/24/00	05/24/00	05/24/00	/ /
LABORATORY ID:	A0E260112001	A0E260112002	A0E260112003	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	95.8 %	91.0 %	93.5 %	100.0 %
UNITS:	UG/KG	UG/KG	UG/KG	
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
CHLOROBENZILATE	340	U		360	U		350	U				
CHRYSENE	340	U		360	U		350	U				
DI-N-BUTYL PHTHALATE	340	U		360	U		350	U				
DI-N-OCTYL PHTHALATE	340	U		360	U		350	U				
DIALLATE	690	U		730	U		710	U				
DIBENZO(A,H)ANTHRACENE	340	U		360	U		350	U				
DIBENZOFURAN	340	U		360	U		350	U				
DIETHYL PHTHALATE	340	U		360	U		350	U				
DIMETHYL PHTHALATE	340	U		360	U		350	U				
DIPHENYLAMINE	340	U		360	U		350	U				
ETHYL METHANESULFONATE	340	U		360	U		350	U				
FLUORANTHENE	340	U		360	U		350	U				
FLUORENE	340	U		360	U		350	U				
HEXACHLOROBENZENE	340	U		360	U		350	U				
HEXACHLOROBUTADIENE	340	U		360	U		350	U				
HEXACHLOROCYCLOPENTADIENE	1700	U		1800	U		1700	U				
HEXACHLOROETHANE	340	U		360	U		350	U				
HEXACHLOROPROPENE	3400	U		3600	U		3500	U				
INDENO(1,2,3-CD)PYRENE	340	U		360	U		350	U				
ISOPHORONE	340	U		360	U		350	U				
ISOSAFROLE	690	U		730	U		710	U				
METHAPYRILENE	1700	U		1800	U		1700	U				
METHYL METHANESULFONATE	340	U		360	U		350	U				
N-NITROSO-DI-N-BUTYLAMINE	340	U		360	U		350	U				
N-NITROSO-DI-N-PROPYLAMINE	340	U		360	U		350	U				
N-NITROSODIETHYLAMINE	340	U		360	U		350	U				
N-NITROSODIMETHYLAMINE	340	U		360	U		350	U				
N-NITROSODIPHENYLAMINE	340	U		360	U		350	U				
N-NITROSOMETHYLETHYLAMINE	340	U		360	U		350	U				
N-NITROSOMORPHOLINE	340	U		360	U		350	U				
N-NITROSOPIPERIDINE	340	U		360	U		350	U				
N-NITROSOPYRROLIDINE	340	U		360	U		350	U				
NAPHTHALENE	340	U		360	U		350	U				
NITROBENZENE	340	U		360	U		350	U				

CTO123-NS MAYPORT
SOIL DATA
QUANTERRA
SDG: MP008

SAMPLE NUMBER:	351-SS-SB02-05	351-SS-SB05-05	351-SS-SB07-05RE	
SAMPLE DATE:	05/24/00	05/24/00	05/24/00	/ /
LABORATORY ID:	A0E260112001	A0E260112002	A0E260112003	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	95.8 %	91.0 %	93.5 %	100.0 %
UNITS:	UG/KG	UG/KG	UG/KG	
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
O-TOLUIDINE	690	U		730	U		710	U				
P-DIMETHYLAMINOAZOBENZENE	690	U		730	U		710	U				
PENTACHLOROBENZENE	340	U		360	U		350	U				
PENTACHLOROETHANE	1700	U		1800	U		1700	U				
PENTACHLORONITROBENZENE	1700	U		1800	U		1700	U				
PENTACHLOROPHENOL	1700	U		1800	U		1700	U				
PHENACETIN	690	U		730	U		710	U				
PHENANTHRENE	340	U		360	U		350	U				
PHENOL	340	U		360	U		350	U				
PRONAMIDE	690	U		730	U		710	U				
PYRENE	340	U		360	U		350	U				
PYRIDINE	690	U		730	U		710	U				
SAFROLE	690	U		730	U		710	U				

CTO123-NS MAYPORT
TCLP DATA
QUANTERRA
SDG: MP008

SAMPLE NUMBER:	351-SS-SB02-05	425-1-SS-SB11-05	436-SS-SB01-05	
SAMPLE DATE:	05/24/00	05/24/00	05/24/00	/ /
LABORATORY ID:	A0E260112001	A0E260115001	A0E260115002	
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
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	20	U		20	U		20	U				
2-METHYLNAPHTHALENE	20	U		20	U		20	U				
ACENAPHTHENE	10	U		10	U		10	U				
ACENAPHTHYLENE	10	U		10	U		10	U				
ANTHRACENE	7.8-/0	J	A	10	U		7.7/0	J	A			
BENZO(A)ANTHRACENE	1	U		1	U		1	U				
BENZO(A)PYRENE	1	U		1	U		1	U				
BENZO(B)FLUORANTHENE	1	U		1	U		1	U				
BENZO(G,H,I)PERYLENE	1	U		1	U		1	U				
BENZO(K)FLUORANTHENE	3	U		3	U		3	U				
CHRYSENE	1	U		1	U		1	U				
DIBENZO(A,H)ANTHRACENE	1	U		1	U		1	U				
FLUORANTHENE	2	U		2	U		2	U				
FLUORENE	20	U		20	U		20	U				
INDENO(1,2,3-CD)PYRENE	1	U		1	U		1	U				
NAPHTHALENE	20	U		20	U		20	U				
PHENANTHRENE	10	U		10	U		10	U				
PYRENE	1	U		1	U		1	U				

CTO123-NS MAYPORT
SOIL DATA
QUANTERRA
SDG: MP008

SAMPLE NUMBER:	351-SS-SB02-05			351-SS-SB05-05			351-SS-SB07-05					
SAMPLE DATE:	05/24/00			05/24/00			05/24/00			/ /		
LABORATORY ID:	A0E260112001			A0E260112002			A0E260112003					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	95.8 %			91.0 %			93.5 %			100.0 %		
UNITS:	UG/KG			UG/KG			UG/KG					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	52	U		55	U		53	U				
2-METHYLNAPHTHALENE	52	U		55	U		53	U				
ACENAPHTHENE	52	U		55	U		53	U				
ACENAPHTHYLENE	52	U		55	U		53	U				
ANTHRACENE	~~24~~ 52	~~J~~ U	A	26 55	~~J~~ U	A	25 53	~~J~~ U	A			
BENZO(A)ANTHRACENE	5.2	U		5.5	U		5.3	U				
BENZO(A)PYRENE	5.2	U		5.5	U		5.3	U				
BENZO(B)FLUORANTHENE	5.2	U		5.5	U		5.3	U				
BENZO(G,H,I)PERYLENE	5.2	U		5.5	U		5.3	U				
BENZO(K)FLUORANTHENE	5.2	U		5.5	U		5.3	U				
CHRYSENE	5.2	U		5.5	U		5.3	U				
DIBENZO(A,H)ANTHRACENE	5.2	U		5.5	U		5.3	U				
FLUORANTHENE	5.2	U		5.5	U		6.9					
FLUORENE	52	U		55	U		53	U				
INDENO(1,2,3-CD)PYRENE	5.2	U		5.5	U		5.3	U				
NAPHTHALENE	52	U		55	U		53	U				
PHENANTHRENE	52	U		55	U		53	U				
PYRENE	5.2	U		5.5	U		5.3	U				

CTO123-NS MAYPORT
SOIL DATA
QUANTERRA
SDG: MP008

SAMPLE NUMBER:	351-SS-SB02-05			351-SS-SB05-05			351-SS-SB07-05					
SAMPLE DATE:	05/24/00			05/24/00			05/24/00			/ /		
LABORATORY ID:	A0E260112001			A0E260112002			A0E260112003					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	95.8 %			91.0 %			93.5 %			100.0 %		
UNITS:	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)	9.8	J		36			11	U				

CTO123-NS MAYPORT
TCLP DATA
QUANTERRA
SDG: MP008

SAMPLE NUMBER:	351-SS-SB02-05			425-1-SS-SB11-05			436-SS-SB01-05					
SAMPLE DATE:	05/24/00			05/24/00			05/24/00			/ /		
LABORATORY ID:	A0E260112001			A0E260115001			A0E260115002					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	MG/L			MG/L			MG/L					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PETROLEUM HYDROCARBONS												
TPH (C8-C40)	1.4	J	A	1.1	J	A	1.4	J	A			

APPENDIX B

Results as Reported by the Laboratory

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SO Lab Sample ID:A0E260112 001
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / g Date Received: 05/25/00
Work Order: DDR70102 Date Extracted:06/06/00
Dilution factor: 1.1 Date Analyzed: 06/06/00
Moisture %:4.2

QC Batch: 0159220

Client Sample Id: 351-SS-SB02-05

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
67-64-1	Acetone	6.0	J B
75-05-8	Acetonitrile	110	U
107-02-8	Acrolein	110	U
107-13-1	Acrylonitrile	110	U
71-43-2	Benzene	5.7	U
75-27-4	Bromodichloromethane	5.7	U
75-25-2	Bromoform	5.7	U
74-83-9	Bromomethane	11	U
75-15-0	Carbon disulfide	5.7	U
56-23-5	Carbon tetrachloride	5.7	U
108-90-7	Chlorobenzene	5.7	U
126-99-8	Chloroprene	5.7	U
124-48-1	Dibromochloromethane	5.7	U
96-12-8	1,2-Dibromo-3-chloropropane	11	U
75-00-3	Chloroethane	11	U
110-75-8	2-Chloroethyl vinyl ether	57	U
67-66-3	Chloroform	5.7	U
74-87-3	Chloromethane	11	U
107-05-1	Allyl chloride	11	U
74-95-3	Dibromomethane	5.7	U
110-57-6	trans-1,4-Dichloro-2-butene	5.7	U
75-71-8	Dichlorodifluoromethane	11	U
75-34-3	1,1-Dichloroethane	5.7	U
107-06-2	1,2-Dichloroethane	5.7	U
75-35-4	1,1-Dichloroethene	5.7	U
156-59-2	cis-1,2-Dichloroethene	2.9	U
156-60-5	trans-1,2-Dichloroethene	2.9	U
540-59-0	1,2-Dichloroethene (total)	5.7	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SO Lab Sample ID:A0E260112 001
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / g
Work Order: DDR70102
Dilution factor: 1.1
Moisture %:4.2

Date Received: 05/25/00
Date Extracted:06/06/00
Date Analyzed: 06/06/00

QC Batch: 0159220

Client Sample Id: 351-SS-SB02-05

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
78-87-5	1,2-Dichloropropane	5.7	U
10061-01-5	cis-1,3-Dichloropropene	5.7	U
10061-02-6	trans-1,3-Dichloropropene	5.7	U
100-41-4	Ethylbenzene	5.7	U
97-63-2	Ethyl methacrylate	5.7	U
75-69-4	Trichlorofluoromethane	11	U
591-78-6	2-Hexanone	23	U
74-88-4	Iodomethane	5.7	U
78-83-1	Isobutyl alcohol	230	U
126-98-7	Methacrylonitrile	5.7	U
75-09-2	Methylene chloride	1.3	J B
80-62-6	Methyl methacrylate	5.7	U
107-12-0	Propionitrile	23	U
100-42-5	Styrene	5.7	U
630-20-6	1,1,1,2-Tetrachloroethane	5.7	U
79-34-5	1,1,2,2-Tetrachloroethane	5.7	U
127-18-4	Tetrachloroethene	5.7	U
108-88-3	Toluene	5.7	U
71-55-6	1,1,1-Trichloroethane	5.7	U
79-00-5	1,1,2-Trichloroethane	5.7	U
79-01-6	Trichloroethene	5.7	U
96-18-4	1,2,3-Trichloropropane	5.7	U
108-05-4	Vinyl acetate	11	U
75-01-4	Vinyl chloride	11	U
1330-20-7	Xylenes (total)	11	U
1634-04-4	Methyl tert-butyl ether	23	U
106-93-4	1,2-Dibromoethane (EDB)	5.7	U
78-93-3	2-Butanone (MEK)	1.6	J B

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SO Lab Sample ID:A0E260112 001
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 1 / mL Date Received: 05/25/00
Work Order: DDR70106 Date Extracted:06/02/00
Dilution factor: 1 Date Analyzed: 06/02/00
Moisture %:4.2

QC Batch: 0157473

Client Sample Id: 351-SS-SB02-05

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) mg/L	Q
71-43-2	Benzene	0.025	U
56-23-5	Carbon tetrachloride	0.025	U
108-90-7	Chlorobenzene	0.025	U
67-66-3	Chloroform	0.025	U
107-06-2	1,2-Dichloroethane	0.025	U
75-35-4	1,1-Dichloroethylene	0.070	U
78-93-3	Methyl ethyl ketone	20	U
127-18-4	Tetrachloroethylene	0.070	U
79-01-6	Trichloroethylene	0.050	U
75-01-4	Vinyl chloride	0.050	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SO Lab Sample ID:A0E260112 001
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / g Date Received: 05/25/00
Work Order: DDR70102 Date Extracted:06/06/00
Dilution factor: 1.1 Date Analyzed: 06/06/00
Moisture %:4.2

QC Batch: 0159220

Client Sample Id: 351-SS-SB02-05

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
108-10-1	4-Methyl-2-pentanone (MIBK)	23	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SO Lab Sample ID:A0E260112 002
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / g Date Received: 05/25/00
Work Order: DDR7G102 Date Extracted:06/06/00
Dilution factor: 1.04 Date Analyzed: 06/06/00
Moisture %:9.0

QC Batch: 0159220

Client Sample Id: 351-SS-SB05-05

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
67-64-1	Acetone	23	U
75-05-8	Acetonitrile	110	U
107-02-8	Acrolein	110	U
107-13-1	Acrylonitrile	110	U
71-43-2	Benzene	5.7	U
75-27-4	Bromodichloromethane	5.7	U
75-25-2	Bromoform	5.7	U
74-83-9	Bromomethane	11	U
75-15-0	Carbon disulfide	5.7	U
56-23-5	Carbon tetrachloride	5.7	U
108-90-7	Chlorobenzene	5.7	U
126-99-8	Chloroprene	5.7	U
124-48-1	Dibromochloromethane	5.7	U
96-12-8	1,2-Dibromo-3-chloropropane	11	U
75-00-3	Chloroethane	11	U
110-75-8	2-Chloroethyl vinyl ether	57	U
67-66-3	Chloroform	5.7	U
74-87-3	Chloromethane	11	U
107-05-1	Allyl chloride	11	U
74-95-3	Dibromomethane	5.7	U
110-57-6	trans-1,4-Dichloro-2-butene	5.7	U
75-71-8	Dichlorodifluoromethane	11	U
75-34-3	1,1-Dichloroethane	5.7	U
107-06-2	1,2-Dichloroethane	5.7	U
75-35-4	1,1-Dichloroethene	5.7	U
156-59-2	cis-1,2-Dichloroethene	2.9	U
156-60-5	trans-1,2-Dichloroethene	2.9	U
540-59-0	1,2-Dichloroethene (total)	5.7	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SO Lab Sample ID:A0E260112 002
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / g Date Received: 05/25/00
Work Order: DDR7G102 Date Extracted:06/06/00
Dilution factor: 1.04 Date Analyzed: 06/06/00
Moisture %:9.0

QC Batch: 0159220

Client Sample Id: 351-SS-SB05-05

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
78-87-5	1,2-Dichloropropane	5.7	U
10061-01-5	cis-1,3-Dichloropropene	5.7	U
10061-02-6	trans-1,3-Dichloropropene	5.7	U
100-41-4	Ethylbenzene	5.7	U
97-63-2	Ethyl methacrylate	5.7	U
75-69-4	Trichlorofluoromethane	11	U
591-78-6	2-Hexanone	23	U
74-88-4	Iodomethane	5.7	U
78-83-1	Isobutyl alcohol	230	U
126-98-7	Methacrylonitrile	5.7	U
75-09-2	Methylene chloride	1.3	J B
80-62-6	Methyl methacrylate	5.7	U
107-12-0	Propionitrile	23	U
100-42-5	Styrene	5.7	U
630-20-6	1,1,1,2-Tetrachloroethane	5.7	U
79-34-5	1,1,2,2-Tetrachloroethane	5.7	U
127-18-4	Tetrachloroethene	5.7	U
108-88-3	Toluene	5.7	U
71-55-6	1,1,1-Trichloroethane	5.7	U
79-00-5	1,1,2-Trichloroethane	5.7	U
79-01-6	Trichloroethene	5.7	U
96-18-4	1,2,3-Trichloropropane	5.7	U
108-05-4	Vinyl acetate	11	U
75-01-4	Vinyl chloride	11	U
1330-20-7	Xylenes (total)	11	U
1634-04-4	Methyl tert-butyl ether	23	U
106-93-4	1,2-Dibromoethane (EDB)	5.7	U
78-93-3	2-Butanone (MEK)	23	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SO Lab Sample ID:A0E260112 002
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / g Date Received: 05/25/00
Work Order: DDR7G102 Date Extracted:06/06/00
Dilution factor: 1.04 Date Analyzed: 06/06/00
Moisture %:9.0

QC Batch: 0159220

Client Sample Id: 351-SS-SB05-05

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
108-10-1	4-Methyl-2-pentanone (MIBK)	23	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SO Lab Sample ID:A0E260112 003
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / g Date Received: 05/25/00
Work Order: DDR7M102 Date Extracted:06/06/00
Dilution factor: 1.15 Date Analyzed: 06/06/00
Moisture %:6.5

QC Batch: 0159220

Client Sample Id: 351-SS-SB07-05

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
67-64-1	Acetone	25	U
75-05-8	Acetonitrile	120	U
107-02-8	Acrolein	120	U
107-13-1	Acrylonitrile	120	U
71-43-2	Benzene	6.2	U
75-27-4	Bromodichloromethane	6.2	U
75-25-2	Bromoform	6.2	U
74-83-9	Bromomethane	12	U
75-15-0	Carbon disulfide	6.2	U
56-23-5	Carbon tetrachloride	6.2	U
108-90-7	Chlorobenzene	6.2	U
126-99-8	Chloroprene	6.2	U
124-48-1	Dibromochloromethane	6.2	U
96-12-8	1,2-Dibromo-3-chloropropane	12	U
75-00-3	Chloroethane	12	U
110-75-8	2-Chloroethyl vinyl ether	62	U
67-66-3	Chloroform	6.2	U
74-87-3	Chloromethane	12	U
107-05-1	Allyl chloride	12	U
74-95-3	Dibromomethane	6.2	U
110-57-6	trans-1,4-Dichloro-2-butene	6.2	U
75-71-8	Dichlorodifluoromethane	12	U
75-34-3	1,1-Dichloroethane	6.2	U
107-06-2	1,2-Dichloroethane	6.2	U
75-35-4	1,1-Dichloroethene	6.2	U
156-59-2	cis-1,2-Dichloroethene	3.1	U
156-60-5	trans-1,2-Dichloroethene	3.1	U
540-59-0	1,2-Dichloroethene (total)	6.2	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SO Lab Sample ID:A0E260112 003
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / g Date Received: 05/25/00
Work Order: DDR7M102 Date Extracted:06/06/00
Dilution factor: 1.15 Date Analyzed: 06/06/00
Moisture %:6.5

QC Batch: 0159220

Client Sample Id: 351-SS-SB07-05

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
78-87-5	1,2-Dichloropropane	6.2	U
10061-01-5	cis-1,3-Dichloropropene	6.2	U
10061-02-6	trans-1,3-Dichloropropene	6.2	U
100-41-4	Ethylbenzene	6.2	U
97-63-2	Ethyl methacrylate	6.2	U
75-69-4	Trichlorofluoromethane	12	U
591-78-6	2-Hexanone	25	U
74-88-4	Iodomethane	6.2	U
78-83-1	Isobutyl alcohol	250	U
126-98-7	Methacrylonitrile	6.2	U
75-09-2	Methylene chloride	0.89	J B
80-62-6	Methyl methacrylate	6.2	U
107-12-0	Propionitrile	25	U
100-42-5	Styrene	6.2	U
630-20-6	1,1,1,2-Tetrachloroethane	6.2	U
79-34-5	1,1,2,2-Tetrachloroethane	6.2	U
127-18-4	Tetrachloroethene	6.2	U
108-88-3	Toluene	6.2	U
71-55-6	1,1,1-Trichloroethane	6.2	U
79-00-5	1,1,2-Trichloroethane	6.2	U
79-01-6	Trichloroethene	6.2	U
96-18-4	1,2,3-Trichloropropane	6.2	U
108-05-4	Vinyl acetate	12	U
75-01-4	Vinyl chloride	12	U
1330-20-7	Xylenes (total)	12	U
1634-04-4	Methyl tert-butyl ether	25	U
106-93-4	1,2-Dibromoethane (EDB)	6.2	U
78-93-3	2-Butanone (MEK)	25	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SO Lab Sample ID:A0E260112 003
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / g Date Received: 05/25/00
Work Order: DDR7M102 Date Extracted:06/06/00
Dilution factor: 1.15 Date Analyzed: 06/06/00
Moisture %:6.5

QC Batch: 0159220

Client Sample Id: 351-SS-SB07-05

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
108-10-1	4-Methyl-2-pentanone (MIBK)	25	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SO Lab Sample ID:A0E260112 001
Method: SW846 8270C
Base/Neutrals and Acids (8270C)

Sample WT/Vol: 30.18 / g Date Received: 05/25/00
Work Order: DDR70103 Date Extracted:05/30/00
Dilution factor: 1 Date Analyzed: 06/01/00
Moisture %:4.2

