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SITE ASSESSMENT REPORT FOR SITE 1586 NS MAYPORT FL
6/1/2003
TETRA TECH NUS

Site Assessment Report
for
Site 1586

Naval Station Mayport
Mayport, Florida



Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order 0247

June 2003

**SITE ASSESSMENT REPORT
FOR
SITE 1586**

**NAVAL STATION MAYPORT
MAYPORT, FLORIDA**

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

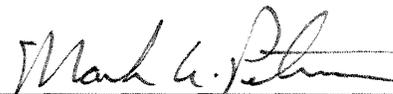
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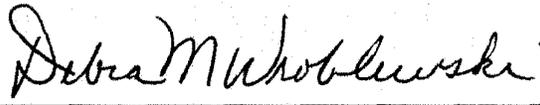
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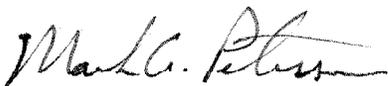


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PROFESSIONAL CERTIFICATION

Site Assessment Report
Site 1586
Naval Station Mayport
Mayport, Florida

This Site Assessment Report was prepared in general accordance with Chapter 62-770, Florida Administrative Code under the direct supervision of the undersigned geologist using geologic and hydrogeologic principles standard to the profession at the time the report was prepared. If 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 Peterson, P.G.
Florida License Number PG-0001852

6/9/03

Date

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ACRONYMS

BTEX	Benzene, Toluene, Ethylbenzene, and Total Xylenes
bls	Below Land Surface
°C	Degrees Celsius
CLEAN	Comprehensive Long-term Environmental Action Navy
COCs	Contaminants of Concern
CompQAP	Comprehensive Quality Assurance Plan
CTO	Contract Task Order
DPT	Direct-Push Technology
EDB	1,2-Dibromoethane or Ethylene Dibromide
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	Flame-Ionization Detector
FL-PRO	Florida Petroleum Range Organics
ft	Foot or Feet
ft/day	Feet (or Foot) per Day
ft/ft	Feet (or Foot) per Foot (or Feet)
GAG	Gasoline Analytical Group
GCTLs	Groundwater Cleanup Target Levels
HSAs	Hollow Stem Augers
ID	Inside Diameter
KAG	Kerosene Analytical Group
µg/L	Micrograms per Liter
mg/kg	Milligrams per Kilogram
mgd	Million Gallons per Day
msl	Mean Sea Level
MTBE	Methyl Tertiary-Butyl Ether
Navy	United States Navy
NS	Naval Station
OVA	Organic Vapor Analyzer
PAHs	Polynuclear Aromatic Hydrocarbons
ppm	Parts per Million
PVC	Polyvinyl Chloride
SA	Site Assessment
SAR	Site Assessment Report
SCTLs	Soil Cleanup Target Levels

ACRONYMS (Continued)

SOUTHNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command
TBM	Temporary Benchmark
TRPH	Total Recoverable Petroleum Hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) has completed a Site Assessment (SA) at Site 1586 at Naval Station (NS) Mayport, Mayport, Florida in accordance with the requirements of Chapter 62-770, Florida Administrative Code (FAC). This Site Assessment Report (SAR) is being submitted to the Florida Department of Environmental Protection (FDEP) for approval. This effort has been undertaken to evaluate potential impacts as a result of a spill that occurred when a fuel storage tank contractor released approximately 1400 gallons of fuel oil via a disconnected tank fill port.

TtNUS performed the following tasks during the SA:

- Reviewed available United States Navy (Navy) documents to:
 - Identify potential sources and receptors for petroleum hydrocarbons in the vicinity.
 - Identify private potable wells within a 0.25-mile radius of the site and public water supply wells within a 0.5-mile radius.
 - Locate nearby surface water bodies.
 - Evaluate surface hydrology and drainage.
- Conducted a site survey to construct a site plan and measured depth to groundwater at specific locations to calculate groundwater flow direction and gradient.
- Performed a soil vapor survey in the unsaturated zone to delineate areas of excessively contaminated soil, if present.
- Advanced 13 soil borings on site using Direct-Push Technology (DPT) and collected soil and groundwater samples from the borings for analysis by mobile and fixed-base laboratories.
- Installed four shallow monitoring wells and collected groundwater samples for analysis of Gasoline Analytical Group (GAG) and Kerosene Analytical Group (KAG) constituents.
- Referenced and obtained appropriate aquifer data from the United States Geological Survey (USGS) to determine aquifer characteristics at NS Mayport.