QC Batch: 0151103

Client Sample Id: 351-SS-SB02-05

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
83-32-9	Acenaphthene	340	U
208-96-8	Acenaphthylene	340	U
98-86-2	Acetophenone	340	U
53-96-3	2-Acetylaminofluorene	3400	U
92-67-1	4-Aminobiphenyl	1700	U
62-53-3	Aniline	340	U
120-12-7	Anthracene	340	U
92-87-5	Benzidine	3400	U
56-55-3	Benzo(a)anthracene	340	U
205-99-2	Benzo(b)fluoranthene	340	U
207-08-9	Benzo(k)fluoranthene	340	U
191-24-2	Benzo(ghi)perylene	340	U
50-32-8	Benzo(a)pyrene	340	U
100-51-6	Benzyl alcohol	340	U
111-91-1	bis(2-Chloroethoxy)methane	340	U
111-44-4	bis(2-Chloroethyl) ether	340	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	340	U
117-81-7	bis(2-Ethylhexyl) phthalate	340	U
101-55-3	4-Bromophenyl phenyl ether	340	U
85-68-7	Butyl benzyl phthalate	340	U
106-47-8	4-Chloroaniline	340	U
59-50-7	4-Chloro-3-methylphenol	340	U
91-58-7	2-Chloronaphthalene	340	U
95-57-8	2-Chlorophenol	340	U
7005-72-3	4-Chlorophenyl phenyl ether	340	U
218-01-9	Chrysene	340	U
2303-16-4	Diallate	690	U
53-70-3	Dibenz(a,h)anthracene	340	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SO Lab Sample ID:A0E260112 001
Method: SW846 8270C
Base/Neutrals and Acids (8270C)

Sample WT/Vol: 30.18 / g Date Received: 05/25/00
Work Order: DDR70103 Date Extracted:05/30/00
Dilution factor: 1 Date Analyzed: 06/01/00
Moisture %:4.2

QC Batch: 0151103

Client Sample Id: 351-SS-SB02-05

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
132-64-9	Dibenzofuran	340	U
84-74-2	Di-n-butyl phthalate	340	U
95-50-1	1,2-Dichlorobenzene	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
91-94-1	3,3'-Dichlorobenzidine	1700	U
120-83-2	2,4-Dichlorophenol	340	U
87-65-0	2,6-Dichlorophenol	340	U
84-66-2	Diethyl phthalate	340	U
60-11-7	p-Dimethylaminoazobenzene	690	U
57-97-6	7,12-Dimethylbenz(a)anthrace	690	U
119-93-7	3,3'-Dimethylbenzidine	1700	U
105-67-9	2,4-Dimethylphenol	340	U
131-11-3	Dimethyl phthalate	340	U
117-84-0	Di-n-octyl phthalate	340	U
99-65-0	1,3-Dinitrobenzene	340	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
51-28-5	2,4-Dinitrophenol	1700	U
121-14-2	2,4-Dinitrotoluene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
88-85-7	2-sec-Butyl-4,6-dinitropheno	690	U
123-91-1	1,4-Dioxane	340	U
122-39-4	Diphenylamine	340	U
122-66-7	1,2-Diphenylhydrazine	340	U
62-50-0	Ethyl methanesulfonate	340	U
206-44-0	Fluoranthene	340	U
86-73-7	Fluorene	340	U
118-74-1	Hexachlorobenzene	340	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SO Lab Sample ID:A0E260112 001
Method: SW846 8270C
Base/Neutrals and Acids (8270C)

Sample WT/Vol: 30.18 / g Date Received: 05/25/00
Work Order: DDR70103 Date Extracted:05/30/00
Dilution factor: 1 Date Analyzed: 06/01/00
Moisture %:4.2

QC Batch: 0151103

Client Sample Id: 351-SS-SB02-05

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
87-68-3	Hexachlorobutadiene	340	U
77-47-4	Hexachlorocyclopentadiene	1700	U
67-72-1	Hexachloroethane	340	U
1888-71-7	Hexachloropropene	3400	U
193-39-5	Indeno(1,2,3-cd)pyrene	340	U
78-59-1	Isophorone	340	U
120-58-1	Isosafrole	690	U
91-80-5	Methapyrilene	1700	U
95-53-4	o-Toluidine	690	U
56-49-5	3-Methylcholanthrene	690	U
66-27-3	Methyl methanesulfonate	340	U
91-57-6	2-Methylnaphthalene	340	U
95-48-7	2-Methylphenol	340	U
108-39-4	3-Methylphenol	340	U
106-44-5	4-Methylphenol	340	U
91-20-3	Naphthalene	340	U
130-15-4	1,4-Naphthoquinone	1700	U
134-32-7	1-Naphthylamine	340	U
91-59-8	2-Naphthylamine	340	U
88-74-4	2-Nitroaniline	1700	U
99-09-2	3-Nitroaniline	1700	U
100-01-6	4-Nitroaniline	1700	U
98-95-3	Nitrobenzene	340	U
88-75-5	2-Nitrophenol	340	U
100-02-7	4-Nitrophenol	1700	U
56-57-5	4-Nitroquinoline-1-oxide	3400	U
924-16-3	N-Nitrosodi-n-butylamine	340	U
55-18-5	N-Nitrosodiethylamine	340	U

FORM I

Cooler Receipt Form

STL Pittsburgh

P: Preserved

UP: Unpreserved

Sample ID	TMET PH<2	DMET PH<2	HG PH<2	NUT(1) PH<2	CN PH ≥12	OG TPHC PH<2	PHEN PH<2	SULF PH ≥12	TOC PH<2	TOX PH<2	VOA P/UP	hardness PH<2			

(1) "NUT" could include sample bottles for ammonia, chemical oxygen demand, nitrate/nitrite, TKN, or total phosphorus

Comments: _____

Cooler Number	Temperature
	20°

Bottle Type	Lot Number*

* Please use an asterisk if bottle lot number was covered by the label.

[redacted]

Chain of Custody Record

Quanterra

OUK-4124

Client: TETRA TECH NUS	Project Manager: RICK ORSANKO	Date: 5/24/00	Chain Of Custody Number: 14155
Address: 794 S. MILITARY TRAIL	Telephone Number (Area Code)/Fax Number: (954) 570-5885 / 570-5974	Lab Number:	Page ____ of ____
City: DEERFIELD BEACH; State: FL; Zip Code: 33442	Site Contact: GARY BRAGANZA		
Project Name: NS MAYPORT, CTO-122 + 123	Carrier/Waybill Number: FED-EX / 811289329463		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	VOC	SVOC	TRPH	PAH	FOC	LEACHABILITY
351-SB-SB02-05	5/24/00	12:00	SOIL				NONE		✓	✓	✓	✓		✓
351-SS-SB05-05	↓	15:00	↓				↓		✓	✓	✓	✓		
351-SS-SB07-05		16:00							✓	✓	✓	✓	✓	
425-1-SS-SB11-05		14:00												✓
436-SS-SB01-05	↓	13:00	↓				↓							✓

Special Instructions: temp = 5.1°C

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☑ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Turn Around Time Required: ☒ Normal ☐ Rush

QC Level: ☒ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By: Gary Braganza	5/24/00	17:30	1. Received By: Jerry Miller	5-25-00	10:15
2. Relinquished By:			2. Received By:		
3. Relinquished By:			3. Received By:		

Comments:

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

STL North Canton

North Canton Facility

AOE 260112

Client: TetraTech Project: NS Marport Quote#: 33626
Cooler Received on: 5-25-00 Opened on: 5-25-00 by Jennifer Miller (Signature)

Fedx ☒ Client Drop Off ☐ UPS ☐ Airborne ☐
Other: _____

Cooler ☒ Safe ☐ Foam Box ☐ Client Cooler ☐ Other: _____
Quanterra Shipper No#: 5584

1. Were custody seals on the outside of the cooler and intact? Yes ☐ No ☒
   If YES, Quantity _____ Location _____
   Were the custody seals signed and dated? Yes ☐ No ☐ NA ☒
2. Shipper's packing slip attached to this form? Yes ☒ No ☐
3. Were custody papers included inside the cooler and relinquished? Yes ☒ No ☐
4. Did you sign the custody papers in the appropriate place? Yes ☒ No ☐
5. Packing material used:
Peanuts ☐ Bubble Wrap ☒ Vermiculite ☐ Foam ☐ None ☐ Other: _____
6. Cooler temperature upon receipt 5.1 °C (see back of form for multiple coolers/temp)
METHOD: Temperature Vial ☒ Coolant ☐ Against Bottles ☐
COOLANT: Wet Ice ☒ Blue Ice ☐ Dry Ice ☐ None ☐
7. Were all the bottles sealed in separate plastic bags? Yes ☐ No ☒
8. Did all bottles arrive in good condition (Unbroken)? Yes ☒ No ☐
9. Did all bottle labels and tags agree with the custody papers? Yes ☒ No ☐
10. Were samples at the correct pH? Yes ☐ No ☐ NA ☒
11. Were correct bottles used for the tests indicated? Yes ☒ No ☐
12. Were air bubbles >6 mm in any VOA vials? Yes ☐ No ☐ NA ☒
13. Was a sufficient amount of sample sent in each bottle? Yes ☒ No ☐
Contacted PM _____ Date: _____ by: _____ via Voice Mail ☐ Verbal ☐ Other ☐
Concerning: _____

Check √	MACRO	MACRO
1. CHAIN OF CUSTODY		
√	SR1A	Samples were received under proper custody procedures and without discrepancies.
	SR1B	The chain of custody and sample bottles did not agree. The following discrepancies occurred _____
2. SAMPLE CONDITION		
	SR2A	Sample(s) _____ were received or requested after the recommended holding time had expired.
	SR2B	Sample(s) _____ were received with insufficient volume
	SR2C	Sample(s) _____ were received in a broken container.
3. SAMPLE PRESERVATION		
√	SR3A	The temperature of the cooler was _____ ° C
	SR3C	Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving.
	SR3D	Sample(s) _____ were received incorrectly preserved and split off in sample receiving.
	SR3E	Samples (s) _____ were received incorrectly preserved and were unable to be analyzed.
	SR3F	Sample(s) _____ were received with bubble > 6 mm in diameter (cc: PM)
	N/A	See back for other anomalies

Quanterra ® Cooler Receipt Form/Narrative
North Canton Facility

Client ID	pH	Date	Initials

Cooler	Temp	Method	Comments

Discrepancies Cont.

Macro Name:

Macro Name:

Macro Name:

Other Anomalies:

Revision #13. Date: 09/04/98
SOP: NC-SC-0005, Sample Receiving
n:\qaqc\narrativ\cooler.doc

Chain of Custody Record

Quanterra

QUA-4124

Client: TETRA TECH NUS	Project Manager: RICK ORSANKO	Date: 5/24/00	Chain Of Custody Number: 14155
Address: 794 S. MILITARY TRAIL	Telephone Number (Area Code)/Fax Number: (954) 570-5885 / 570-5974	Lab Number:	Page ____ of ____
City: DEERFIELD BEACH, State: FL, Zip Code: 33442	Site Contact: GARY BRAGANZA		
Project Name: NS MAYPORT, CTO-122 + 123	Carrier/Waybill Number: FED-EX / 811289329463		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	VOC	SVOC	TRPH	PAH	FOC	LEACHABILITY
351-SB-SB02-05	5/24/00	12:00	SOIL				NONE		✓	✓	✓	✓		✓
351-SS-SB05-05	↓	15:00	↓				↓		✓	✓	✓	✓		
351-SS-SB07-05	↓	16:00	↓				↓		✓	✓	✓	✓	✓	
425-1-SS-SB11-05	↓	14:00	↓				↓							✓
436-SS-SB01-05	↓	13:00	↓				↓							✓

Special Instructions: temp 5.1°C

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Turn Around Time Required: ☒ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By: Gary Braganza	5/24/00	17:30	1. Received By: Jerry Miller	5/25/00	10:15A
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

STL North Canton

21

North Canton Facility

ADE 260115

Client: TetraTech Project: NS Mayport Quote#: 33626
Cooler Received on: 5-25-00 Opened on: 5-25-00 by: Jennifer Miller (Signature)

Fedx ☒ Client Drop Off ☐, UPS ☐ Airborne ☐
Other:_____

Cooler ☒ Safe ☐ Foam Box ☐ Client Cooler ☐ Other:_____
Quanterra Shipper No#: 3584

1. Were custody seals on the outside of the cooler and intact? Yes ☐ No ☒
   If YES, Quantity_____ Location_____
   Were the custody seals signed and dated? Yes ☐ No ☐ NA ☒
2. Shipper's packing slip attached to this form? Yes ☒ No ☐
3. Were custody papers included inside the cooler and relinquished? Yes ☒ No ☐
4. Did you sign the custody papers in the appropriate place? Yes ☒ No ☐
5. Packing material used:
Peanuts ☐, Bubble Wrap ☒ Vermiculite ☐ Foam ☐ None ☐ Other:_____
6. Cooler temperature upon receipt 5.1 °C (see back of form for multiple coolers/temp)
METHOD: Temperature Vial ☒ Coolant ☐ Against Bottles ☐
COOLANT: Wet Ice ☒ Blue Ice ☐ Dry Ice ☐ None ☐
7. Were all the bottles sealed in separate plastic bags? Yes ☐ No ☒
8. Did all bottles arrive in good condition (Unbroken)? Yes ☒ No ☐
9. Did all bottle labels and tags agree with the custody papers? Yes ☒ No ☐
10. Were samples at the correct pH? Yes ☐ No ☐ NA ☒
11. Were correct bottles used for the tests indicated? Yes ☒ No ☐
12. Were air bubbles >6 mm in any VOA vials? Yes ☐ No ☐ NA ☒
13. Was a sufficient amount of sample sent in each bottle? Yes ☒ No ☐
Contacted PM _____ Date:_____ by:_____ via Voice Mail ☐ Verbal ☐ Other ☐
Concerning:_____

Check √	MACRO	MACRO
1. CHAIN OF CUSTODY		
√	SR1A	Samples were received under proper custody procedures and without discrepancies.
	SR1B	The chain of custody and sample bottles did not agree. The following discrepancies occurred_____
2. SAMPLE CONDITION		
	SR2A	Sample(s)_____ were received or requested after the recommended holding time had expired.
	SR2B	Sample(s) _____ were received with insufficient volume
	SR2C	Sample(s)_____ were received in a broken container.
3. SAMPLE PRESERVATION		
√	SR3A	The temperature of the cooler was _____ °C
	SR3C	Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving.
	SR3D	Sample(s) _____ were received incorrectly preserved and split off in sample receiving.
	SR3E	Samples (s)_____ were received incorrectly preserved and were unable to be analyzed.
	SR3F	Sample(s)_____ were received with bubble > 6 mm in diameter (cc: PM)
	N/A	See back for other anomalies

Quanterra ® Cooler Receipt Form/Narrative
North Canton Facility

Client ID	pH	Date	Initials

Cooler	Temp	Method	Comments

Discrepancies Cont.

Macro Name:

Macro Name:

Macro Name:

Other Anomalies:

CASE NARRATIVE
GC/MS VOLATILES
MP008

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

Samples in this lot were preserved by freezing in water due to samples effervescing when preserved with sodium bisulfate.

Sample(s) which contain results between the MDL and the RL are flagged with "J". There is the possibility of false positive or misidentification at these quantitation levels. In analytical methods requiring confirmation of the analyte reported, confirmation will be performed only down to the standard reporting limit (SRL). The acceptance criteria for quality control criteria may not be met at these quantitation levels.

Holding Time Violation

All samples were prepared and analyzed within the method-specified holding time requirements.

Method Blank Contamination

Sample(s) which contain concentrations of target analyte(s) at a reportable level in the associated method blank(s) have been flagged with B. All target analytes in the method blank must be below the reporting limits (RL) or the associated sample(s) must be ND with the exception of Methylene chloride, Acetone, and 2-Butanone. These are common laboratory contaminants and may be present in concentrations up to five times the reporting limits.

MS/MSD/LCS/DCS and Surrogates Outside of QC Criteria

All spike recovery and RPD data met method-specific quality control criteria.

Calibrations

All calibrations and calibration verifications met method-specific quality control criteria.

UX8
Batch # _____

STL-North Canton
GC/MS VOA Run Log

Date: 5-13-00

Column	BFB	Analysis	Purge & Trap
Type: RSG24	100C for 0.1 min	45C for 2 min	Trap: 10
Length 20 M	to 200C @ 20 C/min	to 200C @ 15 C/min	Purge: 11
I.D. 0.18 mm	Hold — min	to — C @ — C/min	Desorb: 1 min @ 180 C
Flow Rate 0.4 ml/min		Hold 3 min	Bake: 6 min @ 220 C

Autor num	Sample ID Workorder#	Method	File Name	Amt purged	Sample prep	Comments	Sample status	Level 2 Review
—	BFB		BFB8417	50ng	Direct Inj.	60007	OK	SJC
1	8260 STD		UX87806	1000ng	V7185, V7193 V7202, V7204		OK	
2			UX87807	500ng	V7198, V7199 V7200		OK	
3			UX87808	250ng		V00523-8	OK	
4			UX87809	100ng			OK	
5			UX87810	25ng			OK	
6	Ec-Stock		UX87811	250ng		V7185 Acetone	OK	
7			UX87812			V7187 CCl4 Alcohol		
8			UX87813			V7188 Acetone	OK	
9	RPTX STD		UX87814	1000ng	V7189		(P)	
10			UX87815	500ng		Vial did not seal		
11			UX87816	250ng		V00523-8A9		
12			UX87817	100ng				
13			UX87818	25ng				

SAM 5-23-00

Analyst: SAM

№ 068

N:\MSVOA\ux8 run log

Due: 5/29

UX8
Batch # _____

STL-North Canton
GC/MS VOA Run Log

Date: 6-1-00

Column	BFB	Analysis	Purge & Trap
Type: DB624 (MLS/2HE's.)	100 C for 0.1 min	45 C for 2 min	Trap: 10
Length 30 M	to 200 C @ 20 C/min	to 200 C @ 8 C/min	Purge: 11
I.D. 0.18 mm	Hold ✓ min	to — C @ — C/min	Desorb: 1 min @ 150 C
Flow Rate 0.4 ml/min		Hold 3 min	Bake: 6 min @ 220 C

Auto num	Sample ID Workorder #	Method	File Name	Amt purged	Sample prep	Comments	Sample status	Level 2 Review
—	BFB		BF88424	50ng	Direct Inj.	(1 14)	OK	
1	8260 STD		UX87966	250ng		V00523-8	OK	
2	APPIX STD		UX87967			V00523-8A9	OK	
3	CHECK		UX87968	250ng (5ml/L)		AHEE	OK	
4	VBLK		UX87969	5ml/L			OK	
5	ODL3C10M	MLS	UX87970	1ml/5ml	01523164	M/P-X/O-Xylenes >100ng	OK	AQE246104
6	ODMCH102		UX87971	30ml/5ml		72ng 1,3,4-TMB	OK	AQE240222
7	ODMH101		UX87972			(OK) M/P-Xylenes - 2733ng, O-Xylene - 599ng, Toluene - 1000ng		AQE250121
8	ODM6T10C	VM (MLS)	UX87973	100ml/5ml	01523166	290ng PCE	OK	AQE240206
9	ODM72102		UX87974	40ml/5ml		660ng PCE	OK	
10	ODM7510C		UX87975	100ml/5ml		487ng PCE	OK	
11	ODM77102		UX87976			524ng PCE	OK	
12	ODM7810C		UX87977			752ng PCE	OK	
13	ODM7J102		UX87978			477ng PCE	OK	
14	ODG-A4	70% falls	UX87979	5ml/5ml		TIC >500ng	OK	AQE209102
15	~~ODGAE~~		UX87980	1/100* 10ml/5ml		(R) 10ml/5ml	(R)	
16	DE7DG102 2HECHECK	2HE	UX87981	1ml/5ml	250ng	01574731 AHEE	OK	
17	DE7DG103 2HECHECK		UX87982				OK	
18	~~ODMHH~~ DE7DG101 2HE VBLK		UX87983				OK	
19	ODL3C101		UX87984	0.5ml/5ml		1ml	(R)	AQE240104
20	ODL5R101		UX87985	1ml/5ml			OK	AQE240112
21	ODMQ110C		UX87986				OK	AQE240272
22	ODMQ110D	MS	UX87987		250ng	AHEE	OK	
23	ODMQ110E	MSD	UX87988				OK	
24	ODMQE10C		UX87989				OK	
25	ODNH6102		UX87990	0.5ml/5ml		Toluene >500ng	OK	AQE250121
26	ODR70106		UX87991	1ml/5ml			OK	AQE260112
27	ODR7X101		UX87992				OK	AQE260115
28	ODR83101		UX87993				OK	
29	ODR96101		UX87994				OK	AQE260119
30	ODVAK10		UX87995				OK	AQE270103

Analyst: SAM

STL North Canton

№ 075

N:\MSVOA\ux8 run log

Due: 6/6

UX8 0158434 - LLW
Batch # 0157495 - LLS

STL-North Canton
GC/MS VOA Run Log

Date: 6-5-00

MS#: 0158213

Column	BFB	Analysis	Purge & Trap
Type: DB624	100 C for 0.1 min	45 C for 2 min	Trap: 10
Length 20 M	to 200 C @ 20 C/min	to 200 C @ 15 C/min	Purge: 11
I.D. 0.18 mm	Hold — min	to — C @ — C/min	Desorb: 1 min @ 180 C
Flow Rate 0.4 ml/min		Hold 3 min	Bake: 6 min @ 210 C

Ok MS/MSD LS

Autoinum	Sample ID Workorder#	Method	File Name	Amt purged	Sample prep	Comments	Sample status	Level Review
—	BFB		BF88427	50cc	Direct Inj.	(8260) Single scan at top apex	Ok	
1	8260 STD		ux88027	250cc		V00523-8	Ok	
2	~~ACP 8260 STD~~		ux88028			V00523-8A9	Ok	
3	DE27H6102 Hal	DE97102	ux88029	250cc (5ml/5ml)		AFLEE	Ok	
4	DE27H6103 CHeXOxy		ux88030				Ok	
5	VBLG		ux88031	5g/5ml		cis-1,2-DCE + TCE >J-value	(R)	
6	DDK38101		ux88032	5.4g/5ml		Black not cleaned.	(R)	
7	VBLG		ux88033	5ml/5ml			Ok	
8	DE27H6101 VBLG	DE9499101	ux88034	5g/5ml			Ok	
9	DDK38101		ux88035	5.87g/5ml			Ok	AOE23 0169
10	VBLG		ux88036	5ml/5ml			—	
11	MS CHex	9@MS 9@MSD	ux88037	100cc/5ml		41-DCE↓	Ok	
12	MS CHexOxy		ux88038				Ok	
13	MS VBLG		ux88039			TCE "J" ed.	Ok	
14	DDWE8101	6.34	ux88040	100cc/5ml		(R) LLS		AOE300103
15	DDWCK101		ux88041	5ml/5ml			Ok	AOE300102
16	DEOF0101		ux88042	4ml/5ml			Ok	AOE310177
17	DEOF5101		ux88043	3ml/5ml			Ok	
18	DEOF6101		ux88044	5ml/5ml			Ok	
19	DEOF6102	MS	ux88045		250cc	AFLEE	Ok	
20	DEOF6103	MSD	ux88046				Ok	
21	DE253101		ux88047				Ok	AOPO 10182
22	DE257101		ux88048	0.7ml/5ml			Ok	
23	DE250101		ux88049	5ml/5ml			Ok	
24	DE25E101		ux88050				Ok	
25	DDR7X10E	TOX 8240 MS	ux88051	1ml/5ml	250cc	0157473 AFLEE	Ok	AOE26 0115
26	DDR7X10F	MSD	ux88052				Ok	
27	DE522103		ux88053	5ml/5ml			Ok	AOFO 20291
28	DE523103		ux88054				Ok	
29	DE524103		ux88055				Ok	
30	DE525101		ux88056				Ok	

STL North Canton Analyst _____ № 078 N:\MSVOA\ux8 run log 263

UX9
Batch # _____

STL-North Canton
GC/MS VOA Run Log

NON-VAP

Date: 5-9-2000

Column	BFB	Analysis	Purge & Trap
Type: DB624 50:1	100 C for 0.1 min	45 C for 2 min Heated	Trap: 10
Length 20 M	to 200 C @ 20 C/min	to 200 C @ 15 C/min	Purge: 11
I.D. 0.18 mm	Hold 1 min	to — C @ — C/min	Desorb: 1 min @ 190 C
Flow Rate 0.4 ml/min		Hold 4 min	Bake: 6 min @ 210 C

Auto num	Sample ID Workorder#	Method	File Name	Amt purged	Sample prep	Comments	Sample status	Level 2 Review
	BFB		BFB063	50 ng	direct	injection (9:01)	OK	RA
1	Blank		UX91646	5 ml				
2	8260 std		UX91647	1000 ng			OK	
3	↓		UX91648	500 ng	V7168		OK	
4			UX91649	250 ng	V7157 V7165	N00509-VAP N00509	OK	
5			UX91650	100 ng	V7155 V7153 V7158		OK	
6	↓		UX91651	25 ng			OK	
7	App IX std		UX91652	1000 ng			OK	
8	↓		UX91653	500 ng			OK	
9			UX91654	250 ng	V7163		OK	
10			UX91655	100 ng		N00509-A9 VAP N00509-A9	OK	
11	↓		UX91656	25 ng			OK	
12	check/IOV		UX91657	250 ng			OK	
13	check-Acetone IOV		UX91658	250 ng		Acetone only	OK	

0065095/K

STL North Canton
Analyst: SK

№ .051

N:\MS\VOA\ux9 run log

UX9

Batch # QK 0152174

MS Run# 0152058

STL-North Canton

GC/MS VOA Run Log

(5/30)

Date: 5·30·00

MCM A02762

Column	BFB	Analysis	Purge & Trap
Type: DB624 SB:1	100 C for 0.1 min	45 C for 2 min Heated	Trap: 10
Length 20 M	to 200 C @ 20 C/min	to 200 C @ 15 C/min	Purge: 11
I.D. 0.18 mm	Hold / min	to — C @ — C/min	Desorb: 1 min @ 190 C
Flow Rate 0.4 ml/min		Hold 4 min	Bake: 6 min @ 210 C

Auto nums	Sample ID Workorder#	Method	File Name	Amt purged	Sample prep	Comments	Sample status	Level 2 Review
	BFB		BFB081	50ng	direct	injection (11:22)	O/L	TS
1	8260std		UX92302	250ng		@ ~~N00509-A9~~		
2	App IX std		UX92303	250ng		N00509-A9	O/L	
3	8260std		UX92304	1000ng	U7220		O/L	
4			UX92305	500ng	U7213 U7209	N00530	O/L	
5			UX92306	250ng	U7210 U7211		OK	
6			UX92307	100ng	U7215 U7219		OK	
7			UX92308	25ng			OK	
8	check	ddxwH-102	UX92309	250ng		MEK failed	O/L	
9	Blank	ddxwH401	UX92310	5.0g Tsal			OK	
10	check		UX92311	250ng			OK	
11	check-Acetone		UX92312	250ng		Acetone only	O/L	
12	ddNPK-102	QK	UX92313	0.5g		not needed		
13	ddNPK202		UX92314	1.0g			OK	
14	ddP41-103	Ed	UX92315	5.0g		ISL557 (x2)		
15	ddP43-103		UX92316	5.0g		ISL (x3)	OK	
16	ddP45-103		UX92317	5.0g		ISL (x2)		
17	ddP47-103		UX92318	5.0g		ISL (x2)		
18	ddP4M-103		UX92319	5.0g		ISL LS977 (x2)		
19	ddP43 10L		UX92320	5.0g	250ng	ISL557	OK	
20	ddP43 10L		UX92321	5.0g	250ng	ISL	OK	
21	ddM60-10C	MZ	UX92322	5.0g			OK	
22	ddM6A-102		UX92323	5.0g			OK	
23	ddM6L-10C		UX92324	5.0g		ISL557 (x2)		
24	ddM6N-102		UX92325	5.0g			OK	
25	ddM6Q-10C		UX92326	5.0g			OK	
26	ddM6V-10C		UX92327	5.0g			OK	
27	ddM6W-102		UX92328	5.0g			OK	
28	ddM6X-10C		UX92329	5.0g			OK	
29	ddM6T-10C		UX92330	0.5g		MLP		

Analyst: SK

STL North Canton

№ .065

N:\MSVOA\ux9 run log

UX9
Batch # 0159220

STL-North Canton
GC/MS VOA Run Log

(6/8)

Date: 6·6·00

Column	BFB	Analysis	Purge & Trap
Type: DB624 so: 1	100 C for 0.1 min	45 C for 2 min Heated	Trap: 10
Length 20 M	to 200 C @ 20 C/min	to 200 C @ 15 C/min	Purge: 11
I.D. 0.18 mm	Hold ✓ min	to — C @ — C/min	Desorb: 1 min @ 190 C
Flow Rate 0.4 ml/min		Hold 4 min	Bake: 6 min @ 210 C

	Auto num	Sample ID Workorder#	Method	File Name	Amt purged	Sample prep	Comments	Sample status	Eval/Review
		BFB		BF0085	50 ng	direct injection	8:28	OK	
	1	8260 std		UX92443	250 ng		N00530	OK	✓
	2	App IX std		UX92444	250 ng		N00509-19	OK	
	3	check	dE9J0 102	UX92445	250 ng			OK	
	4	check	dE9J0-103	UX92446	250 ng			OK	
	5	Blank	dE9J0-101	UX92447	5.0 g/5 ml			OK	
	6	dd P9W-101	Fred	UX92448	4.71 g			OK	
	7	dd R70-102	Ed	UX92449	4.56 g			OK	
	8	dd R76-102		UX92450	4.79 g			OK	
	9	dd R7M-102		UX92451	4.33 g			OK	
250199	10	dd WE6-101		UX92452	6.27 g		IS1557		
260112	11	dd WE7-101		UX92453	5.78 g			OK	
	12	dd WE9-101		UX92454	6.21 g			OK	
300103	13	d E04V-102		UX92455	5.58 g			OK	
	14	dE05A-102		UX92456	5.56 g			OK	
	15	dE05d-102		UX92457	6.28 g			OK	
310148	16	dE05F-102		UX92458	5.22 g			OK	
	17	dE05H-102		UX92459	5.47 g			OK	
310154	18	dE05K-102		UX92460	5.63 g			OK	
	19	dE05L-102		UX92461	5.87 g			OK	
	20	dE05M-102		UX92462	5.76 g			OK	
	21	dE05N-102		UX92463	5.95 g			OK	
	22	dE05P-102		UX92464	5.88 g			OK	
	23	dE089-101	Ed	UX92465	4.46 g			OK	
	24	dE08d-101		UX92466	5.84 g			OK	
	25	dE08E-101		UX92467	5.57 g			OK	
	26	dd WE6-101	Ed	UX92468	5.99 g			OK	
								0001	0750

Analyst: SK

STL North Canton

№ 069

N:\MSVOA\ux9 run log

BLANK WORKORDER NO.

DE9J0101

SW846 8260B METHOD BLANK SUMMARY

Lab Name: Severn Trent Laboratories, Inc.

Lab Code: QESCAN

SDG Number:MP008

Lab File ID: ux92447.d

Lot Number: A0E260112

Date Analyzed: 06/06/00

Time Analyzed: 10:25

Matrix: SOLID

Date Extracted:06/06/00

GC Column: DB 624 ID: .18

Extraction Method: 5035

Instrument ID: UX9

Level:(low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	351-SS-SB05-05	DDR7G102	ux92450.d	06/06/00	11:39
02	351-SS-SB07-05	DDR7M102	ux92451.d	06/06/00	12:04
03	351-SS-SB02-05	DDR70102	ux92449.d	06/06/00	11:15
04	CHECK SAMPLE	DE9J0102 C	ux92445.d	06/06/00	09:35
05	DUPLICATE CHECK	DE9J0103 L	ux92446.d	06/06/00	10:00
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

COMMENTS:

FORM IV

TETRA TECH NUS, INC.
METHOD BLANK COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SOLID Lab Sample ID:A0F070000 220
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / g Date Received: 05/25/00
Work Order: DE9J0101 Date Extracted:06/06/00
Dilution factor: 1 Date Analyzed: 06/06/00
Moisture %:NA

QC Batch: 0159220

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
67-64-1	Acetone	3.2	J
75-05-8	Acetonitrile	100	U
107-02-8	Acrolein	100	U
107-13-1	Acrylonitrile	100	U
71-43-2	Benzene	5.0	U
75-27-4	Bromodichloromethane	5.0	U
75-25-2	Bromoform	5.0	U
74-83-9	Bromomethane	10	U
75-15-0	Carbon disulfide	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
108-90-7	Chlorobenzene	5.0	U
126-99-8	Chloroprene	5.0	U
124-48-1	Dibromochloromethane	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	10	U
75-00-3	Chloroethane	10	U
110-75-8	2-Chloroethyl vinyl ether	50	U
67-66-3	Chloroform	5.0	U
74-87-3	Chloromethane	10	U
107-05-1	Allyl chloride	10	U
74-95-3	Dibromomethane	5.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	U
75-71-8	Dichlorodifluoromethane	10	U
75-34-3	1,1-Dichloroethane	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
156-59-2	cis-1,2-Dichloroethene	2.5	U
156-60-5	trans-1,2-Dichloroethene	2.5	U
540-59-0	1,2-Dichloroethene (total)	5.0	U

FORM I

TETRA TECH NUS, INC.
METHOD BLANK COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SOLID Lab Sample ID:A0F070000 220
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / g Date Received: 05/25/00
Work Order: DE9J0101 Date Extracted:06/06/00
Dilution factor: 1 Date Analyzed: 06/06/00
Moisture %:NA

QC Batch: 0159220

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
100-41-4	Ethylbenzene	5.0	U
97-63-2	Ethyl methacrylate	5.0	U
75-69-4	Trichlorofluoromethane	10	U
591-78-6	2-Hexanone	20	U
74-88-4	Iodomethane	5.0	U
78-83-1	Isobutyl alcohol	200	U
126-98-7	Methacrylonitrile	5.0	U
75-09-2	Methylene chloride	0.74	J
80-62-6	Methyl methacrylate	5.0	U
107-12-0	Propionitrile	20	U
100-42-5	Styrene	5.0	U
630-20-6	1,1,1,2-Tetrachloroethane	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
108-88-3	Toluene	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
79-01-6	Trichloroethene	5.0	U
96-18-4	1,2,3-Trichloropropane	5.0	U
108-05-4	Vinyl acetate	10	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylenes (total)	10	U
1634-04-4	Methyl tert-butyl ether	20	U
106-93-4	1,2-Dibromoethane (EDB)	5.0	U
78-93-3	2-Butanone (MEK)	1.2	J

FORM I

TETRA TECH NUS, INC.
METHOD BLANK COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SOLID Lab Sample ID:A0F070000 220
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / g
Work Order: DE9J0101
Dilution factor: 1
Moisture %:NA

Date Received: 05/25/00
Date Extracted:06/06/00
Date Analyzed: 06/06/00

QC Batch: 0159220

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
108-10-1	4-Methyl-2-pentanone (MIBK)	20	U

FORM I

BLANK WORKORDER NO.

DE7DG101

SW846 8260B METHOD BLANK SUMMARY

Lab Name: Severn Trent Laboratories, Inc.

Lab Code: QESCAN

SDG Number:MP008

Lab File ID: ux87983.d

Lot Number: A0E260115

Date Analyzed: 06/02/00

Time Analyzed: 02:21

Matrix: WATER

Date Extracted:06/02/00

GC Column: DB 624 ID: .18

Extraction Method: 1311/5030B

Instrument ID: UX8

Level:(low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	INTRA-LAB QC	DDMQ110C	ux87986.d	06/02/00	03:32
02	LAB MS/MSD	DDMQ110D S	ux87987.d	06/02/00	03:56
03	LAB MS/MSD	DDMQ110E D	ux87988.d	06/02/00	04:20
04	425-1-SS-SB11-05	DDR7X10E S	ux88051.d	06/06/00	04:20
05	425-1-SS-SB11-05	DDR7X10F D	ux88052.d	06/06/00	04:43
06	425-1-SS-SB11-05	DDR7X101	ux87992.d	06/02/00	05:56
07	436-SS-SB01-05	DDR83101	ux87993.d	06/02/00	06:19
08	CHECK SAMPLE	DE7DG102 C	ux87981.d	06/02/00	01:33
09	DUPLICATE CHECK	DE7DG103 L	ux87982.d	06/02/00	01:57
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

COMMENTS:

FORM IV

BLANK WORKORDER NO.

DE7DG101

SW846 8260B METHOD BLANK SUMMARY

Lab Name: Severn Trent Laboratories, Inc.

Lab Code: QESCAN

SDG Number:MP008

Lab File ID: ux87983.d

Lot Number: A0E260112

Date Analyzed: 06/02/00

Time Analyzed: 02:21

Matrix: WATER

Date Extracted:06/02/00

GC Column: DB 624 ID: .18

Extraction Method: 1311/5030B

Instrument ID: UX8

Level:(low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	INTRA-LAB QC	DDMQ110C	ux87986.d	06/02/00	03:32
02	LAB MS/MSD	DDMQ110D S	ux87987.d	06/02/00	03:56
03	LAB MS/MSD	DDMQ110E D	ux87988.d	06/02/00	04:20
04	LAB MS/MSD	DDR7X10E S	ux88051.d	06/06/00	04:20
05	LAB MS/MSD	DDR7X10F D	ux88052.d	06/06/00	04:43
06	INTRA-LAB QC	DDR7X101	ux87992.d	06/02/00	05:56
07	351-SS-SB02-05	DDR70106	ux87991.d	06/02/00	05:32
08	CHECK SAMPLE	DE7DG102 C	ux87981.d	06/02/00	01:33
09	DUPLICATE CHECK	DE7DG103 L	ux87982.d	06/02/00	01:57
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

COMMENTS:

FORM IV

TETRA TECH NUS, INC.
METHOD BLANK COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) WATER Lab Sample ID:A0F050000 473
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 1 / mL Date Received: 05/25/00
Work Order: DE7DG101 Date Extracted:06/02/00
Dilution factor: 1 Date Analyzed: 06/02/00
Moisture %:NA

QC Batch: 0157473

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) mg/L	Q
71-43-2	Benzene	0.025	U
56-23-5	Carbon tetrachloride	0.025	U
108-90-7	Chlorobenzene	0.025	U
67-66-3	Chloroform	0.025	U
107-06-2	1,2-Dichloroethane	0.025	U
75-35-4	1,1-Dichloroethylene	0.070	U
78-93-3	Methyl ethyl ketone	0.0085	J
127-18-4	Tetrachloroethylene	0.070	U
79-01-6	Trichloroethylene	0.050	U
75-01-4	Vinyl chloride	0.050	U

FORM I

CASE NARRATIVE
GC/MS SEMIVOLATILES
MP008

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

Holding Time Violation

All samples were prepared and analyzed within the method-specified holding time requirements.

Method Blank Contamination

All analytes in the method blank were less than the associated reporting limits.

MS/MSD/LCS/DCS and Surrogates Outside of QC Criteria

Sample 351-SS-SB05-05 had up to one surrogate recovery per fraction outside acceptance limits. However, since the recovery was greater than 10% and all associated QC met criteria, no corrective action was taken.

Calibrations

All calibrations and calibration verifications met method-specific quality control criteria.

BLANK WORKORDER NO.

DE5XT101

SW846 8270C METHOD BLANK SUMMARY

Lab Name: Severn Trent Laboratories, Inc.

Lab Code: QESCAN

SDG Number:MP008

Lab File ID: de5xt101.

Lot Number: A0E260112

Date Analyzed: 06/12/00

Time Analyzed: 12:40

Matrix: SOLID

Date Extracted:06/05/00

GC Column: DB-5.625 ID: .32

Extraction Method: 3550B

Instrument ID: HP7

Level:(low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS, LCSD, MS , MSD:

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	351-SS-SB07-05	DDR7M203	ddr7m203.	06/09/00	15:45
02	LAB MS/MSD	DE3RL10A D	de3rl10a.	06/12/00	16:10
03	INTRA-LAB QC	DE3RL108	de3rl108.	06/12/00	14:59
04	LAB MS/MSD	DE3RL109 S	de3rl109.	06/12/00	15:35
05	CHECK SAMPLE	DE5XT102 C	de5xt102.	06/09/00	14:35
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

COMMENTS:

FORM IV

TETRA TECH NUS, INC.
METHOD BLANK COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SOLID Lab Sample ID:A0F050000 106
Method: SW846 8270C
Base/Neutrals and Acids (8270C)

Sample WT/Vol: 30 / g Date Received: 06/02/00
Work Order: DE5XT101 Date Extracted:06/05/00
Dilution factor: 1 Date Analyzed: 06/12/00
Moisture %:NA

QC Batch: 0157106

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
83-32-9	Acenaphthene	330	U
208-96-8	Acenaphthylene	330	U
98-86-2	Acetophenone	330	U
53-96-3	2-Acetylaminofluorene	3300	U
92-67-1	4-Aminobiphenyl	1600	U
62-53-3	Aniline	330	U
120-12-7	Anthracene	330	U
92-87-5	Benzidine	3300	U
56-55-3	Benzo(a)anthracene	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
191-24-2	Benzo(ghi)perylene	330	U
50-32-8	Benzo(a)pyrene	330	U
100-51-6	Benzyl alcohol	330	U
111-91-1	bis(2-Chloroethoxy)methane	330	U
111-44-4	bis(2-Chloroethyl) ether	330	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	330	U
117-81-7	bis(2-Ethylhexyl) phthalate	42	J
101-55-3	4-Bromophenyl phenyl ether	330	U
85-68-7	Butyl benzyl phthalate	330	U
106-47-8	4-Chloroaniline	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-58-7	2-Chloronaphthalene	330	U
95-57-8	2-Chlorophenol	330	U
7005-72-3	4-Chlorophenyl phenyl ether	330	U
218-01-9	Chrysene	330	U
2303-16-4	Diallate	660	U
53-70-3	Dibenz(a,h)anthracene	330	U

FORM I

TETRA TECH NUS, INC.
METHOD BLANK COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SOLID Lab Sample ID:A0F050000 106
Method: SW846 8270C
Base/Neutrals and Acids (8270C)

Sample WT/Vol: 30 / g Date Received: 06/02/00
Work Order: DE5XT101 Date Extracted:06/05/00
Dilution factor: 1 Date Analyzed: 06/12/00
Moisture %:NA

QC Batch: 0157106

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
132-64-9	Dibenzofuran	330	U
84-74-2	Di-n-butyl phthalate	330	U
95-50-1	1,2-Dichlorobenzene	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
91-94-1	3,3'-Dichlorobenzidine	1600	U
120-83-2	2,4-Dichlorophenol	330	U
87-65-0	2,6-Dichlorophenol	330	U
84-66-2	Diethyl phthalate	330	U
60-11-7	p-Dimethylaminoazobenzene	660	U
57-97-6	7,12-Dimethylbenz(a)anthrace	660	U
119-93-7	3,3'-Dimethylbenzidine	1600	U
105-67-9	2,4-Dimethylphenol	330	U
131-11-3	Dimethyl phthalate	330	U
117-84-0	Di-n-octyl phthalate	330	U
99-65-0	1,3-Dinitrobenzene	330	U
534-52-1	4,6-Dinitro-2-methylphenol	1600	U
51-28-5	2,4-Dinitrophenol	1600	U
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
88-85-7	2-sec-Butyl-4,6-dinitropheno	660	U
123-91-1	1,4-Dioxane	330	U
122-39-4	Diphenylamine	330	U
122-66-7	1,2-Diphenylhydrazine	330	U
62-50-0	Ethyl methanesulfonate	330	U
206-44-0	Fluoranthene	330	U
86-73-7	Fluorene	330	U
118-74-1	Hexachlorobenzene	330	U

FORM I

TETRA TECH NUS, INC.
METHOD BLANK COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SOLID Lab Sample ID:A0F050000 106
Method: SW846 8270C
Base/Neutrals and Acids (8270C)

Sample WT/Vol: 30 / g Date Received: 06/02/00
Work Order: DE5XT101 Date Extracted:06/05/00
Dilution factor: 1 Date Analyzed: 06/12/00
Moisture %:NA