The results of the soil vapor analysis during the SA revealed "excessively contaminated" soil, as defined by Chapter 62-770.200, FAC. Soil samples analyzed on site by the mobile laboratory and confirmatory

samples analyzed by the fixed-base laboratory contained reported concentrations of analyzed compounds exceeding FDEP Soil Cleanup Target Levels (SCTLs). Similarly, groundwater samples analyzed by the mobile and fixed-base laboratory contained analyzed compounds with reported concentrations exceeding FDEP Groundwater Cleanup Target Levels (GCTLs). Free product was measured in four on-site wells ranging from 7 to 14 inches in thickness.

Based on the results of the SAR, preparation of a Remedial Action Plan is recommended to address petroleum impacts to soil and groundwater at Site 1586.

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

A SA was conducted at Site 1586, NS Mayport, by TtNUS for the Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) under Contract Task Order (CTO) 0247, for the Comprehensive Long-term Environmental Action Navy (CLEAN) III, Contract Number N62467-94-D-0888. The data collected during the investigation was used to prepare this SAR. Information from the field investigation has been assimilated into this SAR to provide a characterization of site conditions from which to base future courses of action.

The purpose of this SA was to evaluate the extent of petroleum hydrocarbons in subsurface soils and groundwater at Site 1586 in accordance with the requirements of Chapter 62-770, FAC.

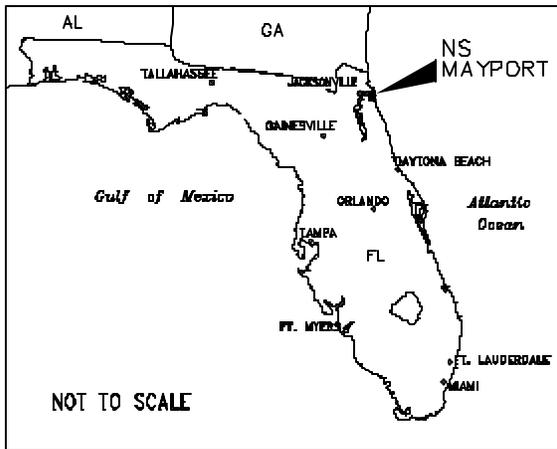
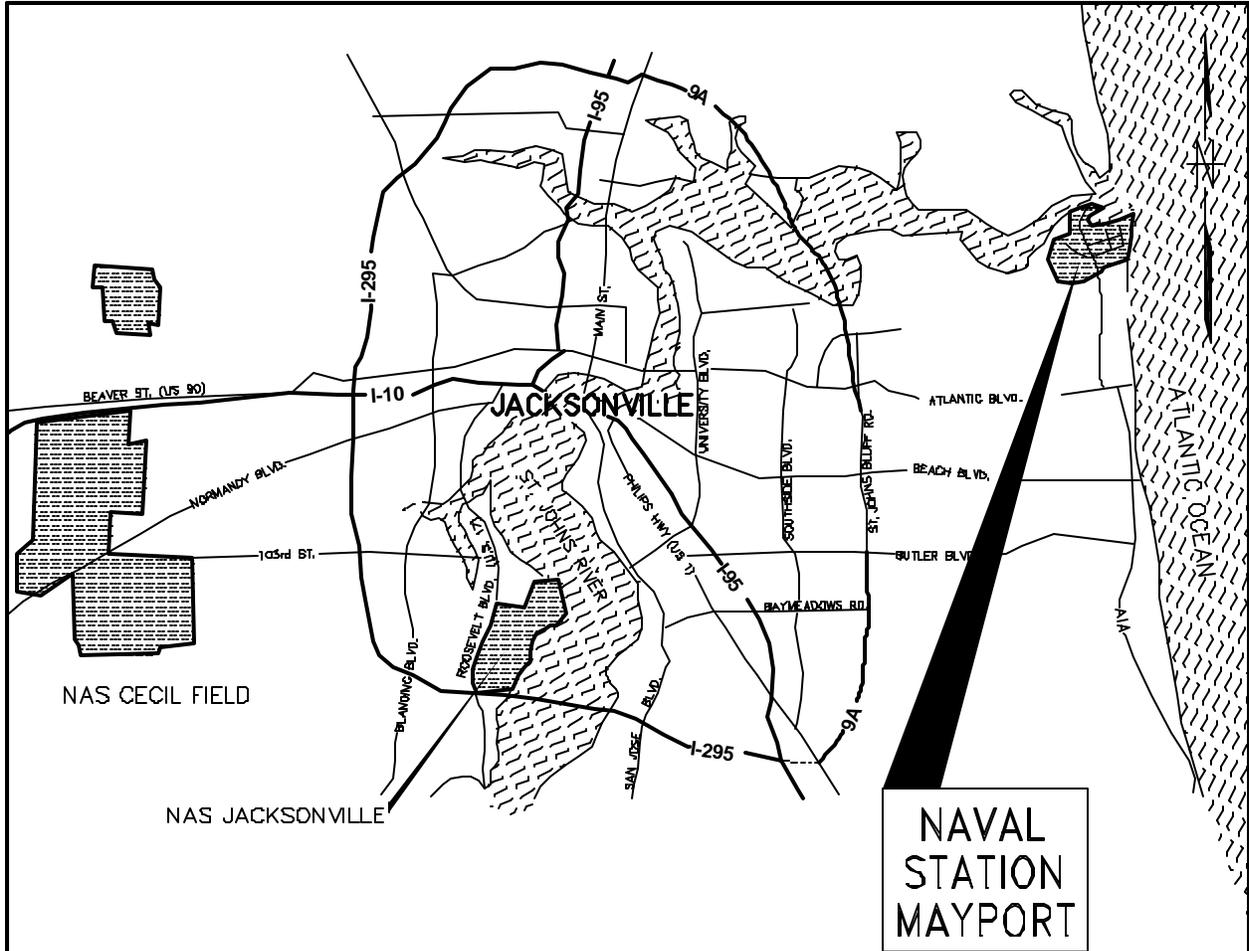
1.2 FACILITY AND SITE LOCATION