QC Batch: 0157106

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
87-68-3	Hexachlorobutadiene	330	U
77-47-4	Hexachlorocyclopentadiene	1600	U
67-72-1	Hexachloroethane	330	U
1888-71-7	Hexachloropropene	3300	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
78-59-1	Isophorone	330	U
120-58-1	Isosafrole	660	U
91-80-5	Methapyrilene	1600	U
95-53-4	o-Toluidine	660	U
56-49-5	3-Methylcholanthrene	660	U
66-27-3	Methyl methanesulfonate	330	U
91-57-6	2-Methylnaphthalene	330	U
95-48-7	2-Methylphenol	330	U
108-39-4	3-Methylphenol	330	U
106-44-5	4-Methylphenol	330	U
91-20-3	Naphthalene	330	U
130-15-4	1,4-Naphthoquinone	1600	U
134-32-7	1-Naphthylamine	330	U
91-59-8	2-Naphthylamine	330	U
88-74-4	2-Nitroaniline	1600	U
99-09-2	3-Nitroaniline	1600	U
100-01-6	4-Nitroaniline	1600	U
98-95-3	Nitrobenzene	330	U
88-75-5	2-Nitrophenol	330	U
100-02-7	4-Nitrophenol	1600	U
56-57-5	4-Nitroquinoline-1-oxide	3300	U
924-16-3	N-Nitrosodi-n-butylamine	330	U
55-18-5	N-Nitrosodiethylamine	330	U

TETRA TECH NUS, INC.
METHOD BLANK COMPOUNDS

Lab Name: Severn Trent Laboratories, Inc. SDG Number: MP008

Matrix: (soil/water) SOLID Lab Sample ID: A0F050000 106
Method: SW846 8270C
Base/Neutrals and Acids (8270C)

Sample WT/Vol: 30 / g Date Received: 06/02/00
Work Order: DE5XT101 Date Extracted: 06/05/00
Dilution factor: 1 Date Analyzed: 06/12/00
Moisture %: NA

QC Batch: 0157106

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
62-75-9	N-Nitrosodimethylamine	330	U
621-64-7	N-Nitrosodi-n-propylamine	330	U
86-30-6	N-Nitrosodiphenylamine	330	U
10595-95-6	N-Nitrosomethylethylamine	330	U
59-89-2	N-Nitrosomorpholine	330	U
100-75-4	N-Nitrosopiperidine	330	U
930-55-2	N-Nitrosopyrrolidine	330	U
99-55-8	5-Nitro-o-toluidine	660	U
608-93-5	Pentachlorobenzene	330	U
76-01-7	Pentachloroethane	1600	U
82-68-8	Pentachloronitrobenzene	1600	U
87-86-5	Pentachlorophenol	1600	U
62-44-2	Phenacetin	660	U
85-01-8	Phenanthrene	330	U
108-95-2	Phenol	330	U
106-50-3	p-Phenylene diamine	3300	U
109-06-8	2-Picoline	660	U
23950-58-5	Pronamide	660	U
129-00-0	Pyrene	330	U
110-86-1	Pyridine	660	U
94-59-7	Safrole	660	U
95-94-3	1,2,4,5-Tetrachlorobenzene	330	U
58-90-2	2,3,4,6-Tetrachlorophenol	1600	U
120-82-1	1,2,4-Trichlorobenzene	330	U
95-95-4	2,4,5-Trichlorophenol	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
99-35-4	1,3,5-Trinitrobenzene	1600	U
86-74-8	Carbazole	330	U

FORM I

TETRA TECH NUS, INC.
METHOD BLANK COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP008

Matrix: (soil/water) SOLID Lab Sample ID:A0F050000 106
Method: SW846 8270C
Base/Neutrals and Acids (8270C)

Sample WT/Vol: 30 / g Date Received: 06/02/00
Work Order: DE5XT101 Date Extracted:06/05/00
Dilution factor: 1 Date Analyzed: 06/12/00
Moisture %:NA

QC Batch: 0157106

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
510-15-6	Chlorobenzilate	330	U
122-09-8	a,a-Dimethylphenethylamine	1600	U
140-57-8	Aramite	660	U

FORM I

STL North Canton

APPENDIX I

MOBILE LABORATORY ANALYTICAL REPORTS FOR GROUNDWATER

TetraTech NUS

Analytical Data
Mayport NAS, Bldg 351
Jacksonville, FL
5/1/00 - 5/5/00

Method 8260 (ug/L)	351-gw-tw11-01	351-gw-tw12-01	351-gw-tw13-01					
MTBE	ND	ND	ND					
Benzene	ND	2.2	ND					
Toluene	ND	2.9	ND					
Ethylbenzene	ND	6.2	0.57					
m&p-Xylene	ND	ND	ND					
o-Xylene	ND	3.3	0.73					
Naphthalene	ND	ND	ND					
dilution factor	1x	1x	1x					

Method 8260 (ug/L)	351-gw-tw01-01	351-gw-tw04-01	351-gw-tw05-01	351-gw-tw09-01	351-gw-tw02-01	351-gw-tw03-01	351-gw-tw07-01	351-gw-tw08-01
MTBE	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND
m&p-Xylene	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND
dilution factor	1x	1x	1x	1x	1x	1x	1x	1x

Method 8260 (ug/L)	351-gw-fd01-01	351-gw-tw06-01	351-gw-tw10-01					
MTBE	ND	ND	ND					
Benzene	ND	ND	ND					
Toluene	ND	2						
Ethylbenzene	ND	ND	ND					
m&p-Xylene	ND	ND	ND					
o-Xylene	ND	ND	ND					
Naphthalene	ND	ND	ND					
dilution factor	1x	1x	1x					

Source: KB Labs, Inc.
May 2000

APPENDIX J

LABORATORY ANALYTICAL REPORTS FOR GROUNDWATER

CTO122-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP011

SAMPLE NUMBER:	351-GW-DUP1-001			351-GW-MW01-001			351-GW-MW02-001			351-GW-MW03-001		
SAMPLE DATE:	06/14/00			06/14/00			06/14/00			06/14/00		
LABORATORY ID:	A0F150207005			A0F150207001			A0F150207002			A0F150207003		
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:	351-GW-MW04-001											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PETROLEUM HYDROCARBONS												
TOTAL PETROLEUM HYDROCARBONS	720			100	U		100	U		160		

CTO122-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP011

SAMPLE NUMBER:	351-GW-MW04-001											
SAMPLE DATE:	06/14/00			/ /			/ /			/ /		
LABORATORY ID:	A0F150207004											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:	351-GW-DUP1-001											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PETROLEUM HYDROCARBONS												
TOTAL PETROLEUM HYDROCARBONS	630											

CTO122-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP011

SAMPLE NUMBER:	351-GW-MW02-001	351-GW-MW02-001	351-GW-MW03-001	
SAMPLE DATE:	06/14/00	06/14/00	06/14/00	/ /
LABORATORY ID:	A0F150207002	A0F150207002	A0F150207003	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	0.0 %	0.0 %	0.0 %	100.0 %
UNITS:	MG/L	MG/L	MG/L	
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
NITRATE	0.1	U		0.1	U		0.1	U				
NITRITE	0.1	U		0.1	U		0.1	U				
SULFATE	53			53			52					
SULFIDE	1	U		1	U		1	U				

CTO122-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP011

SAMPLE NUMBER:	351-GW-MW02-001	351-GW-MW03-001		
SAMPLE DATE:	06/14/00	06/14/00	/ /	/ /
LABORATORY ID:	A0F150207002	A0F150207003		
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
DISSOLVED METHANE												
METHANE	9.6	B		16	B							

CTO122-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP011

SAMPLE NUMBER:	351-GW-DUP1-001			351-GW-MW01-001			351-GW-MW02-001			351-GW-MW03-001		
SAMPLE DATE:	06/14/00			06/14/00			06/14/00			06/14/00		
LABORATORY ID:	A0F150207005			A0F150207001			A0F150207002			A0F150207003		
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
INORGANICS												
LEAD	1.7	U		1.7	U		1.7	U		1.7	U	

CTO122-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP011

SAMPLE NUMBER:	351-GW-MW04-001											
SAMPLE DATE:	06/14/00			/ /			/ /			/ /		
LABORATORY ID:	A0F150207004											
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	1.7	U										

CTO122-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP011

SAMPLE NUMBER:	351-GW-DUP1-001	351-GW-MW01-001	351-GW-MW02-001	351-GW-MW03-001
SAMPLE DATE:	06/14/00	06/14/00	06/14/00	06/14/00
LABORATORY ID:	A0F150207005	A0F150207001	A0F150207002	A0F150207003
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
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2	U		2	U		2	U		4.6	PG	
2-METHYLNAPHTHALENE	2	U		2	U		2	U		2.4	PG	
ACENAPHTHENE	1	U		1	U		1	U		1	U	
ACENAPHTHYLENE	1	U		1	U		1	U		3		
ANTHRACENE	2	U		2	U		2	U		2	U	
BENZO(A)ANTHRACENE	0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(A)PYRENE	0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(B)FLUORANTHENE	0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(G,H,I)PERYLENE	0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(K)FLUORANTHENE	0.1	U		0.1	U		0.1	U		0.1	U	
CHRYSENE	0.1	U		0.1	U		0.1	U		0.1	U	
DIBENZO(A,H)ANTHRACENE	0.1	U		0.1	U		0.1	U		0.1	U	
FLUORANTHENE	0.1	U		0.1	U		0.1	U		0.1	U	
FLUORENE	1	U		1	U		1	U		0.71	J	
INDENO(1,2,3-CD)PYRENE	0.1	U		0.1	U		0.1	U		0.1	U	
NAPHTHALENE	5.6	PG		2	U		2	U		2	U	
PHENANTHRENE	1	U		1	U		1	U		1	U	
PYRENE	0.1	U		0.1	U		0.1	U		0.1	U	

CTO122-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP011

SAMPLE NUMBER:	351-GW-MW04-001			
SAMPLE DATE:	06/14/00	/ /	/ /	/ /
LABORATORY ID:	A0F150207004			
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	U										
2-METHYLNAPHTHALENE	2	U										
ACENAPHTHENE	1	U										
ACENAPHTHYLENE	1.4											
ANTHRACENE	2	U										
BENZO(A)ANTHRACENE	0.1	U										
BENZO(A)PYRENE	0.1	U										
BENZO(B)FLUORANTHENE	0.1	U										
BENZO(G,H,I)PERYLENE	0.1	U										
BENZO(K)FLUORANTHENE	0.1	U										
CHRYSENE	0.1	U										
DIBENZO(A,H)ANTHRACENE	0.1	U										
FLUORANTHENE	0.1	U										
FLUORENE	1	U										
INDENO(1,2,3-CD)PYRENE	0.1	U										
NAPHTHALENE	5.2	PG										
PHENANTHRENE	1	U										
PYRENE	0.1	U										

CTO122-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP011

SAMPLE NUMBER:	351-GW-DUP1-001			351-GW-MW01-001			351-GW-MW02-001			351-GW-MW03-001		
SAMPLE DATE:	06/14/00			06/14/00			06/14/00			06/14/00		
LABORATORY ID:	A0F150207005			A0F150207001			A0F150207002			A0F150207003		
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
VOLATILES												
1,1,1,2-TETRACHLOROETHANE	1	U		1	U		1	U		1	U	
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	
1,2,3-TRICHLOROPROPANE	1	U		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	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)	1	U		1	U		1	U		0.87	J	
1,2-DICHLOROPROPANE	1	U		1	U		1	U		1	U	
2-BUTANONE	10	U		10	U		10	U		10	U	
2-CHLOROETHYL VINYL ETHER	1	U		1	U		1	U		1	U	
2-HEXANONE	10	U		10	U		10	U		10	U	
4-METHYL-2-PENTANONE	10	U		10	U		10	U		10	U	
ACETONE	1.1	J		2.1	J		1.1	J		1.1	J	
ACETONITRILE	20	U		20	U		20	U		20	U	
ACROLEIN	10	U		10	U		10	U		10	U	
ACRYLONITRILE	10	U		10	U		10	U		10	U	
ALLYL CHLORIDE	1	U		1	U		1	U		1	U	
BENZENE	0.38	J		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	2	U		2	U		2	U		2	U	
CARBON DISULFIDE	1	U		1	U		1	U		1	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	
CHLOROPRENE	1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE	0.5	U		0.5	U		0.5	U		0.87		
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	

CTO122-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP011

SAMPLE NUMBER:	351-GW-DUP1-001			351-GW-MW01-001			351-GW-MW02-001			351-GW-MW03-001		
SAMPLE DATE:	06/14/00			06/14/00			06/14/00			06/14/00		
LABORATORY ID:	A0F150207005			A0F150207001			A0F150207002			A0F150207003		
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
VOLATILES												
DIBROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
DIBROMOMETHANE	1	U		1	U		1	U		1	U	
DICHLORODIFLUOROMETHANE	1	U		1	U		1	U		1	U	
ETHYL METHACRYLATE	1	U		1	U		1	U		1	U	
ETHYLBENZENE	3.9			1	U		1	U		1	U	
IODOMETHANE	1	U		1	U		1	U		1	U	
ISOBUTYL ALCOHOL	50	U		50	U		50	U		50	U	
METHACRYLONITRILE	1	U		1	U		1	U		1	U	
METHYL METHACRYLATE	1	U		1	U		1	U		1	U	
METHYL TERT-BUTYL ETHER	5	U		5	U		5	U		5	U	
METHYLENE CHLORIDE	1	U		1	U		1	U		1	U	
PROPIONITRILE	4	U		4	U		4	U		4	U	
STYRENE	1	U		1	U		1	U		1	U	
TETRACHLOROETHENE	1	U		1	U		1	U		1.4		
TOLUENE	0.097	J		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE	0.5	U		0.5	U		0.5	U		0.5	U	
TRANS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
TRANS-1,4-DICHLORO-2-BUTENE	1	U		1	U		1	U		1	U	
TRICHLOROETHENE	1	U		1	U		1	U		1.9		
TRICHLOROFLUOROMETHANE	2	U		2	U		2	U		2	U	
VINYL ACETATE	1	U		1	U		1	U		1	U	
VINYL CHLORIDE	1	U		1	U		1	U		1	U	
XYLENES, TOTAL	1	U		1	U		1	U		1	U	

CTO122-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP011

SAMPLE NUMBER:	351-GW-MW04-001	TRIP BLANK		
SAMPLE DATE:	06/14/00	06/14/00	/ /	/ /
LABORATORY ID:	A0F150207004	A0F150207006		
QC_TYPE:	NORMAL	TRIP BLANK		
% 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												
1,1,1,2-TETRACHLOROETHANE	1	U		1	U							
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							
1,2,3-TRICHLOROPROPANE	1	U		1	U							
1,2-DIBROMO-3-CHLOROPROPANE	1	U		1	U							
1,2-DIBROMOETHANE	1	U		1	U							
1,2-DICHLOROETHANE	1	U		1	U							
1,2-DICHLOROETHENE (TOTAL)	1	U		1	U							
1,2-DICHLOROPROPANE	1	U		1	U							
2-BUTANONE	10	U		10	U							
2-CHLOROETHYL VINYL ETHER	1	U		1	U							
2-HEXANONE	10	U		10	U							
4-METHYL-2-PENTANONE	10	U		10	U							
ACETONE	1.5	J		1	J							
ACETONITRILE	20	U		20	U							
ACROLEIN	10	U		10	U							
ACRYLONITRILE	10	U		10	U							
ALLYL CHLORIDE	1	U		1	U							
BENZENE	0.29	J		1	U							
BROMODICHLOROMETHANE	1	U		1	U							
BROMOFORM	1	U		1	U							
BROMOMETHANE	2	U		2	U							
CARBON DISULFIDE	1	U		1	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							
CHLOROPRENE	1	U		1	U							
CIS-1,2-DICHLOROETHENE	0.5	U		0.5	U							
CIS-1,3-DICHLOROPROPENE	1	U		1	U							

CTO122-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP011

SAMPLE NUMBER:	351-GW-MW04-001	TRIP BLANK		
SAMPLE DATE:	06/14/00	06/14/00	/ /	/ /
LABORATORY ID:	A0F150207004	A0F150207006		
QC_TYPE:	NORMAL	TRIP BLANK		
% 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												
DIBROMOCHLOROMETHANE	1	U		1	U							
DIBROMOMETHANE	1	U		1	U							
DICHLORODIFLUOROMETHANE	1	U		1	U							
ETHYL METHACRYLATE	1	U		1	U							
ETHYLBENZENE	2.8			1	U							
IODOMETHANE	1	U		1	U							
ISOBUTYL ALCOHOL	50	U		50	U							
METHACRYLONITRILE	1	U		1	U							
METHYL METHACRYLATE	1	U		1	U							
METHYL TERT-BUTYL ETHER	5	U		5	U							
METHYLENE CHLORIDE	1	U		0.19	J							
PROPIONITRILE	4	U		4	U							
STYRENE	1	U		1	U							
TETRACHLOROETHENE	1	U		1	U							
TOLUENE	0.091	J		1	U							
TRANS-1,2-DICHLOROETHENE	0.5	U		0.5	U							
TRANS-1,3-DICHLOROPROPENE	1	U		1	U							
TRANS-1,4-DICHLORO-2-BUTENE	1	U		1	U							
TRICHLOROETHENE	1	U		1	U							
TRICHLOROFLUOROMETHANE	2	U		2	U							
VINYL ACETATE	1	U		1	U							
VINYL CHLORIDE	1	U		1	U							
XYLENES, TOTAL	1	U		1	U							

MP011

HOLDING TIME
07/27/00

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
UG/L	351-GW-DUP1-001	A0F150207005	NORMAL	MP011	M	06/14/00	06/27/00	06/28/00	13	1	14
UG/L	351-GW-MW01-001	A0F150207001	NORMAL	MP011	M	06/14/00	06/27/00	06/28/00	13	1	14
UG/L	351-GW-MW02-001	A0F150207002	NORMAL	MP011	M	06/14/00	06/27/00	06/28/00	13	1	14
UG/L	351-GW-MW03-001	A0F150207003	NORMAL	MP011	M	06/14/00	06/27/00	06/28/00	13	1	14
UG/L	351-GW-MW04-001	A0F150207004	NORMAL	MP011	M	06/14/00	06/27/00	06/28/00	13	1	14
UG/L	351-GW-MW02-001	A0F150207002	NORMAL	MP011	METH	06/14/00	06/27/00	06/28/00	13	1	14
UG/L	351-GW-MW03-001	A0F150207003	NORMAL	MP011	METH	06/14/00	06/27/00	06/28/00	13	1	14
MG/L	351-GW-MW02-001	A0F150207002	NORMAL	MP011	NTA	06/14/00	06/15/00	06/15/00	1	0	1
MG/L	351-GW-MW03-001	A0F150207003	NORMAL	MP011	NTA	06/14/00	06/15/00	06/15/00	1	0	1
MG/L	351-GW-MW02-001	A0F150207002	NORMAL	MP011	NTI	06/14/00	06/15/00	06/15/00	1	0	1
MG/L	351-GW-MW03-001	A0F150207003	NORMAL	MP011	NTI	06/14/00	06/15/00	06/15/00	1	0	1
UG/L	351-GW-DUP1-001	A0F150207005	NORMAL	MP011	OV	06/14/00	06/20/00	06/20/00	6	0	6
UG/L	351-GW-MW01-001	A0F150207001	NORMAL	MP011	OV	06/14/00	06/20/00	06/20/00	6	0	6
UG/L	351-GW-MW02-001	A0F150207002	NORMAL	MP011	OV	06/14/00	06/20/00	06/20/00	6	0	6
UG/L	351-GW-MW03-001	A0F150207003	NORMAL	MP011	OV	06/14/00	06/20/00	06/20/00	6	0	6
UG/L	351-GW-MW04-001	A0F150207004	NORMAL	MP011	OV	06/14/00	06/20/00	06/20/00	6	0	6
UG/L	TRIP BLANK	A0F150207006	TRIP BLANK	MP011	OV	06/14/00	06/20/00	06/20/00	6	0	6
UG/L	351-GW-DUP1-001	A0F150207005	NORMAL	MP011	PAH	06/14/00	06/16/00	06/20/00	2	4	6
UG/L	351-GW-MW01-001	A0F150207001	NORMAL	MP011	PAH	06/14/00	06/16/00	06/20/00	2	4	6
UG/L	351-GW-MW02-001	A0F150207002	NORMAL	MP011	PAH	06/14/00	06/16/00	06/20/00	2	4	6
UG/L	351-GW-MW03-001	A0F150207003	NORMAL	MP011	PAH	06/14/00	06/16/00	06/20/00	2	4	6
UG/L	351-GW-MW04-001	A0F150207004	NORMAL	MP011	PAH	06/14/00	06/16/00	06/20/00	2	4	6
MG/L	351-GW-MW02-001	A0F150207002	NORMAL	MP011	SO4	06/14/00	06/29/00	06/29/00	15	0	15
MG/L	351-GW-MW03-001	A0F150207003	NORMAL	MP011	SO4	06/14/00	06/29/00	06/29/00	15	0	15
MG/L	351-GW-MW02-001	A0F150207002	NORMAL	MP011	SUL	06/14/00	06/19/00	06/20/00	5	1	6

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	351-GW-MW03-001	A0F150207003	NORMAL	MP011	SUL	06/14/00	06/19/00	06/20/00	5	1	6
UG/L	351-GW-DUP1-001	A0F150207005	NORMAL	MP011	TPH	06/14/00	06/27/00	06/28/00	13	1	14
UG/L	351-GW-MW01-001	A0F150207001	NORMAL	MP011	TPH	06/14/00	06/27/00	06/28/00	13	1	14
UG/L	351-GW-MW02-001	A0F150207002	NORMAL	MP011	TPH	06/14/00	06/27/00	06/28/00	13	1	14
UG/L	351-GW-MW03-001	A0F150207003	NORMAL	MP011	TPH	06/14/00	06/27/00	06/28/00	13	1	14
UG/L	351-GW-MW04-001	A0F150207004	NORMAL	MP011	TPH	06/14/00	06/27/00	06/28/00	13	1	14

Chain of Custody Record

Quanterra

QUA-4124 0797

Client: TETRA TECH	Project Manager: RICK DEFRANCISCO	Date: 6/14/00	Chain of Custody Number: 42090
Address: 794 S. MILITARY TRAIL	Telephone Number (Area Code)/Fax Number: (954) 570-5885	Lab Number:	Page 1 of 1
City: Deerfield Beach; State: FL; Zip Code: 33442	Site Contact: RB	Lab Contact:	
Project Name: NS Mayport CTO-122	Carrier/Waybill Number: FEDEX		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	BTEX+MTBE	PAH	TRPH	Lead	EDB	Anions	METHANE	SULFIDE	Special Instructions/ Conditions of Receipt
351-GW-MW01-001	6/14/00	11:00	X									X	X	X	X	X				
351-GW-MW02-001		11:05	X									X	X	X	X	X	X	X	X	
351-GW-MW03-001		10:10	X									X	X	X	X	X	X	X	X	
351-GW-MW04-001		9:02	X									X	X	X	X	X				
351-GW-DUP1-001			X									X	X	X	X	X				

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☑ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☑ 14 Days ☐ 21 Days ☐ Other ____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: [signature]	6/14/00	15:00	1. Received By		
2. Relinquished By			2. Received By: [signature]	6/15/00	9:20
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

SDG NARRATIVE
MP011

The following report contains the analytical results for five water samples and one quality control sample submitted to STL North Canton by Tetra Tech NUS, Inc. from the NS Mayport-CTO 122 Site. The samples were received June 15, 2000, according to documented sample acceptance procedures.

STL North Canton utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the method reference page in accordance with the methods indicated. Preliminary results were provided by facsimile transmission to Tom Thompson on July 18, 2000.

Samples submitted for TPH FL-PRO were analyzed at the STL Pensacola facility.

Samples submitted for Methane were analyzed at the STL Austin facility.

Please refer to individual analytical sections for laboratory specific narratives.

SAMPLE RECEIVING

Coolers J806 (10.2), G48 (10.8), and J294 (7.2) were received at the laboratory with wet ice present.

Received three trip blanks not listed on the chain-of-custody. Samples were analyzed per Howard Engle's request on June 15, 2000.

(See STL's Cooler Receipt Form for additional information.)

ANALYTICAL METHODS SUMMARY

A0F150207

PARAMETER	ANALYTICAL METHOD
Dissolved Gases in Water	RSK SOP-175
Nitrate	MCAWW 353.2
Nitrite	MCAWW 353.2
Polynuclear Aromatic Hydrocarbons by HPLC	SW846 8310
Sulfate	MCAWW 375.4
Sulfide	MCAWW 376.1
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B
Volatile Organics by GC/MS	SW846 8260B

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

RSK Sample Prep and Calculations for Dissolved Gas Analysis in Water Samples Using a GC Headspace Equilibration Technique, RSKSOP-175, REV. 0, 8/11/94, USEPA Research Lab

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

A0F150207

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
DEQ58	001	351-GW-MW01-001	06/14/00	11:00
DEQ6P	002	351-GW-MW02-001	06/14/00	11:05
DEQ74	003	351-GW-MW03-001	06/14/00	10:10
DEQ77	004	351-GW-MW04-001	06/14/00	09:02
DEQ7D	005	351-GW-DUP1-001	06/14/00	
DEQ7G	006	TRIP BLANK	06/14/00	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

SDG NARRATIVE
MP011

GC/MS VOLATILES

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

2-Chloroethyl vinyl ether cannot be reliably recovered in an acid preserved samples.

Sample(s) which contain results between the MDL and the RL are flagged with "J". There is the possibility of false positive or misidentification at these quantitation levels. In analytical methods requiring confirmation of the analyte reported, confirmation will be performed only down to the standard reporting limit (SRL). The acceptance criteria for quality control criteria may not be met at these quantitation levels.

Holding Time Violation

All samples were prepared and analyzed within the method-specified holding time requirements.

Method Blank Contamination

Methylene chloride was detected in the method blank for batch 0173099. This is a common laboratory contaminant with concentrations less than five times the reporting limit. All affected sample results are qualified with B.

Low levels of 1,1,2,2-Tetrachloroethane were detected in the method blank. All affected sample results are qualified with B.

MS/MSD/LCS/DCS and Surrogates Outside of QC Criteria

All spike recovery and RPD data met method-specific quality control criteria.

Calibrations

The calibration check for instrument UX7 on May 23, 2000 failed the second source calibration check recoveries for Acetone, 2-Butanone, and 2-Hexanone. These compounds have poor purging efficiency; therefore, the initial calibration was acceptable.

SDG NARRATIVE
MP011

DISSOLVED GASES

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

Holding Time Violation

All samples were prepared and analyzed within the method-specified holding time requirements.

Method Blank Contamination

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

MS/MSD/LCS/DCS and Surrogates Outside of QC Criteria

All spike recovery and RPD data met method-specific quality control criteria.

Calibrations

All calibrations and calibration verifications met method-specific quality control criteria.

SDG NARRATIVE
MP011

POLYNUCLEAR AROMATIC HYDROCARBONS

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

Holding Time Violation

All samples were prepared and analyzed within the method-specified holding time requirements.

Method Blank Contamination

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

MS/MSD/LCS/DCS and Surrogates Outside of QC Criteria

Acenaphthylene was omitted from the laboratory control sample/laboratory control sample duplicate spiking solution. Since it is not a controlling compound, corrective action is not required.

Calibrations

All calibrations and calibration verifications met method-specific quality control criteria.

SDG NARRATIVE
MP011

TPH FL-PRO

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

Holding Time Violations

All samples were prepared and analyzed within the method-specified holding time requirements.

Method Blank Contamination

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

MS/MSD/LCS/DCS and Surrogates Outside of QC Criteria

All spike recovery and RPD data met method-specific quality control criteria.

Calibrations

All calibrations and calibration verifications met method-specific quality control criteria.

SDG NARRATIVE
MP011

METALS

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

Sample(s) that contain results between the IDL and the RL were flagged with "B". There is the possibility of false positive or mis-identification at these quantitation levels. The acceptance criteria for the ICB, CCB, and Method Blank are ± the standard reporting limit (SRL).

Holding Time Violation

All samples were prepared and analyzed within the method-specified holding time requirements.

Method Blank Contamination

All analytes in the method blank were less than the associated reporting limits.

MS/MSD/LCS/DCS Outside of QC Criteria

All spike recovery and RPD data met method-specific quality control criteria.

Calibrations

All calibrations and calibration verifications met method-specific quality control criteria.

SDG NARRATIVE
MP011

GENERAL CHEMISTRY

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

There are samples/analytes reported with dilutions due to high target analytes.

Holding Time Violation

All samples were prepared and analyzed within the method-specified holding time requirements.

Method Blank Contamination

All analytes in the method blank were less than the associated reporting limits.

MS/MSD/LCS/DCS/Sample Duplicate Outside of QC Criteria

All spike recovery and RPD data met method-specific quality control criteria.

Calibrations

All calibrations and calibration verifications met method-specific quality control criteria.

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 001
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ58103 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: 351-GW-MW01-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	2.1	J
75-05-8	Acetonitrile	20	U
107-02-8	Acrolein	10	U
107-13-1	Acrylonitrile	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
126-99-8	Chloroprene	1.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
75-00-3	Chloroethane	1.0	U
110-75-8	2-Chloroethyl vinyl ether	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
107-05-1	Allyl chloride	1.0	U
74-95-3	Dibromomethane	1.0	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
540-59-0	1,2-Dichloroethene (total)	1.0	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 001
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ58103 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: 351-GW-MW01-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
97-63-2	Ethyl methacrylate	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
591-78-6	2-Hexanone	10	U
74-88-4	Iodomethane	1.0	U
78-83-1	Isobutyl alcohol	50	U
126-98-7	Methacrylonitrile	1.0	U
75-09-2	Methylene chloride	1.0	U
80-62-6	Methyl methacrylate	1.0	U
107-12-0	Propionitrile	4.0	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
108-05-4	Vinyl acetate	1.0	U
75-01-4	Vinyl chloride	1.0	U
1330-20-7	Xylenes (total)	1.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
106-93-4	1,2-Dibromoethane (EDB)	1.0	U
78-93-3	2-Butanone (MEK)	10	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 001
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ58103 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: 351-GW-MW01-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-10-1	4-Methyl-2-pentanone (MIBK)	10	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 002
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ6P103 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: 351-GW-MW02-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	1.1	J
75-05-8	Acetonitrile	20	U
107-02-8	Acrolein	10	U
107-13-1	Acrylonitrile	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
126-99-8	Chloroprene	1.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
75-00-3	Chloroethane	1.0	U
110-75-8	2-Chloroethyl vinyl ether	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
107-05-1	Allyl chloride	1.0	U
74-95-3	Dibromomethane	1.0	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
540-59-0	1,2-Dichloroethene (total)	1.0	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 002
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ6P103 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: 351-GW-MW02-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
97-63-2	Ethyl methacrylate	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
591-78-6	2-Hexanone	10	U
74-88-4	Iodomethane	1.0	U
78-83-1	Isobutyl alcohol	50	U
126-98-7	Methacrylonitrile	1.0	U
75-09-2	Methylene chloride	1.0	U
80-62-6	Methyl methacrylate	1.0	U
107-12-0	Propionitrile	4.0	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
108-05-4	Vinyl acetate	1.0	U
75-01-4	Vinyl chloride	1.0	U
1330-20-7	Xylenes (total)	1.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
106-93-4	1,2-Dibromoethane (EDB)	1.0	U
78-93-3	2-Butanone (MEK)	10	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 002
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ6P103 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: 351-GW-MW02-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-10-1	4-Methyl-2-pentanone (MIBK)	10	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 003
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ74103 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: 351-GW-MW03-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	1.1	J
75-05-8	Acetonitrile	20	U
107-02-8	Acrolein	10	U
107-13-1	Acrylonitrile	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
126-99-8	Chloroprene	1.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
75-00-3	Chloroethane	1.0	U
110-75-8	2-Chloroethyl vinyl ether	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
107-05-1	Allyl chloride	1.0	U
74-95-3	Dibromomethane	1.0	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	0.87	
156-60-5	trans-1,2-Dichloroethene	0.50	U
540-59-0	1,2-Dichloroethene (total)	0.87	J

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 003
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ74103 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: 351-GW-MW03-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
97-63-2	Ethyl methacrylate	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
591-78-6	2-Hexanone	10	U
74-88-4	Iodomethane	1.0	U
78-83-1	Isobutyl alcohol	50	U
126-98-7	Methacrylonitrile	1.0	U
75-09-2	Methylene chloride	1.0	U
80-62-6	Methyl methacrylate	1.0	U
107-12-0	Propionitrile	4.0	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.4	
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.9	
96-18-4	1,2,3-Trichloropropane	1.0	U
108-05-4	Vinyl acetate	1.0	U
75-01-4	Vinyl chloride	1.0	U
1330-20-7	Xylenes (total)	1.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
106-93-4	1,2-Dibromoethane (EDB)	1.0	U
78-93-3	2-Butanone (MEK)	10	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 003
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ74103 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: 351-GW-MW03-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-10-1	4-Methyl-2-pentanone (MIBK)	10	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 004
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ77103 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: 351-GW-MW04-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	1.5	J
75-05-8	Acetonitrile	20	U
107-02-8	Acrolein	10	U
107-13-1	Acrylonitrile	10	U
71-43-2	Benzene	0.29	J
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
126-99-8	Chloroprene	1.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
75-00-3	Chloroethane	1.0	U
110-75-8	2-Chloroethyl vinyl ether	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
107-05-1	Allyl chloride	1.0	U
74-95-3	Dibromomethane	1.0	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
540-59-0	1,2-Dichloroethene (total)	1.0	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 004
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ77103 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: 351-GW-MW04-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	2.8	
97-63-2	Ethyl methacrylate	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
591-78-6	2-Hexanone	10	U
74-88-4	Iodomethane	1.0	U
78-83-1	Isobutyl alcohol	50	U
126-98-7	Methacrylonitrile	1.0	U
75-09-2	Methylene chloride	1.0	U
80-62-6	Methyl methacrylate	1.0	U
107-12-0	Propionitrile	4.0	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	0.091	J
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
108-05-4	Vinyl acetate	1.0	U
75-01-4	Vinyl chloride	1.0	U
1330-20-7	Xylenes (total)	1.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
106-93-4	1,2-Dibromoethane (EDB)	1.0	U
78-93-3	2-Butanone (MEK)	10	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 004
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ77103 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: 351-GW-MW04-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-10-1	4-Methyl-2-pentanone (MIBK)	10	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 005
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ7D103 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: 351-GW-DUP1-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	1.1	J
75-05-8	Acetonitrile	20	U
107-02-8	Acrolein	10	U
107-13-1	Acrylonitrile	10	U
71-43-2	Benzene	0.38	J
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
126-99-8	Chloroprene	1.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
75-00-3	Chloroethane	1.0	U
110-75-8	2-Chloroethyl vinyl ether	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
107-05-1	Allyl chloride	1.0	U
74-95-3	Dibromomethane	1.0	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
540-59-0	1,2-Dichloroethene (total)	1.0	U

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 005
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ7D103 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: 351-GW-DUP1-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	3.9	
97-63-2	Ethyl methacrylate	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
591-78-6	2-Hexanone	10	U
74-88-4	Iodomethane	1.0	U
78-83-1	Isobutyl alcohol	50	U
126-98-7	Methacrylonitrile	1.0	U
75-09-2	Methylene chloride	1.0	U
80-62-6	Methyl methacrylate	1.0	U
107-12-0	Propionitrile	4.0	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	0.097	J
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
108-05-4	Vinyl acetate	1.0	U
75-01-4	Vinyl chloride	1.0	U
1330-20-7	Xylenes (total)	1.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
106-93-4	1,2-Dibromoethane (EDB)	1.0	U
78-93-3	2-Butanone (MEK)	10	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 005
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ7D103 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: 351-GW-DUP1-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-10-1	4-Methyl-2-pentanone (MIBK)	10	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WQ Lab Sample ID:A0F150207 006
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ7G101 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: TRIP BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	1.0	J
75-05-8	Acetonitrile	20	U
107-02-8	Acrolein	10	U
107-13-1	Acrylonitrile	10	U
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	2.0	U
75-15-0	Carbon disulfide	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
126-99-8	Chloroprene	1.0	U
124-48-1	Dibromochloromethane	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
75-00-3	Chloroethane	1.0	U
110-75-8	2-Chloroethyl vinyl ether	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
107-05-1	Allyl chloride	1.0	U
74-95-3	Dibromomethane	1.0	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
540-59-0	1,2-Dichloroethene (total)	1.0	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WQ Lab Sample ID:A0F150207 006
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ7G101 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: TRIP BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
97-63-2	Ethyl methacrylate	1.0	U
75-69-4	Trichlorofluoromethane	2.0	U
591-78-6	2-Hexanone	10	U
74-88-4	Iodomethane	1.0	U
78-83-1	Isobutyl alcohol	50	U
126-98-7	Methacrylonitrile	1.0	U
75-09-2	Methylene chloride	0.19	J B
80-62-6	Methyl methacrylate	1.0	U
107-12-0	Propionitrile	4.0	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
108-05-4	Vinyl acetate	1.0	U
75-01-4	Vinyl chloride	1.0	U
1330-20-7	Xylenes (total)	1.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
106-93-4	1,2-Dibromoethane (EDB)	1.0	U
78-93-3	2-Butanone (MEK)	10	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WQ Lab Sample ID:A0F150207 006
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/15/00
Work Order: DEQ7G101 Date Extracted:06/20/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:

QC Batch: 0173099

Client Sample Id: TRIP BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-10-1	4-Methyl-2-pentanone (MIBK)	10	U

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG
Method: RSK SOP-175
Dissolved Gases in Water

Lab Sample ID:A0F150207 002

mg/L

Sample WT/Vol: 40 / mL
Work Order: DEQ6P104
Dilution factor: 1
Moisture %:

Date Received: 06/15/00
Date Extracted:06/27/00
Date Analyzed: 06/28/00

QC Batch: 0182470

Client Sample Id: 351-GW-MW02-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-82-8	Methane	9.6	B

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 003
Method: RSK SOP-175
Dissolved Gases in Water mg/L

Sample WT/Vol: 40 / mL Date Received: 06/15/00
Work Order: DEQ74104 Date Extracted:06/27/00
Dilution factor: 1 Date Analyzed: 06/28/00
Moisture %:

QC Batch: 0182475

Client Sample Id: 351-GW-MW03-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-84-0	Ethane	0.50	U
74-85-1	Ethene	0.50	U
74-82-8	Methane	16	B

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 001
Method: SW846 8310
Hydrocarbons, Polynuclear Aromatic (HPLC - 8310)

Sample WT/Vol: 1000 / mL Date Received: 06/15/00
Work Order: DEQ58104 Date Extracted:06/16/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:
QC Batch: 0167453

Client Sample Id: 351-GW-MW01-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
83-32-9	Acenaphthene	1.0	U
208-96-8	Acenaphthylene	1.0	U
120-12-7	Anthracene	2.0	U
56-55-3	Benzo(a)anthracene	0.10	U
50-32-8	Benzo(a)pyrene	0.10	U
205-99-2	Benzo(b)fluoranthene	0.10	U
191-24-2	Benzo(ghi)perylene	0.10	U
207-08-9	Benzo(k)fluoranthene	0.10	U
218-01-9	Chrysene	0.10	U
53-70-3	Dibenz(a,h)anthracene	0.10	U
206-44-0	Fluoranthene	0.10	U
86-73-7	Fluorene	1.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	U
90-12-0	1-Methylnaphthalene	2.0	U
91-57-6	2-Methylnaphthalene	2.0	U
91-20-3	Naphthalene	2.0	U
85-01-8	Phenanthrene	1.0	U
129-00-0	Pyrene	0.10	U

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 002
Method: SW846 8310
Hydrocarbons, Polynuclear Aromatic (HPLC - 8310)

Sample WT/Vol: 1000 / mL Date Received: 06/15/00
Work Order: DEQ6P105 Date Extracted:06/16/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:
QC Batch: 0167453

Client Sample Id: 351-GW-MW02-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
83-32-9	Acenaphthene	1.0	U
208-96-8	Acenaphthylene	1.0	U
120-12-7	Anthracene	2.0	U
56-55-3	Benzo(a)anthracene	0.10	U
50-32-8	Benzo(a)pyrene	0.10	U
205-99-2	Benzo(b)fluoranthene	0.10	U
191-24-2	Benzo(ghi)perylene	0.10	U
207-08-9	Benzo(k)fluoranthene	0.10	U
218-01-9	Chrysene	0.10	U
53-70-3	Dibenz(a,h)anthracene	0.10	U
206-44-0	Fluoranthene	0.10	U
86-73-7	Fluorene	1.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	U
90-12-0	1-Methylnaphthalene	2.0	U
91-57-6	2-Methylnaphthalene	2.0	U
91-20-3	Naphthalene	2.0	U
85-01-8	Phenanthrene	1.0	U
129-00-0	Pyrene	0.10	U

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 003
Method: SW846 8310
Hydrocarbons, Polynuclear Aromatic (HPLC - 8310)

Sample WT/Vol: 1000 / mL Date Received: 06/15/00
Work Order: DEQ74105 Date Extracted:06/16/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:
QC Batch: 0167453

Client Sample Id: 351-GW-MW03-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
83-32-9	Acenaphthene	1.0	U
208-96-8	Acenaphthylene	3.0	
120-12-7	Anthracene	2.0	U
56-55-3	Benzo(a)anthracene	0.10	U
50-32-8	Benzo(a)pyrene	0.10	U
205-99-2	Benzo(b)fluoranthene	0.10	U
191-24-2	Benzo(ghi)perylene	0.10	U
207-08-9	Benzo(k)fluoranthene	0.10	U
218-01-9	Chrysene	0.10	U
53-70-3	Dibenz(a,h)anthracene	0.10	U
206-44-0	Fluoranthene	0.10	U
86-73-7	Fluorene	0.71	J
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	U
90-12-0	1-Methylnaphthalene	4.6	PG
91-57-6	2-Methylnaphthalene	2.4	PG
91-20-3	Naphthalene	2.0	U
85-01-8	Phenanthrene	1.0	U
129-00-0	Pyrene	0.10	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 004
Method: SW846 8310
Hydrocarbons, Polynuclear Aromatic (HPLC - 8310)

Sample WT/Vol: 1000 / mL Date Received: 06/15/00
Work Order: DEQ77104 Date Extracted:06/16/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:
QC Batch: 0167453

Client Sample Id: 351-GW-MW04-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
83-32-9	Acenaphthene	1.0	U
208-96-8	**Acenaphthylene**	**1.4**	
120-12-7	Anthracene	2.0	U
56-55-3	Benzo(a)anthracene	0.10	U
50-32-8	Benzo(a)pyrene	0.10	U
205-99-2	Benzo(b)fluoranthene	0.10	U
191-24-2	Benzo(ghi)perylene	0.10	U
207-08-9	Benzo(k)fluoranthene	0.10	U
218-01-9	Chrysene	0.10	U
53-70-3	Dibenz(a,h)anthracene	0.10	U
206-44-0	Fluoranthene	0.10	U
86-73-7	Fluorene	1.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	U
90-12-0	1-Methylnaphthalene	2.0	U
91-57-6	2-Methylnaphthalene	2.0	U
91-20-3	**Naphthalene**	**5.2**	**PG**
85-01-8	Phenanthrene	1.0	U
129-00-0	Pyrene	0.10	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP011

Matrix: (soil/water) WG Lab Sample ID:A0F150207 005
Method: SW846 8310
Hydrocarbons, Polynuclear Aromatic (HPLC - 8310)

Sample WT/Vol: 1000 / mL Date Received: 06/15/00
Work Order: DEQ7D104 Date Extracted:06/16/00
Dilution factor: 1 Date Analyzed: 06/20/00
Moisture %:
QC Batch: 0167453

Client Sample Id: 351-GW-DUP1-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
83-32-9	Acenaphthene	1.0	U
208-96-8	Acenaphthylene	1.0	U
120-12-7	Anthracene	2.0	U
56-55-3	Benzo(a)anthracene	0.10	U
50-32-8	Benzo(a)pyrene	0.10	U
205-99-2	Benzo(b)fluoranthene	0.10	U
191-24-2	Benzo(ghi)perylene	0.10	U
207-08-9	Benzo(k)fluoranthene	0.10	U
218-01-9	Chrysene	0.10	U
53-70-3	Dibenz(a,h)anthracene	0.10	U
206-44-0	Fluoranthene	0.10	U
86-73-7	Fluorene	1.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	U
90-12-0	1-Methylnaphthalene	2.0	U
91-57-6	2-Methylnaphthalene	2.0	U
91-20-3	**Naphthalene**	**5.6**	**PG**
85-01-8	Phenanthrene	1.0	U
129-00-0	Pyrene	0.10	U

FORM I

Commited To Your Success

LOG NO: C0-06510
Received: 16 JUN 00
Reported: 26 JUN 00

Ms. DENISE POHL
STL Ohio
4101 Shuffel Drive
North Canton, OH 44720

Client PO. No.: SR023921

Project: A0F150207-NS MAYPORT
Sampled By: Client
Code: 170800713

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
06510-1	351-GW-MW01-001	06-14-00/00:00
06510-2	351-GW-MW02-001	06-14-00/00:00
06510-3	351-GW-MW03-001	06-14-00/00:00
06510-4	351-GW-MW04-001	06-14-00/00:00
06510-5	351-GW-DUP1-001	06-14-00/00:00

PARAMETER	06510-1	06510-2	06510-3	06510-4	06510-5
Petroleum Hydrocarbons (FL-PRO)					
Petroleum Range Organics (FL-PRO), ug/l	<100	<100	160	630	720
Surrogate - o-Terphenyl	82 %	69 %	76 %	71 %	76 %
Surrogate - Nonatriacontane (C39)	71 %	51 %	66 %	56 %	51 %
Analyst	KA	KA	KA	KA	KA
Prep Date	06.20.00	06.20.00	06.20.00	06.20.00	06.20.00
Analysis Date	06.22.00	06.22.00	06.22.00	06.22.00	06.22.00
Batch ID	FLW087	FLW087	FLW087	FLW087	FLW087
Prep Method	3510	3510	3510	3510	3510
Dilution Factor	1	1	1	1	1

Commited To Your Success

LOG NO: C0-06510
Received: 16 JUN 00
Reported: 26 JUN 00

Ms. DENISE POHL
STL Ohio
4101 Shuffel Drive
North Canton, OH 44720

Client PO. No.: SR023921

Project: A0F150207-NS MAYPORT
Sampled By: Client
Code: 170800713

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
06510-6	Method Blank	
06510-7	Lab Control Standard % Recovery	
06510-8	Matrix Spike % Recovery	
06510-9	Matrix Spike Duplicate % Recovery	

PARAMETER	06510-6	06510-7	06510-8	06510-9
Petroleum Hydrocarbons (FL-PRO)				
Petroleum Range Organics (FL-PRO), ug/l	<100	96 %	NoMS	NoMS
Surrogate - o-Terphenyl	72 %	85 %	---	---
Surrogate - Nonatriacontane (C39)	60 %	100 %	---	---
Analyst	KA	KA	---	---
Prep Date	06.20.00	06.20.00	---	---
Analysis Date	06.22.00	06.22.00	---	---
Batch ID	FLW087	FLW087	---	---
Prep Method	3510	3510	---	---
Dilution Factor	1	1	---	---

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.