NS Mayport is located within the corporate limits of the city of Jacksonville, Duval County, Florida, approximately 12 miles to the northeast of downtown Jacksonville, and adjacent to the town of Mayport. A Regional Area Map is provided as Figure 1-1. The station complex is located on the northern end of a peninsula bound by the Atlantic Ocean to the east and the St. Johns River to the north and west. NS Mayport occupies the entire northern part of the peninsula except for the town of Mayport, which is located to the west between the station and the St. Johns River.

Building 1586 is located in the northeastern region of the base as indicated on the Site Location Map (Figure 1-2). The subject site is located at the end of Building 1586 on the northeastern side. The building is used as the Bachelors' Quarters.

1.3 REGIONAL GEOLOGY AND HYDROGEOLOGY

Northeast Florida is underlain by two main aquifer systems: the surficial aquifer system and the Floridan aquifer system. The surficial aquifer system in the vicinity of NS Mayport includes sediments of the Upper Hawthorn Group, upper Miocene and Pliocene deposits, and Pleistocene and Holocene deposits [United States Department of Agriculture (USDA), 1978]. These undifferentiated surficial deposits extend from land surface to the top of the Hawthorn Group about 50 feet (ft) below land surface (bls) (USGS, 1997).

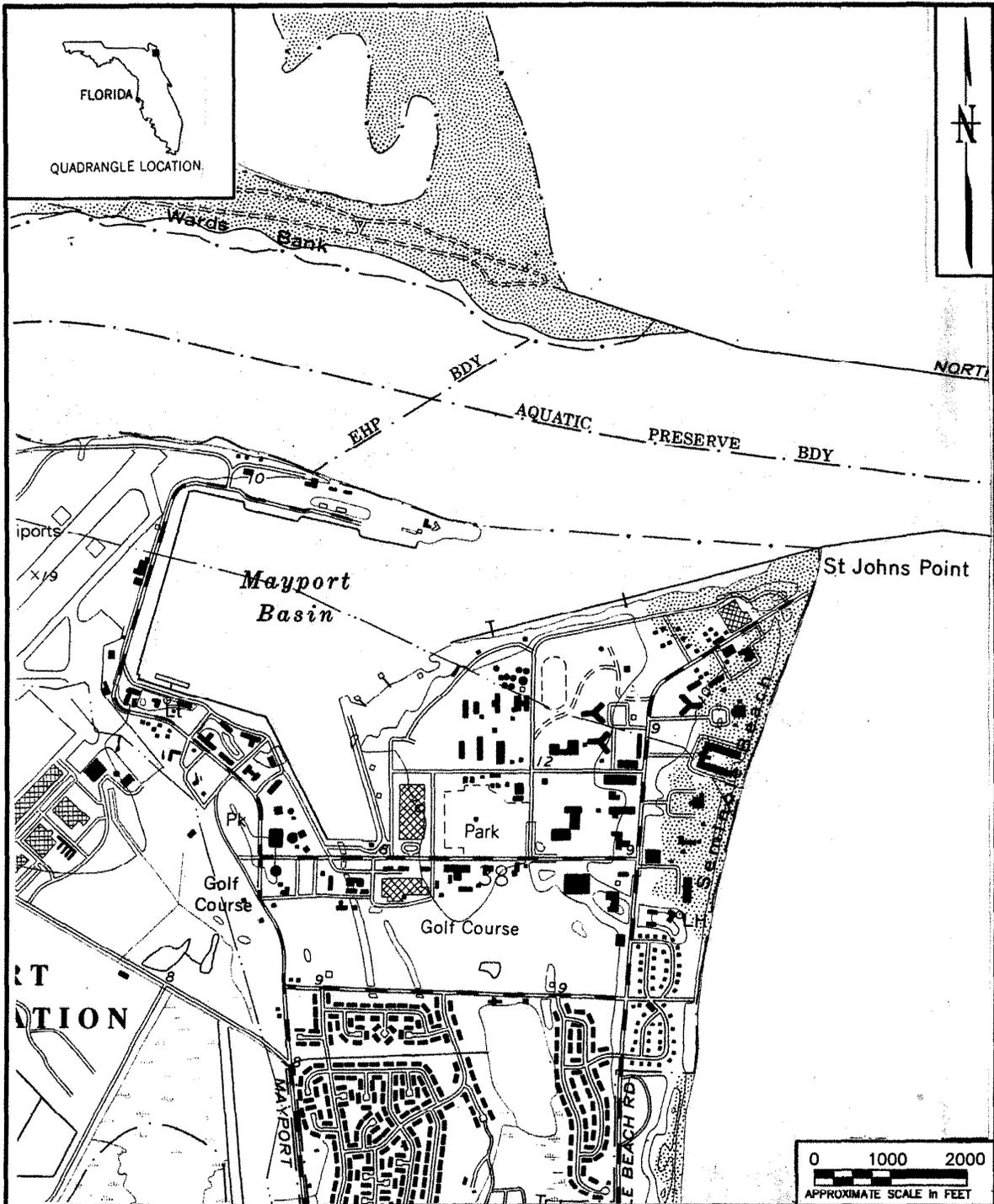


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REGIONAL AREA MAP
SITE 1586
SITE ASSESSMENT REPORT
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

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SITE LOCATION MAP
 SITE ASSESSMENT REPORT
 SITE 1586
 NAVAL STATION MAYPORT
 MAYPORT, FLORIDA

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Source: USGS Mayport, Florida 7.5-Minute Topographic Quadrangle, Revised 1992

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 ft 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. In the area of investigation, the system is comprised of (from youngest to oldest) the Ocala Formation, the Avon Park Formation, and the Oldsmar Limestone. The Hawthorn Group, a confining unit between the surficial aquifer system and Floridan aquifer system, unconformably overlies the Floridan (USDA, 1978).