Lance Larson, Project Manager

Final Page Of Report

Commited To Your Success

LOG NO: C0-06484
Received: 17 JUN 00
Reported: 26 JUN 00

Ms. DENISE POHL
STL Ohio
4101 Shuffel Drive
North Canton, OH 44720

Client PO. No.: SR023952

Project: A0F160173-NS MAYPORT
Sampled By: Client
Code: 170800713

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
06484-1	436-GW-MW01-001	06-15-00
06484-2	436-GW-MW02-001	06-15-00
06484-3	436-GW-MW03-001	06-15-00
06484-4	436-GW-DUP2-001	06-15-00

PARAMETER	06484-1	06484-2	06484-3	06484-4
Petroleum Hydrocarbons (FL-PRO)				
Petroleum Range Organics (FL-PRO), ug/l	<100	<100	<100	<100
Surrogate - o-Terphenyl	88 %	79 %	70 %	72 %
Surrogate - Nonatriacontane (C39)	62 %	55 %	53 %	52 %
Analyst	KA	KA	KA	KA
Prep Date	06.20.00	06.20.00	06.20.00	06.20.00
Analysis Date	06.20.00	06.20.00	06.20.00	06.20.00
Batch ID	FLW088	FLW088	FLW088	FLW088
Prep Method	3510	3510	3510	3510
Dilution Factor	1	1	1	1

Committed To Your Success

LOG NO: C0-06484
Received: 17 JUN 00
Reported: 26 JUN 00

Ms. DENISE POHL
STL Ohio
4101 Shuffel Drive
North Canton, OH 44720

Client PO. No.: SR023952

Project: A0F160173-NS MAYPORT
Sampled By: Client
Code: 170800713

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
06484-5	Method Blank	
06484-6	Lab Control Standard % Recovery	
06484-7	Matrix Spike % Recovery	
06484-8	Matrix Spike Duplicate % Recovery	

PARAMETER	06484-5	06484-6	06484-7	06484-8
Petroleum Hydrocarbons (FL-PRO)				
Petroleum Range Organics (FL-PRO), ug/l	<100	106 %	NoMS	NoMS
Surrogate - o-Terphenyl	89 %	100	---	---
Surrogate - Nonatriacontane (C39)	61 %	76 %	---	---
Analyst	KA	KA	---	---
Prep Date	06.20.00	06.20.00	---	---
Analysis Date	06.20.00	06.20.00	---	---
Batch ID	FLW088	FLW088	---	---
Prep Method	3510	3510	---	---
Dilution Factor	1	1	---	---

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.

Lance Larson, Project Manager

Final Page Of Report

Commited To Your Success

LOG NO: C0-06458
Received: 16 JUN 00
Reported: 26 JUN 00

Ms. DENISE POHL
STL Ohio
4101 Shuffel Drive
North Canton, OH 44720

Client PO. No.: SR023926

Project: A0F150214-NS MAYPORT
Sampled By: Client
Code: 170800713

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
06458-6	4251-GW-MW02-001	06-13-00
06458-7	4251-GW-MW03-001	06-13-00
06458-8	4251-GW-MW04-001	06-13-00
06458-9	358-GW-MW01-001	06-14-00
06458-10	358-GW-MW02-001	06-14-00

PARAMETER	06458-6	06458-7	06458-8	06458-9	06458-10
Petroleum Hydrocarbons (FL-PRO)					
Petroleum Range Organics (FL-PRO), ug/l	<100	<100	<100	<100	<100
Surrogate - o-Terphenyl	59 %	69 %	67 %	80 %	90 %
Surrogate - Nonatriacontane (C39)	60 %	62 %	63 %	69 %	74 %
Analyst	KA	KA	KA	KA	KA
Prep Date	06.20.00	06.20.00	06.20.00	06.20.00	06.20.00
Analysis Date	06.22.00	06.22.00	06.22.00	06.22.00	06.22.00
Batch ID	FLW087	FLW087	FLW087	FLW087	FLW087
Prep Method	3510	3510	3510	3510	3510
Dilution Factor	1	1	1	1	1

Commited To Your Success

LOG NO: C0-06458
Received: 16 JUN 00
Reported: 26 JUN 00

Ms. DENISE POHL
STL Ohio
4101 Shuffel Drive
North Canton, OH 44720

Client PO. No.: SR023926

Project: A0F150214-NS MAYPORT
Sampled By: Client
Code: 170800713

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
06458-1	425-GW-MW01-001	06-13-00
06458-2	425-GW-MW02-001	06-13-00
06458-3	425-GW-MW03-001	06-13-00
06458-4	425-GW-MW5D-001	06-13-00
06458-5	4251-GW-MW01-001	06-13-00

PARAMETER	06458-1	06458-2	06458-3	06458-4	06458-5
Petroleum Hydrocarbons (FL-PRO)					
Petroleum Range Organics (FL-PRO), ug/l	<100	<100	<100	<100	<100
Surrogate - o-Terphenyl	74 %	81 %	74 %	74 %	70 %
Surrogate - Nonatriacontane (C39)	62 %	65 %	69 %	77 %	64 %
Analyst	KA	KA	KA	KA	KA
Prep Date	06.20.00	06.20.00	06.20.00	06.20.00	06.20.00
Analysis Date	06.22.00	06.22.00	06.22.00	06.22.00	06.22.00
Batch ID	FLW087	FLW087	FLW087	FLW087	FLW087
Prep Method	3510	3510	3510	3510	3510
Dilution Factor	1	1	1	1	1

Commited To Your Success

LOG NO: C0-06458
Received: 16 JUN 00
Reported: 26 JUN 00

Ms. DENISE POHL
STL Ohio
4101 Shuffel Drive
North Canton, OH 44720

Client PO. No.: SR023926

Project: A0F150214-NS MAYPORT
Sampled By: Client
Code: 170800713

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
06458-11	358-GW-MW03-001	06-14-00
06458-12	358-GW-DUP1-001	06-14-00

PARAMETER	06458-11	06458-12
Petroleum Hydrocarbons (FL-PRO)		
Petroleum Range Organics (FL-PRO), ug/l	<100	<100
Surrogate - o-Terphenyl	70 %	68 %
Surrogate - Nonatriacontane (C39)	62 %	53 %
Analyst	KA	KA
Prep Date	06.20.00	06.20.00
Analysis Date	06.22.00	06.22.00
Batch ID	FLW087	FLW087
Prep Method	3510	3510
Dilution Factor	1	1

Commited To Your Success

LOG NO: C0-06458
Received: 16 JUN 00
Reported: 26 JUN 00

Ms. DENISE POHL
STL Ohio
4101 Shuffel Drive
North Canton, OH 44720

Client PO. No.: SR023926

Project: A0F150214-NS MAYPORT
Sampled By: Client
Code: 170800713

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
06458-13	Method Blank	
06458-14	Lab Control Standard % Recovery	
06458-15	Matrix Spike % Recovery	
06458-16	Matrix Spike Duplicate % Recovery	

PARAMETER	06458-13	06458-14	06458-15	06458-16
Petroleum Hydrocarbons (FL-PRO)				
Petroleum Range Organics (FL-PRO), ug/l	<100	96 %	NoMS	NoMS
Surrogate - o-Terphenyl	72 %	85 %	---	---
Surrogate - Nonatriacontane (C39)	60 %	100 %	---	---
Analyst	KA	KA	---	---
Prep Date	06.20.00	06.20.00	---	---
Analysis Date	06.22.00	06.22.00	---	---
Batch ID	FLW087	FLW087	---	---
Prep Method	3510	3510	---	---
Dilution Factor	1	1	---	---

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.

Lance Larson, Project Manager

Final Page Of Report

TETRA TECH NUS, INC.

Client Sample ID: 351-GW-MW02-001

General Chemistry

Lot-Sample #...: A0F150207-002 **Work Order #...:** DEQ6P **Matrix.....:** WG
Date Sampled...: 06/14/00 11:05 **Date Received..:** 06/15/00

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Nitrate	ND	0.1	mg/L	MCAWW 353.2	06/15/00	0168149
	Dilution Factor: 1					
Nitrite	ND	0.1	mg/L	MCAWW 353.2	06/15/00	0168150
	Dilution Factor: 1					
Sulfate	**53**	**10**	**mg/L**	**MCAWW 375.4**	**06/29/00**	**0181373**
	Dilution Factor: 2					
Total Sulfide	ND	1.0	mg/L	MCAWW 376.1	06/19-06/20/00	0171417
	Dilution Factor: 1					

TETRA TECH NUS, INC.

Client Sample ID: 351-GW-MW03-001

General Chemistry

Lot-Sample #...: A0F150207-003 **Work Order #...:** DEQ74 **Matrix.....:** WG
Date Sampled...: 06/14/00 10:10 **Date Received..:** 06/15/00

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Nitrate	ND	0.1	mg/L	MCAWW 353.2	06/15/00	0168149
		Dilution Factor: 1				
Nitrite	ND	0.1	mg/L	MCAWW 353.2	06/15/00	0168150
		Dilution Factor: 1				
Sulfate	**52**	**10**	**mg/L**	**MCAWW 375.4**	**06/29/00**	**0181373**
		Dilution Factor: 2				
Total Sulfide	ND	1.0	mg/L	MCAWW 376.1	06/19-06/20/00	0171417
		Dilution Factor: 1				

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**Mr. Mark Peterson**	**DATE:**	**January 15, 2001**
FROM:	**Elena Rodriguez**	**COPIES:**	**DV FILE**
SUBJECT:	**DATA VALIDATION – VOLATILE ORGANICS** **CTO 0123, NS Mayport** **SDG MP035**		
SAMPLES:	3/Aqueous/ 351-GW-MW05-001 436-GW-MW05-001 TRIP BLANK		

OVERVIEW

The sample set for CTO 0123, NS Mayport, SDG MP035 consists of 2 aqueous environmental samples and one (1) aqueous field quality control sample. All samples were analyzed for select volatile organic compounds.

The samples were collected by TetraTech NUS on January 4, 2001 and analyzed by Severn Trent Laboratories (STL). 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. The data contained in this SDG were validated with regard to the following parameters:

* • Data completeness
* • Holding times
* • Initial/continuing calibrations
* • Laboratory method and field quality control blank results
* • 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 Organics

Samples were analyzed for BTEX (benzene, toluene, ethylbenzene, and total xylenes) and MTBE (methyl tert-butyl ether). All quality control data reported for this fraction were found to be acceptable.

Additional Comments

Positive results below the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

EXECUTIVE SUMMARY

Laboratory Performance Issues: None.

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 Navy IRCDQM (9/99) NFESC guidelines. 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)."

Elena Rodriguez
Tetra Tech NUS

Elena Rodriguez
Chemist/Data Validator

Mark Peterson
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 MSAs r<0.995
K = ICP Interference – Include ICSAB %Rs
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%

CTO123-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP035

SAMPLE NUMBER:	351-GW-MW05-001	436-GW-MW05-001	TRIP BLANK	
SAMPLE DATE:	01/04/01	01/04/01	01/04/01	/ /
LABORATORY ID:	A1A050149002	A1A050149001	A1A050149003	
QC_TYPE:	NORMAL	NORMAL	TRIP BLANK	
% 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												
BENZENE	3.7	J	P	1	U							
ETHYLBENZENE	87			1	U							
METHYL TERT-BUTYL ETHER	50	U		5	U							
TOLUENE	20			1	U							
XYLENES, TOTAL	500			1	U							

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP035

Matrix: (soil/water) WG Lab Sample ID:A1A050149 001
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 01/05/01
Work Order: DR9Q61AA Date Extracted:01/08/01
Dilution factor: 1 Date Analyzed: 01/08/01
Moisture %:

QC Batch: 1009151

Client Sample Id: 436-GW-MW05-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
108-88-3	Toluene	1.0	U
1330-20-7	Xylenes (total)	1.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP035

Matrix: (soil/water) WG Lab Sample ID:A1A050149 002
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 01/05/01
Work Order: DR9Q91AA Date Extracted:01/08/01
Dilution factor: 10 Date Analyzed: 01/08/01
Moisture %:

QC Batch: 1009151

Client Sample Id: 351-GW-MW05-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	3.7	J
100-41-4	Ethylbenzene	87	
108-88-3	Toluene	20	
1330-20-7	Xylenes (total)	500	
1634-04-4	Methyl tert-butyl ether	50	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP035

Matrix: (soil/water) WQ Lab Sample ID:A1A050149 003
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 01/05/01
Work Order: DR9RA1AA Date Extracted:01/08/01
Dilution factor: 1 Date Analyzed: 01/08/01
Moisture %:

QC Batch: 1009151

Client Sample Id: TRIP BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
108-88-3	Toluene	1.0	U
1330-20-7	Xylenes (total)	1.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U

FORM I

APPENDIX C

SUPPORT DOCUMENTATION

MP035

HOLDING TIME

01/11/01

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	351-GW-MW05-001	A1A050149002	NORMAL	MP035	BTEX	01/04/01	01/08/01	01/08/01	4	0	4
UG/L	436-GW-MW05-001	A1A050149001	NORMAL	MP035	BTEX	01/04/01	01/08/01	01/08/01	4	0	4
UG/L	TRIP BLANK	A1A050149003	TRIP BLANK	MP035	BTEX	01/04/01	01/08/01	01/08/01	4	0	4

SDG NARRATIVE
MP035

The following report contains the analytical results for two water samples and one quality control sample submitted to STL North Canton by Tetra Tech NUS, Inc. from the NS Mayport Bldg 436 site. The samples were received January 5, 2000, according to documented sample acceptance procedures.

This SDG consists of one (1) laboratory IDs: A1A050149.

STL North Canton utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the method reference page in accordance with the methods indicated.

Please refer to individual analytical sections for laboratory specific narratives.

SAMPLE RECEIVING

The temperature of the cooler upon sample receipt was 0.7° C. The samples were received in wet ice.

SDG NARRATIVE
MP035

GC/MS VOLATILES

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

Sample(s) that contain results between the MDL and the RL were flagged with "J". There is the possibility of false positive or mis-identification at these quantitation levels. In analytical methods requiring confirmation of the analyte reported, confirmation was performed only down to the standard reporting limit (SRL). The acceptance criteria for QC samples may not be met at these quantitation levels.

Holding Time Violations

All samples were prepared and analyzed within the method-specified holding time requirements.

Method Blank Contamination

All analytes in the method blank were less than the associated reporting limits.

MS/MSD/LCS/DCS and Surrogates Outside of QC Criteria

All spike recovery and RPD data met method-specific quality control criteria.

Calibrations

All calibrations and calibration verifications met method-specific quality control criteria.

Chain of Custody Record

Quanterra

QUA-4124 0797

Client	Project Manager	Date	Chain of Custody Number
TINUS	Mark Peterson	1-4-00	45804

Address	Telephone Number (Area Code)/Fax Number	Lab Number
7018 AC Skinner Pkwy, Ste 250	904/281-0400 904/281-0070	Page 1 of 1

City	State	Zip Code	Site Contact	Lab Contact
Jacksonville	FL	32256		Denise Pohl

Project Name	Carrier/Waybill Number
NS Mayport Bldg 436	FedEx

Contract/Purchase Order/Quote No.

Analysis (Attach list if more space is needed): BTEX + MTBE (Method 602)

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Aqueous	Sled.	Soil		Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		BTEX + MTBE (Method 602)	Special Instructions/ Conditions of Receipt
436-GW-MW05-001	1-4-00		X							X				X	Cool to 4°C
351-GW-MW05-001	1-4-00		X							X				X	
TRIP BLANK	1-4-00	–	X							X					*Results to be delivered by 1/12/01 per Denise Pohl.

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other By Jan 12*

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	1-4-01	1700	1. Received By	1/5/01	950
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

STL North Canton

TETRA TECH NUS, INC.
METHOD BLANK COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP035

Matrix: (soil/water) WATER Lab Sample ID:A1A090000 151
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 01/05/01
Work Order: DTD2G1AA Date Extracted:01/08/01
Dilution factor: 1 Date Analyzed: 01/08/01
Moisture %:NA

QC Batch: 1009151

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
108-88-3	Toluene	1.0	U
1330-20-7	Xylenes (total)	1.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U

FORM I

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**Mr. Mark Peterson**	**DATE:**	**January 16, 2001**
FROM:	**Elena Rodriguez**	**COPIES:**	**DV FILE**
SUBJECT:	**ORGANIC DATA VALIDATION** **CTO 0123, NS Mayport** **SDG MP030**		

SAMPLES:

4/Aqueous/	4/Soil/
351-GW-MW05-001	MPT-436-SS11-02'
436-GW-MW05-001	MPT-436-SS11-06'
TB112900	MPT-436-SS12-02'
TB113000	MPT-436-SS13-06'

OVERVIEW

The sample set for CTO 0123, NS Mayport, SDG MP027 consists of 2 aqueous environmental samples, and 4 soil environmental samples, and 2 aqueous field quality control samples. The environmental samples were analyzed for volatile organic compounds, ethylene dibromide (EDB), polynuclear aromatic hydrocarbons, and total recoverable petroleum hydrocarbons. Only aqueous samples were analyzed for EDB. The field quality control samples, trip blanks, were provided by the lab, transported with each cooler of samples, and analyzed for volatile organic compounds only.

The sample was collected by TetraTech NUS on November 29-30, 2000 and analyzed by Severn Trent Laboratories (STL). All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 8260B, 8310, EPA 504.1, and FL DEP PRO. The data contained in this SDG were validated with regard to the following parameters:

*	• Data completeness
	• Holding times
*	• Initial/continuing calibrations
*	• Laboratory method and field quality control blank results
	• Surrogate spike recoveries
*	• 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 Organics

Aqueous samples were analyzed by two methods: GC/MS by SW846-8260B for BTEX (benzene, toluene, ethylbenzene, and total xylenes) and MTBE (methyl tert-butyl ether) and GC by EPA 504.1 for EDB (1,2-dibromoethane). Soil samples were analyzed by GC/MS by SW846-8260B only. Aqueous samples,

351-GW-MW05-001, 436-GW-MW05-001 and TRIP BLANK, were analyzed on December 20th exceeding the 14 day holding time. All results for BTEX and MTBE were qualified as "H". STL notified TetraTech NUS of the variance and replacement samples were collected on January 2, 2001.

All quality control data reported by SW846-8260B for the soil samples were found to be acceptable.

All quality control data reported by EPA 504.1 for EDB were found to be acceptable.

Polynuclear Aromatic Hydrocarbons

All quality control data reported for this fraction were found to be acceptable.

Petroleum Hydrocarbons

Surrogate recoveries for MPT-436-SS11-02' and MPT-436-SS12-02' exceeded QC limits. Positive results for MPT-436-SS12-02' were qualified as estimated, J.

The recovery for one of the surrogates for the closing CCV (continuing calibration verification) was below QC limits affecting samples 351-GW-MW05-001 and 436-GW-MW05-001. However, surrogate recoveries for both samples were acceptable. No action was taken

Additional Comments

Positive results below the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Petroleum hydrocarbons surrogate recoveries were outside the QC limits.

Other Factors Affecting Data Quality: The holding time was exceeded for BTEX and MTBE for the aqueous samples.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), and the Navy IRCDQM (9/99) NFESC guidelines. 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.

Elena Rodriguez

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

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 MSAs r<0.995
K = ICP Interference – Include ICSAB %Rs
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%

CTO123-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP030

SAMPLE NUMBER:	351-GW-MW05-001	436-GW-MW05-001	TB112900	TB113000
SAMPLE DATE:	11/30/00	11/30/00	11/29/00	11/30/00
LABORATORY ID:	A0L010208002	A0L010208001	A0K300158005	A0L010208003
QC_TYPE:	NORMAL	NORMAL	TRIP BLANK	TRIP BLANK
% 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
VOLATILES												
1,2-DIBROMOETHANE	0.02	U		0.02	U							
BENZENE	4	J	H	1	UJ	H	1	U		1	UJ	H
ETHYLBENZENE	32	J	H	1	UJ	H	1	U		1	UJ	H
METHYL TERT-BUTYL ETHER	29	UJ	H	5	UJ	H	5	U		5	UJ	H
TOLUENE	20	J	H	1	UJ	H	1	U		1	UJ	H
XYLENES, TOTAL	180	J	H	1	UJ	H	1	U		1	UJ	H

CTO123-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP030

SAMPLE NUMBER:	351-GW-MW05-001	436-GW-MW05-001		
SAMPLE DATE:	11/30/00	11/30/00	/ /	/ /
LABORATORY ID:	A0L010208002	A0L010208001		
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
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	93			2	U							
2-METHYLNAPHTHALENE	110			2	U							
ACENAPHTHENE	4	U		1	U							
ACENAPHTHYLENE	4	U		1	U							
ANTHRACENE	4	U		1	U							
BENZO(A)ANTHRACENE	0.4	U		0.1	U							
BENZO(A)PYRENE	0.4	U		0.1	U							
BENZO(B)FLUORANTHENE	0.4	U		0.1	U							
BENZO(G,H,I)PERYLENE	0.4	U		0.1	U							
BENZO(K)FLUORANTHENE	1.2	U		0.3	U							
CHRYSENE	0.4	U		0.1	U							
DIBENZO(A,H)ANTHRACENE	0.4	U		0.1	U							
FLUORANTHENE	0.8	U		0.2	U							
FLUORENE	6.7	J	P	2	U							
INDENO(1,2,3-CD)PYRENE	0.4	U		0.1	U							
NAPHTHALENE	41			2	U							
PHENANTHRENE	4	U		1	U							
PYRENE	0.4	U		0.1	U							

CTO123-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP030

SAMPLE NUMBER:	351-GW-MW05-001	436-GW-MW05-001		
SAMPLE DATE:	11/30/00	11/30/00	/ /	/ /
LABORATORY ID:	A0L010208002	A0L010208001		
QC_TYPE:	NORMAL	NORMAL		
% SOLIDS:	0.0 %	0.0 %	100.0 %	100.0 %
UNITS:	MG/L	MG/L		
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PETROLEUM HYDROCARBONS												
TPH (C8-C40)	5.5			0.5	U							

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP030

Matrix: (soil/water) WG Lab Sample ID:A0L010208 002
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 12/01/00
Work Order: DQNNE1AF Date Extracted:12/20/00
Dilution factor: 5.88 Date Analyzed: 12/20/00
Moisture %:

QC Batch: 0356132

Client Sample Id: 351-GW-MW05-001

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	4.0	J
100-41-4	Ethylbenzene	32	
108-88-3	Toluene	20	
1330-20-7	Xylenes (total)	180	
1634-04-4	Methyl tert-butyl ether	29	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP030

Matrix: (soil/water) WQ Lab Sample ID:A0K300158 005
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 11/30/00
Work Order: DQKGE1AA Date Extracted:12/01/00
Dilution factor: 1 Date Analyzed: 12/01/00
Moisture %:

QC Batch: 0339124

Client Sample Id: TRIP BLANK

TB112900

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
108-88-3	Toluene	1.0	U
1330-20-7	Xylenes (total)	1.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U

1-18-01
JAJ

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP030

Matrix: (soil/water) WQ Lab Sample ID:A0L010208 003
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 12/01/00
Work Order: DQNNF1AA Date Extracted:12/20/00
Dilution factor: 1 Date Analyzed: 12/20/00
Moisture %:

QC Batch: 0356132

Client Sample Id: TRIP BLANK
761130 DO

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
108-88-3	Toluene	1.0	U
1330-20-7	Xylenes (total)	1.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U

1-18-01
JAI

FORM I

TETRA TECH NUS, INC.

Client Sample ID: 351-GW-MW05-001

GC Semivolatiles

Lot-Sample #...: A0L010208-002 Work Order #...: DQNNE1AD Matrix.....: WG
Date Sampled...: 11/30/00 08:20 Date Received..: 12/01/00
Prep Date.....: 12/14/00 Analysis Date..: 12/15/00
Prep Batch #...: 0349391
Dilution Factor: 1 Method.....: EPA-DW 504.1

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2-Dibromoethane (EDB)	ND	0.020	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,1,1,2-Tetrachloroethane	105	(67 - 137)

TETRA TECH NUS, INC.

Client Sample ID: 436-GW-MW05-001

GC Semivolatiles

Lot-Sample #...: A0L010208-001 Work Order #...: DQNNA1AD Matrix.....: WG
Date Sampled...: 11/30/00 07:08 Date Received..: 12/01/00
Prep Date.....: 12/14/00 Analysis Date..: 12/15/00
Prep Batch #...: 0349391
Dilution Factor: 1 Method.....: EPA-DW 504.1

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,2-Dibromoethane (EDB)	ND	0.020	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,1,1,2-Tetrachloroethane	107	(67 - 137)

TETRA TECH NUS, INC.

Client Sample ID: 351-GW-MW05-001

HPLC

Lot-Sample #...:	A0L010208-002	Work Order #...:	DQNNE1AA	Matrix.....:	WG
Date Sampled...:	11/30/00 08:20	Date Received..:	12/01/00 09:10		
Prep Date.....:	12/04/00	Analysis Date..:	12/07/00		
Prep Batch #...:	0339469	Analysis Time..:	10:52		
Dilution Factor:	4	Initial Wgt/Vol:	970 mL	Final Wgt/Vol..:	1 mL
Analyst ID.....:	400112	Instrument ID..:	LC		
		Method.....:	SW846 8310		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	4.0	ug/L
Acenaphthylene	ND	4.0	ug/L
Anthracene	ND	4.0	ug/L
Benzo(a)anthracene	ND	0.40	ug/L
Benzo(a)pyrene	ND	0.40	ug/L
Benzo(b)fluoranthene	ND	0.40	ug/L
Benzo(ghi)perylene	ND	0.40	ug/L
Benzo(k)fluoranthene	ND	1.2	ug/L
Chrysene	ND	0.40	ug/L
Dibenz(a,h)anthracene	ND	0.40	ug/L
Fluoranthene	ND	0.80	ug/L
Fluorene	6.7 J	8.0	ug/L
Indeno(1,2,3-cd)pyrene	ND	0.40	ug/L
1-Methylnaphthalene	93	8.0	ug/L
2-Methylnaphthalene	110	8.0	ug/L
Naphthalene	41	8.0	ug/L
Phenanthrene	ND	4.0	ug/L
Pyrene	ND	0.40	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Carbazole	110	(10 - 127)

NOTE(S):

J Estimated result. Result is less than RL.

TETRA TECH NUS, INC.

Client Sample ID: 351-GW-MW05-001

GC Semivolatiles

Lot-Sample #...:	A0L010208-002	Work Order #...:	DQNNE1AC	Matrix.....:	WG
Date Sampled...:	11/30/00 08:20	Date Received..:	12/01/00 09:10		
Prep Date.....:	12/04/00	Analysis Date..:	12/06/00		
Prep Batch #...:	0339466	Analysis Time..:	21:34		
Dilution Factor:	1	Initial Wgt/Vol:	1010 mL	Final Wgt/Vol..:	2 mL
Analyst ID.....:	400088	Instrument ID..:	HPK		
		Method.....:	FL-DEP FL-PRO		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Petroleum Range Organics (C8 - C40)	5.5	0.50	mg/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nonatriacontane	31	(12 - 149)
o-Terphenyl	70	(51 - 135)

TETRA TECH NUS, INC.

Client Sample ID: 436-GW-MW05-001

GC Semivolatiles

Lot-Sample #...:	A0L010208-001	Work Order #...:	DQNNA1AC	Matrix.....:	WG
Date Sampled...:	11/30/00 07:08	Date Received..:	12/01/00 09:10		
Prep Date.....:	12/04/00	Analysis Date..:	12/06/00		
Prep Batch #...:	0339466	Analysis Time..:	20:54		
Dilution Factor:	1	Initial Wgt/Vol:	980 mL	Final Wgt/Vol..:	2 mL
Analyst ID.....:	400088	Instrument ID..:	HPK		
		Method.....:	FL-DEP FL-PRO		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Petroleum Range Organics (C8 - C40)	ND	0.50	mg/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nonatriacontane	30	(12 - 149)
o-Terphenyl	84	(51 - 135)

APPENDIX C

SUPPORT DOCUMENTATION

MP030

HOLDING TIME
01/04/01

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	351-GW-MW05-001	A0L010208002	NORMAL	MP030	BTEX	11/30/00	12/20/00	12/20/00	20	0	20
UG/L	436-GW-MW05-001	A0L010208001	NORMAL	MP030	BTEX	11/30/00	12/20/00	12/20/00	20	0	20
UG/KG	MPT-436-SS11-02'	A0K300158001	NORMAL	MP030	BTEX	11/29/00	12/05/00	12/05/00	6	0	6
UG/KG	MPT-436-SS11-06'	A0K300158002	NORMAL	MP030	BTEX	11/29/00	12/05/00	12/05/00	6	0	6
UG/KG	MPT-436-SS12-02'	A0K300158003	NORMAL	MP030	BTEX	11/29/00	12/06/00	12/06/00	7	0	7
UG/KG	MPT-436-SS13-06'	A0K300158004	NORMAL	MP030	BTEX	11/29/00	12/05/00	12/05/00	6	0	6
UG/L	TRIP BLANK	A0L010208003	TRIP BLANK	MP030	BTEX	11/30/00	12/20/00	12/20/00	20	0	20
UG/L	TRIP BLANK1	A0K300158005	TRIP BLANK	MP030	BTEX	11/29/00	12/01/00	12/01/00	2	0	2
UG/L	351-GW-MW05-001	A0L010208002	NORMAL	MP030	M	11/30/00	12/11/00	12/11/00	11	0	11
UG/L	436-GW-MW05-001	A0L010208001	NORMAL	MP030	M	11/30/00	12/11/00	12/11/00	11	0	11
MG/KG	MPT-436-SS11-02'	A0K300158001	NORMAL	MP030	M	11/29/00	12/11/00	12/11/00	12	0	12
MG/KG	MPT-436-SS11-06'	A0K300158002	NORMAL	MP030	M	11/29/00	12/11/00	12/11/00	12	0	12
MG/KG	MPT-436-SS12-02'	A0K300158003	NORMAL	MP030	M	11/29/00	12/11/00	12/11/00	12	0	12
MG/KG	MPT-436-SS13-06'	A0K300158004	NORMAL	MP030	M	11/29/00	12/11/00	12/11/00	12	0	12
UG/L	351-GW-MW05-001	A0L010208002	NORMAL	MP030	OV	11/30/00	12/14/00	12/15/00	14	1	15
UG/L	436-GW-MW05-001	A0L010208001	NORMAL	MP030	OV	11/30/00	12/14/00	12/15/00	14	1	15
UG/L	351-GW-MW05-001	A0L010208002	NORMAL	MP030	PAH	11/30/00	12/04/00	12/07/00	4	3	7
UG/L	436-GW-MW05-001	A0L010208001	NORMAL	MP030	PAH	11/30/00	12/04/00	12/06/00	4	2	6
UG/KG	MPT-436-SS11-02'	A0K300158001	NORMAL	MP030	PAH	11/29/00	12/13/00	12/15/00	14	2	16
UG/KG	MPT-436-SS11-06'	A0K300158002	NORMAL	MP030	PAH	11/29/00	12/13/00	12/18/00	14	5	19
UG/KG	MPT-436-SS12-02'	A0K300158003	NORMAL	MP030	PAH	11/29/00	12/13/00	12/15/00	14	2	16
UG/KG	MPT-436-SS13-06'	A0K300158004	NORMAL	MP030	PAH	11/29/00	12/13/00	12/15/00	14	2	16
MG/L	351-GW-MW05-001	A0L010208002	NORMAL	MP030	TPH	11/30/00	12/04/00	12/06/00	4	2	6
MG/L	436-GW-MW05-001	A0L010208001	NORMAL	MP030	TPH	11/30/00	12/04/00	12/06/00	4	2	6

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	MPT-436-SS11-02'	A0K300158001	NORMAL	MP030	TPH	11/29/00	12/11/00	12/16/00	12	5	17
MG/KG	MPT-436-SS11-06'	A0K300158002	NORMAL	MP030	TPH	11/29/00	12/11/00	12/16/00	12	5	17
MG/KG	MPT-436-SS12-02'	A0K300158003	NORMAL	MP030	TPH	11/29/00	12/11/00	12/16/00	12	5	17
MG/KG	MPT-436-SS13-06'	A0K300158004	NORMAL	MP030	TPH	11/29/00	12/11/00	12/16/00	12	5	17

SDG NARRATIVE
MP030

The following report contains the analytical results for two water samples, four solid samples, and two quality control samples submitted to STL North Canton by Tetra Tech NUS, Inc. from the NS Mayport-Bldg. 436 Site. The samples were received November 30 and December 1 2000, according to documented sample acceptance procedures.

FL-PRO and 8310 analyses were performed at STL's Tampa, Florida facility.

STL North Canton utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the method reference page in accordance with the methods indicated. Preliminary results were provided by electronic mail to Alan Pate on December 11, 2000.

Please refer to individual analytical sections for laboratory specific narratives.

SAMPLE RECEIVING

The cooler was received at the laboratory at a temperature of 3.2° C.

Samples 436-GW-MW05-001, 351-GW-MW05-001, and TRIP BLANK for Volatile analyses were mistakenly stored in the GCS cooler. Samples were given to MS immediately upon discovery.

SDG NARRATIVE
MP030

GC/MS VOLATILES

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

Sample(s) that contain results between the MDL and the RL were flagged with "J". There is the possibility of false positive or mis-identification at these quantitation levels. In analytical methods requiring confirmation of the analyte reported, confirmation was performed only down to the standard reporting limit (SRL). The acceptance criteria for QC samples may not be met at these quantitation levels.

Samples in this lot were preserved by freezing in water due to samples effervescing when preserved with sodium bisulfate.

Holding Time Violation

Samples 436-GW-MW05-001, 351-GW-MW05-001, and TRIP BLANK were analyzed after the recommended sample holding time had been exceeded due to an error in the laboratory.

Method Blank Contamination

All analytes in the method blank were less than the associated reporting limits.

MS/MSD/LCS/DCS and Surrogates Outside of QC Criteria

All spike recovery and RPD data met method-specific quality control criteria.

Calibrations

All calibrations and calibration verifications met method-specific quality control criteria.

SDG NARRATIVE
MP030

8310

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

Holding Time Violation

All samples were prepared and analyzed within the method-specified holding time requirements.

Method Blank Contamination

All analytes in the method blank were less than the associated reporting limits.

MS/MSD/LCS/DCS Outside of QC Criteria

All spike recovery and RPD data met method-specific quality control criteria.

Calibrations

All calibrations and calibration verifications met method-specific quality control criteria.

SDG NARRATIVE
MP030

FL-PRO

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

Holding Time Violation

All samples were prepared and analyzed within the method-specified holding time requirements.

Method Blank Contamination

All analytes in the method blank were less than the associated reporting limits.

MS/MSD/LCS/DCS and Surrogates Outside of QC Criteria

All spike recovery and RPD data met method-specific quality control criteria.

Calibrations

Samples MPT-436-SS11-02' and MPT-436-SS12-02' had surrogate recoveries high outside QC limits.

Sample MPT-436-SS11-02' high surrogate recovery for both OTP (primary) with 149% where limits = 143% and C-39 (secondary) with 160% where limits = 22-152%. However, the sample was ND (4.36 mg/kg) for FL PRO where RL = 10 mg/kg and MDL = 8.6 mg/kg.

Sample MPT-436-SS12-02' had high surrogate recovery for C-39 (secondary) with 158% where limits = 22-152% and OTP recovery was within limits with 101% where limits = 45-13%. The sample was positive for FL PRO at 24.6 mg/kg.

Also, the MS/MSD results on sample MPT-436-SS12-02' confirmed the positive results in the native.

CCV's bracketing the data were in control for all analytes. The opening CCV (HPKB 7308) had OTP @ 101%, C-39 @ 109%, and FL PRO @ 112%. The closing CCV (CCV HPKB7319) had OTP @ 102%, C-39 @ 100%, and FL PRO @ 113%. The samples are not affected by the high surrogate recovery, therefore the data is reported.

SDG NARRATIVE
MP030

FL-PRO (continued)

The closing CCV (HPKB 6979) associated with samples 436-GW-MW05-001 and 351-GW-MW05-001' was low outside QC limits for C-39 (secondary) surrogate @ 73% (limits = 75-125%). The OTP (primary) surrogate was in control @ 109%. The associated samples were in control for both OTP and C-39 surrogates and were not effected by the low bias of the C-39 of the closing CCV. Results have been reported as is.

[redacted]

Chain of Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700)

Client	Project Manager	Date	Chain of Custody Number
TETRA TECH NUS	MARK PETERSON	11/30/00	030548
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	
7018 AC SKINNER PKWY SUITE 250	904-281-0400 / 904-281-0070		Page 1 of 1

City	State	Zip Code	Site Contact	Lab Contact
JACKSONVILLE	FL	32256		DENISE POHL

Project Name and Location (State)	Carrier/Waybill Number
NS MAYPORT Bldg. 436	

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): 601, 602	B310	FLOPRO	504	LEAD								Special Instructions/ Conditions of Receipt
436-GW-MW05-001	11/30/00	0708		X				7		1	3				X	X	X	X	X								Cool To 4°C
351-GW-MW05-001	11/30/00	0820		X				7		1	3				X	X	X	X	X								
TRIP BLANK	11/30/00	–		X											X												Refer To Attached
																											Table A & B For
																											Parameter Info

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required

☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☒ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify)

Relinquished By	Date	Time	Received By	Date	Time
1. Alan Pate	11/30/00	1600	1. Anne Sanders	12-1-00	910AM
2.			2.		
3.			3.		

Comments: 3.0°C

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

TETRA TECH NUS, INC.
METHOD BLANK COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP030

Matrix: (soil/water) SOLID Lab Sample ID:A0L060000 124
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / g Date Received: 11/30/00
Work Order: DQWCV1AA Date Extracted:12/05/00
Dilution factor: 1 Date Analyzed: 12/05/00
Moisture %:NA

QC Batch: 0341124

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
71-43-2	Benzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
108-88-3	Toluene	5.0	U
1330-20-7	Xylenes (total)	10	U
1634-04-4	Methyl tert-butyl ether	20	U

FORM I

TETRA TECH NUS, INC.
METHOD BLANK COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP030

Matrix: (soil/water) SOLID Lab Sample ID:A0L080000 124
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / g Date Received: 11/30/00
Work Order: DQ3G51AA Date Extracted:12/06/00
Dilution factor: 1 Date Analyzed: 12/06/00
Moisture %:NA

QC Batch: 0343124

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
71-43-2	Benzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
108-88-3	Toluene	5.0	U
1330-20-7	Xylenes (total)	10	U
1634-04-4	Methyl tert-butyl ether	20	U

FORM I

TETRA TECH NUS, INC.
METHOD BLANK COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP030

Matrix: (soil/water) WATER Lab Sample ID:A0L040000 124
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 11/22/00
Work Order: DQQV41AA Date Extracted:12/01/00
Dilution factor: 1 Date Analyzed: 12/01/00
Moisture %:NA

QC Batch: 0339124

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
108-88-3	Toluene	1.0	U
1330-20-7	Xylenes (total)	1.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U

FORM I

TETRA TECH NUS, INC.
METHOD BLANK COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:MP030

Matrix: (soil/water) WATER Lab Sample ID:A0L210000 132
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 12/16/00
Work Order: DRTD71AA Date Extracted:12/20/00
Dilution factor: 1 Date Analyzed: 12/20/00
Moisture %:NA

QC Batch: 0356132

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
71-43-2	Benzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
108-88-3	Toluene	1.0	U
1330-20-7	Xylenes (total)	1.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U

FORM I

METHOD BLANK REPORT

HPLC

Client Lot #...: A0L010208
MB Lot-Sample #: B0L040000-469

Analysis Date..: 12/06/00
Dilution Factor: 1

Work Order #...: DQRV81AA

Prep Date.....: 12/04/00
Prep Batch #...: 0339469
Initial Wgt/Vol: 1000 mL
Analyst ID.....: 400112

Matrix.....: WATER

Analysis Time..: 16:33
Final Wgt/Vol..: 1 mL
Instrument ID..: LC

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	1.0	ug/L	SW846 8310
Acenaphthylene	ND	1.0	ug/L	SW846 8310
Anthracene	ND	1.0	ug/L	SW846 8310
Benzo(a)anthracene	ND	0.10	ug/L	SW846 8310
Benzo(a)pyrene	ND	0.10	ug/L	SW846 8310
Benzo(b)fluoranthene	ND	0.10	ug/L	SW846 8310
Benzo(ghi)perylene	ND	0.10	ug/L	SW846 8310
Benzo(k)fluoranthene	ND	0.30	ug/L	SW846 8310
Chrysene	ND	0.10	ug/L	SW846 8310
Dibenz(a,h)anthracene	ND	0.10	ug/L	SW846 8310
Fluoranthene	ND	0.20	ug/L	SW846 8310
Fluorene	ND	2.0	ug/L	SW846 8310
Indeno(1,2,3-cd)pyrene	ND	0.10	ug/L	SW846 8310
1-Methylnaphthalene	ND	2.0	ug/L	SW846 8310
2-Methylnaphthalene	ND	2.0	ug/L	SW846 8310
Naphthalene	ND	2.0	ug/L	SW846 8310
Phenanthrene	ND	1.0	ug/L	SW846 8310
Pyrene	ND	0.10	ug/L	SW846 8310

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Carbazole	92	(10 - 127)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

HPLC

Client Lot #...: A0K300158
MB Lot-Sample #: B0L130000-362

Work Order #...: DRCXT1AA

Matrix.....: SOLID

Prep Date.....: 12/13/00
Prep Batch #...: 0348362
Initial Wgt/Vol: 30 g
Analyst ID.....: 400112

Analysis Time..: 22:52
Final Wgt/Vol..: 1 mL
Instrument ID..: LC

Analysis Date..: 12/14/00
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
2-Methylnaphthalene	ND	50	ug/kg	SW846 8310
1-Methylnaphthalene	ND	50	ug/kg	SW846 8310
Acenaphthene	ND	50	ug/kg	SW846 8310
Acenaphthylene	ND	50	ug/kg	SW846 8310
Anthracene	ND	50	ug/kg	SW846 8310
Benzo(a)anthracene	ND	5.0	ug/kg	SW846 8310
Benzo(a)pyrene	ND	5.0	ug/kg	SW846 8310
Benzo(b)fluoranthene	ND	5.0	ug/kg	SW846 8310
Benzo(ghi)perylene	ND	5.0	ug/kg	SW846 8310
Benzo(k)fluoranthene	ND	5.0	ug/kg	SW846 8310
Chrysene	ND	5.0	ug/kg	SW846 8310
Dibenz(a,h)anthracene	ND	5.0	ug/kg	SW846 8310
Fluoranthene	ND	5.0	ug/kg	SW846 8310
Fluorene	ND	50	ug/kg	SW846 8310
Indeno(1,2,3-cd)pyrene	ND	5.0	ug/kg	SW846 8310
Naphthalene	ND	50	ug/kg	SW846 8310
Phenanthrene	ND	50	ug/kg	SW846 8310
Pyrene	ND	5.0	ug/kg	SW846 8310

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Carbazole	80	(17 - 115)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: A0K300158	Work Order #...: DQ75N1AA	Matrix.....: SOLID
MB Lot-Sample #: B0L110000-400		
	Prep Date.....: 12/11/00	Analysis Time..: 02:10
Analysis Date..: 12/16/00	Prep Batch #...: 0346400	Final Wgt/Vol..: 2 mL
Dilution Factor: 1	Initial Wgt/Vol: 30 g	Instrument ID..: HPK
	Analyst ID.....: 400088	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Petroleum Range Organics (C8 - C40)	ND	10	mg/kg	FL-DEP FL-PRO

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nonatriacontane	42	(22 - 152)
o-Terphenyl	117	(45 - 143)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #...:	A0K300158	Work Order #...:	DQKF81AG-MS	Matrix.....:	SO
MS Lot-Sample #:	A0K300158-003		DQKF81AH-MSD		
Date Sampled...:	11/29/00 10:50	Date Received..:	11/30/00 09:10		
Prep Date.....:	12/11/00	Analysis Date..:	12/16/00		
Prep Batch #...:	0346400	Analysis Time..:	09:49		
Dilution Factor:	1	Initial Wgt/Vol:	30.35 g	Final Wgt/Vol..:	2 mL
Analyst ID.....:	400088	Instrument ID..:	HPK		

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Petroleum Range Organics (C8 - C40)	**96**	**(46 - 115)**			**FL-DEP FL-PRO**
	126 a	**(46 - 115)**	**19**	**(0-45)**	**FL-DEP FL-PRO**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nonatriacontane	67	(22 - 152)
	48	(22 - 152)
o-Terphenyl	103	(45 - 143)
	109	(45 - 143)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

MATRIX SPIKE SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #...:	A0K300158	Work Order #...:	DQKF81AG-MS	Matrix.....:	SO
MS Lot-Sample #:	A0K300158-003		DQKF81AH-MSD		
Date Sampled...:	11/29/00 10:50	Date Received..:	11/30/00 09:10		
Prep Date.....:	12/11/00	Analysis Date..:	12/16/00		
Prep Batch #...:	0346400	Analysis Time..:	09:49		
Dilution Factor:	1	Initial Wgt/Vol:	30.35 g	Final Wgt/Vol..:	2 mL
Analyst ID.....:	400088	Instrument ID..:	HPK		

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Petroleum Range Organics (C8 - C40)	26	59	83	mg/kg	96		FL-DEP FL-PRO
	26	60	100	mg/kg	126 a	19	FL-DEP FL-PRO

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nonatriacontane	67	(22 - 152)
	48	(22 - 152)
o-Terphenyl	103	(45 - 143)
	109	(45 - 143)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

STL Tampa East

Data file : \\Qtamfl02\D\Chem\gcs\hpk.i\121500-2.b\HPKB7298.D
Lab Smp Id: IB
Inj Date : 15-DEC-2000 23:21
Operator : 400088 Inst ID: hpk.i
Smp Info : IB
Misc Info : IB
Comment :
Method : \\Qtamfl02\D\Chem\gcs\hpk.i\121500-2.b\FLAPRO.m
Meth Date : 16-Dec-2000 14:54 mccombsr Quant Type: ESTD
Cal Date : 15-DEC-2000 13:55 Cal File: HPKB7285.D
Als bottle: 1 QC Sample: INSTBLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: 1-all.sub
Target Version: 4.10
Processing Host: TPAP1149

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng)	FINAL (ng)

REPORT

STL Tampa East

Data file : \\Qtamfl02\D\Chem\gcs\hpk.i\121500-2.b\HPKB7307.D
Lab Smp Id: IB
Inj Date : 16-DEC-2000 05:38
Operator : 400088 Inst ID: hpk.i
Smp Info : IB
Misc Info : IB
Comment :
Method : \\Qtamfl02\D\Chem\gcs\hpk.i\121500-2.b\FLAPRO.m
Meth Date : 16-Dec-2000 14:54 mccombsr Quant Type: ESTD
Cal Date : 15-DEC-2000 13:55 Cal File: HPKB7285.D
Als bottle: 1 QC Sample: INSTBLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: 1-all.sub
Target Version: 4.10
Processing Host: TPAP1149

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng)	CONCENTRATIONS FINAL (ng)

REPORT

STL Tampa East

Data file : \\Qtamfl02\D\Chem\gcs\hpk.i\121500-2.b\HPKB7318.D
Lab Smp Id: IB
Inj Date : 16-DEC-2000 13:17
Operator : 400088 Inst ID: hpk.i
Smp Info : IB
Misc Info : IB
Comment :
Method : \\Qtamfl02\D\Chem\gcs\hpk.i\121500-2.b\FLAPRO.m
Meth Date : 16-Dec-2000 14:54 mccombsr Quant Type: ESTD
Cal Date : 15-DEC-2000 13:55 Cal File: HPKB7285.D
Als bottle: 1 QC Sample: INSTBLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: 1-all.sub
Target Version: 4.10
Processing Host: TPAP1149

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng)	FINAL (ng)

REPORT

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: A0L010208	Work Order #...: DQRWA1AA	Matrix.....: WATER
MB Lot-Sample #: B0L040000-466		
	Prep Date.....: 12/04/00	Analysis Time..: 01:44
Analysis Date..: 12/06/00	Prep Batch #...: 0339466	Final Wgt/Vol..: 2 mL
Dilution Factor: 1	Initial Wgt/Vol: 1000 mL	Instrument ID..: HPK
	Analyst ID.....: 400088	

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Petroleum Range Organics (C8 - C40)	ND	0.50	mg/L	FL-DEP FL-PRO

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nonatriacontane	25	(12 - 149)
o-Terphenyl	79	(51 - 135)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

STL Tampa East

Data file : \\Qtamfl02\D\Chem\gcs\hpk.i\120500-2.b\HPKB6937.D
Lab Smp Id: IB
Inj Date : 05-DEC-2000 20:30
Operator : 400088 Inst ID: hpk.i
Smp Info : IB
Misc Info : IB
Comment :
Method : \\Qtamfl02\D\Chem\gcs\hpk.i\120500-2.b\FLAPRO.m
Meth Date : 06-Dec-2000 08:33 mccombsr Quant Type: ESTD
Cal Date : Cal File:
Als bottle: 1 QC Sample: INSTBLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: 1-all.sub
Target Version: 4.10
Processing Host: TPAP1149

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng)	CONCENTRATIONS FINAL (ng)
S 3 Fla-PRO	0.950	26.500		682214		

REPORT

STL Tampa East

Data file : \\Qtamfl02\D\Chem\gcs\hpk.i\120500-2.b\HPKB6953.D
Lab Smp Id: IB
Inj Date : 06-DEC-2000 06:56
Operator : 400088 Inst ID: hpk.i
Smp Info : IB
Misc Info : IB
Comment :
Method : \\Qtamfl02\D\Chem\gcs\hpk.i\120500-2.b\FLAPRO.m
Meth Date : 06-Dec-2000 08:33 mccombsr Quant Type: ESTD
Cal Date : 06-DEC-2000 00:25 Cal File: HPKB6943.D
Als bottle: 1 QC Sample: INSTBLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: 1-all.sub
Target Version: 4.10
Processing Host: TPAP1149

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng)	FINAL (ng)
S 3 Fla-PRO	0.950	26.500		282680	2.39800	2.3979952

REPORT

STL Tampa East

Data file : \\Qtamfl02\D\Chem\gcs\hpk.i\120500-2.b\HPKB6978.D
Lab Smp Id: IB
Inj Date : 06-DEC-2000 23:33
Operator : 400088 Inst ID: hpk.i
Smp Info : IB
Misc Info : IB
Comment :
Method : \\Qtamfl02\D\Chem\gcs\hpk.i\120500-2.b\FLAPRO.m
Meth Date : 07-Dec-2000 07:37 mccombsr Quant Type: ESTD
Cal Date : 06-DEC-2000 00:25 Cal File: HPKB6943.D
Als bottle: 1 QC Sample: INSTBLANK
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: 1-all.sub
Target Version: 4.10
Processing Host: TPAP1149

Compound#	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ng)	CONCENTRATIONS FINAL (ng)
S 3 Fla-PRO	0.950	26.500		1192023	10.1120	10.1120187

REPORT

METHOD BLANK REPORT

GC Semivolatiles

Client Lot #...: A0L010208 Work Order #...: DRE1E1AA Matrix.....: WATER
MB Lot-Sample #: B0L140000-391

Prep Date.....: 12/14/00
Analysis Date..: 12/15/00 Prep Batch #...: 0349391
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
1,2-Dibromoethane (EDB)	ND	0.020	ug/L	EPA-DW 504.1

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,1,1,2-Tetrachloroethane	104	(67 - 137)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**Mr. Mark Peterson**	**DATE:**	**January 12, 2001**
FROM:	**Elena Rodriguez**	**COPIES:**	**DV FILE**
SUBJECT:	**INORGANIC DATA VALIDATION - METALS** **CTO 123, NS Mayport** **SDG MP030**		

SAMPLES:

2/Aqueous/	4/Soil/
436-GW-MW05-001	MPT-436-SS11-02'
351-GW-MW05-001	MPT-436-SS11-06'
	MPT-436-SS12-02'
	MPT-436-SS13-06'

OVERVIEW

The sample set for CTO 123, NS Mayport, SDG MP030 consists of 2 aqueous environmental samples and 4 soil environmental samples. All samples were analyzed lead.

The sample was collected by TetraTech NUS on November 29-30, 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 the following analytical and reporting protocols: SW-846 Method 6010B. The data contained in this SDG were validated with regard to the following parameters:

* • Data completeness
* • Holding times
* • Initial/continuing calibrations
* • Laboratory method and quality control blank results
* • 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.

Metals
All quality control data reported for this fraction were found to be acceptable.

EXECUTIVE SUMMARY

Laboratory Performance Issues: None.

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 entitles "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)."

Elena Rodriguez
Tetra Tech NUS, Inc.

Elena Rodriguez

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

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 MSAs r<0.995
K = ICP Interference – Include ICSAB %Rs
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%

CTO123-NS MAYPORT
WATER DATA
QUANTERRA
SDG: MP030

SAMPLE NUMBER:	351-GW-MW05-001	436-GW-MW05-001		
SAMPLE DATE:	11/30/00	11/30/00	/ /	/ /
LABORATORY ID:	A0L010208002	A0L010208001		
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
INORGANICS												
LEAD	1.9	U		1.9	U							

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

STL North Canton

Metals Data Reporting Form

Sample Results

Lab Sample ID: DQNNE **Client ID:** 351-GW-MW05-001

Matrix: Water **Units:** ug/L **Prep Date:** 12/11/00 **Prep Batch:** 0343200

Weight: NA **Volume:** 50 **Percent Moisture:** NA

Element	WL/ Mass	IDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Lead	220.35	1.9	3.0	1.9	U	1	ICPST	12/11/00	23:03

Comments:

Version 4.10.5

U Result is less than the IDL
B Result is between IDL and RL

Form 1 Equivalent

APPENDIX C

SUPPORT DOCUMENTATION

SDG NARRATIVE
MP030

The following report contains the analytical results for two water samples, four solid samples, and two quality control samples submitted to STL North Canton by Tetra Tech NUS, Inc. from the NS Mayport-Bldg. 436 Site. The samples were received November 30 and December 1 2000, according to documented sample acceptance procedures.

FL-PRO and 8310 analyses were performed at STL's Tampa, Florida facility.

STL North Canton utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the method reference page in accordance with the methods indicated. Preliminary results were provided by electronic mail to Alan Pate on December 11, 2000.

Please refer to individual analytical sections for laboratory specific narratives.

SAMPLE RECEIVING

The cooler was received at the laboratory at a temperature of 3.2° C.

Samples 436-GW-MW05-001, 351-GW-MW05-001, and TRIP BLANK for Volatile analyses were mistakenly stored in the GCS cooler. Samples were given to MS immediately upon discovery.

MP030

HOLDING TIME
01/04/01

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	351-GW-MW05-001	A0L010208002	NORMAL	MP030	BTEX	11/30/00	12/20/00	12/20/00	20	0	20
UG/L	436-GW-MW05-001	A0L010208001	NORMAL	MP030	BTEX	11/30/00	12/20/00	12/20/00	20	0	20
UG/KG	MPT-436-SS11-02'	A0K300158001	NORMAL	MP030	BTEX	11/29/00	12/05/00	12/05/00	6	0	6
UG/KG	MPT-436-SS11-06'	A0K300158002	NORMAL	MP030	BTEX	11/29/00	12/05/00	12/05/00	6	0	6
UG/KG	MPT-436-SS12-02'	A0K300158003	NORMAL	MP030	BTEX	11/29/00	12/06/00	12/06/00	7	0	7
UG/KG	MPT-436-SS13-06'	A0K300158004	NORMAL	MP030	BTEX	11/29/00	12/05/00	12/05/00	6	0	6
UG/L	TRIP BLANK	A0L010208003	TRIP BLANK	MP030	BTEX	11/30/00	12/20/00	12/20/00	20	0	20
UG/L	TRIP BLANK1	A0K300158005	TRIP BLANK	MP030	BTEX	11/29/00	12/01/00	12/01/00	2	0	2
UG/L	351-GW-MW05-001	A0L010208002	NORMAL	MP030	M	11/30/00	12/11/00	12/11/00	11	0	11
UG/L	436-GW-MW05-001	A0L010208001	NORMAL	MP030	M	11/30/00	12/11/00	12/11/00	11	0	11
MG/KG	MPT-436-SS11-02'	A0K300158001	NORMAL	MP030	M	11/29/00	12/11/00	12/11/00	12	0	12
MG/KG	MPT-436-SS11-06'	A0K300158002	NORMAL	MP030	M	11/29/00	12/11/00	12/11/00	12	0	12
MG/KG	MPT-436-SS12-02'	A0K300158003	NORMAL	MP030	M	11/29/00	12/11/00	12/11/00	12	0	12
MG/KG	MPT-436-SS13-06'	A0K300158004	NORMAL	MP030	M	11/29/00	12/11/00	12/11/00	12	0	12
UG/L	351-GW-MW05-001	A0L010208002	NORMAL	MP030	OV	11/30/00	12/14/00	12/15/00	14	1	15
UG/L	436-GW-MW05-001	A0L010208001	NORMAL	MP030	OV	11/30/00	12/14/00	12/15/00	14	1	15
UG/L	351-GW-MW05-001	A0L010208002	NORMAL	MP030	PAH	11/30/00	12/04/00	12/07/00	4	3	7
UG/L	436-GW-MW05-001	A0L010208001	NORMAL	MP030	PAH	11/30/00	12/04/00	12/06/00	4	2	6
UG/KG	MPT-436-SS11-02'	A0K300158001	NORMAL	MP030	PAH	11/29/00	12/13/00	12/15/00	14	2	16
UG/KG	MPT-436-SS11-06'	A0K300158002	NORMAL	MP030	PAH	11/29/00	12/13/00	12/18/00	14	5	19
UG/KG	MPT-436-SS12-02'	A0K300158003	NORMAL	MP030	PAH	11/29/00	12/13/00	12/15/00	14	2	16
UG/KG	MPT-436-SS13-06'	A0K300158004	NORMAL	MP030	PAH	11/29/00	12/13/00	12/15/00	14	2	16
MG/L	351-GW-MW05-001	A0L010208002	NORMAL	MP030	TPH	11/30/00	12/04/00	12/06/00	4	2	6
MG/L	436-GW-MW05-001	A0L010208001	NORMAL	MP030	TPH	11/30/00	12/04/00	12/06/00	4	2	6

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	MPT-436-SS11-02'	A0K300158001	NORMAL	MP030	TPH	11/29/00	12/11/00	12/16/00	12	5	17
MG/KG	MPT-436-SS11-06'	A0K300158002	NORMAL	MP030	TPH	11/29/00	12/11/00	12/16/00	12	5	17
MG/KG	MPT-436-SS12-02'	A0K300158003	NORMAL	MP030	TPH	11/29/00	12/11/00	12/16/00	12	5	17
MG/KG	MPT-436-SS13-06'	A0K300158004	NORMAL	MP030	TPH	11/29/00	12/11/00	12/16/00	12	5	17

SDG NARRATIVE
MP030

METALS

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

Holding Time Violation

All samples were prepared and analyzed within the method-specified holding time requirements.

Method Blank Contamination

All analytes in the method blank were less than the associated reporting limits.

MS/MSD/LCS/DCS Outside of QC Criteria

All spike recovery and RPD data met method-specific quality control criteria.

Calibrations

All calibrations and calibration verifications met method-specific quality control criteria.

Chain of Custody Record

STL-4124 (0700)

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

Client	TETRA TECH NUS
Address	7018 AC SKINNER PKWY SUITE 250
City	JACKSONVILLE
State	FL
Zip Code	32256
Project Name and Location (State)	NS MAYPORT Bldg. 436
Contract/Purchase Order/Quote No.	
Project Manager	MARK PETERSON
Telephone Number (Area Code)/Fax Number	904-281-0400 / 904-281-0070
Site Contact	
Lab Contact	DENISE POHL
Carrier/Waybill Number	
Date	11/30/00
Chain of Custody Number	030548
Lab Number	
Page	1 of 1

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): 601,602	8310	FLOTRO	504	LEAD	Special Instructions/ Conditions of Receipt
436-GW-MW05-001	11/30/00	0708		X			7		1	3			X	X	X	X	X	COOL TO 4°C
351-GW-MW05-001	11/30/00	0820		X			7		1	3			X	X	X	X	X	
TRIP BLANK	11/30/00	-		X									X					REFER TO ATTACHED TABLE A & B FOR PARAMETER INFO

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☒ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Alan Pate	11/30/00	1600	1. Received By: Anne Sanders	12-1-00	910 AM
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments: 3.0°C

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

STL North Canton

STL North Canton

Metals Data Reporting Form

Initial Calibration Blank Results

Instrument: ICPST **Units:** ug/L

Chart Number: i51211a.arc

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	ICB 12/11/00 10:28 AM									
			Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Lead	220.353	3	1.9	U								

Version 4.10.5

U Result is less than the IDL
B Result is between IDL and RL

Form 3 Equivalent

STL North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: ICPST **Units:** ug/L

Chart Number: i51211a.arc

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	CCB 12/11/00 10:56 AM		CCB 12/11/00 11:44 AM		CCB 12/11/00 12:47 PM		CCB 12/11/00 1:48 PM		CCB 12/11/00 2:51 PM	
			Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Lead	220.353	3	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U

Version 4.10.5

U Result is less than the IDL
B Result is between IDL and RL

Form 3 Equivalent

STL North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: ICPST **Units:** ug/L

Chart Number: i51211a.arc

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	CCB 12/11/00 3:54 PM		CCB 12/11/00 4:56 PM		CCB 12/11/00 5:59 PM		CCB 12/11/00 7:08 PM		CCB 12/11/00 8:37 PM	
			Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Lead	220.353	3	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U

Version 4.10.5

U Result is less than the IDL
B Result is between IDL and RL

Form 3 Equivalent

STL North Canton

Metals Data Reporting Form

Continuing Calibration Blank Results

Instrument: ICPST **Units:** ug/L

Chart Number: i51211a.arc

Standard Source: _____ **Standard ID:** _____

Element	WL/ Mass	Report Limit	CCB 12/11/00 9:39 PM		CCB 12/11/00 10:43 PM		CCB 12/11/00 11:47 PM					
			Found	Q	Found	Q	Found	Q	Found	Q	Found	Q
Lead	220.353	3	1.9	U	1.9	U	1.9	U				

Version 4.10.5

U Result is less than the IDL
B Result is between IDL and RL

Form 3 Equivalent

STL North Canton

Metals Data Reporting Form

Preparation Blank Results

Lab Sample ID: DQ3VTB

Matrix: Water **Units:** ug/L **Prep Date:** 12/11/00 **Prep Batch:** 0343200

Weight: NA **Volume:** 50 **Percent Moisture:** NA

Element	WL/ Mass	IDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Lead	220.353	1.9	3.0	1.9	U	1	ICPST	12/11/00	22:26

Comments:

Version 4.10.5

U Result is less than the IDL
B Result is between IDL and RL

Form 3 Equivalent

STL North Canton

Metals Data Reporting Form

Preparation Blank Results

Lab Sample ID: DQ3V1B

Matrix: Soil **Units:** mg/kg **Prep Date:** 12/11/00 **Prep Batch:** 0343203

Weight: 1.00 **Volume:** 100 **Percent Moisture:** NA

Element	WL/ Mass	IDL	Report Limit	Conc	Q	DF	Instr	Anal Date	Anal Time
Lead	220.353	0.19	0.30	0.19	U	1	ICPST	12/11/00	21:28

Comments:

Version 4.10.5

U Result is less than the IDL
B Result is between IDL and RL

Form 3 Equivalent