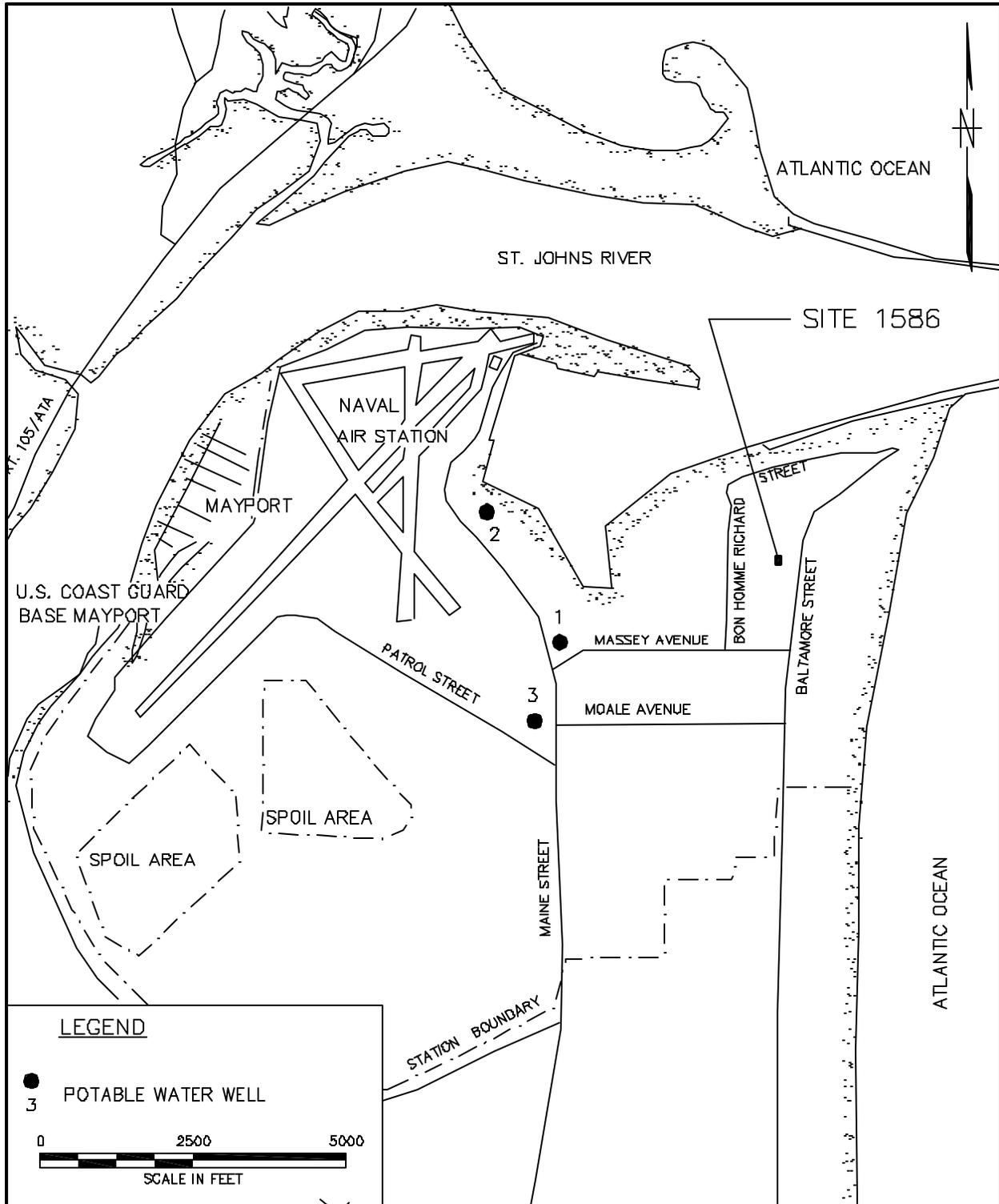
1.4 POTABLE WATER WELL SURVEY

The potable water supply information presented in this report was obtained from a Contamination Assessment Report for Site 1330 prepared by the United States Army Corps of Engineers (USACE) in 1992 (USACE, 1992). Personnel at the water treatment plant and the maintenance contractor, Lon Coleman Jones, confirmed the accuracy of the water well information.

Potable water is supplied to NS Mayport by three on-base supply wells. One of the three active wells is 12 inches in diameter, and the other two are 16-inch diameter wells. All three wells draw water from the Floridan aquifer at depths approximately 1,000 ft. Well capacities range between 2.1 and 2.9 million gallons per day (mgd) with a combined total pumping capacity of 9.0 mgd. The base water treatment plant treats the water prior to distribution.

Potable well information is summarized on Table 1-1. The locations of the potable wells are depicted on Figure 1-3. No potable wells are within a 0.5-mile radius of the study site.

<p style="text-align: center;">TABLE 1-1 Potable Water Well Survey Results Site Assessment Report Site 1586 Naval Station Mayport Mayport, Florida</p>				
Well ID	Distance from Site (miles)	Diameter (inches)	Depth of Well (ft bls)	Use
1	Beyond 0.5	12	1,000	In use
2	Beyond 0.5	16	1,000	In use
3	Beyond 0.5	16	1,000	In use



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			APPROVED BY APPROVED BY	DATE DATE
			DRAWING NO. FIGURE 1-3	REV. 0

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1.5 TOPOGRAPHY AND DRAINAGE

NS Mayport is located in the Southeastern Coastal Plain physiographic province. The topography is mostly low, gentle to flat, and composed of a series of ancient marine terraces. NS Mayport is located within the Silver Bluff Terrace. The average land surface elevation at NS Mayport is between 8 and 10 ft above mean sea level (msl) (USGS, 1992).

As mentioned in Section 1.2, Site 1586 is located south of the St. Johns River and east of the turning basin (see Figure 1-1). Site surface drainage flows radially away from the building and the drainage is generally sluggish and poorly defined due to low relief over the area.

1.6 LAND USE IN SITE VICINITY

The site is located in a commercial area of the base.

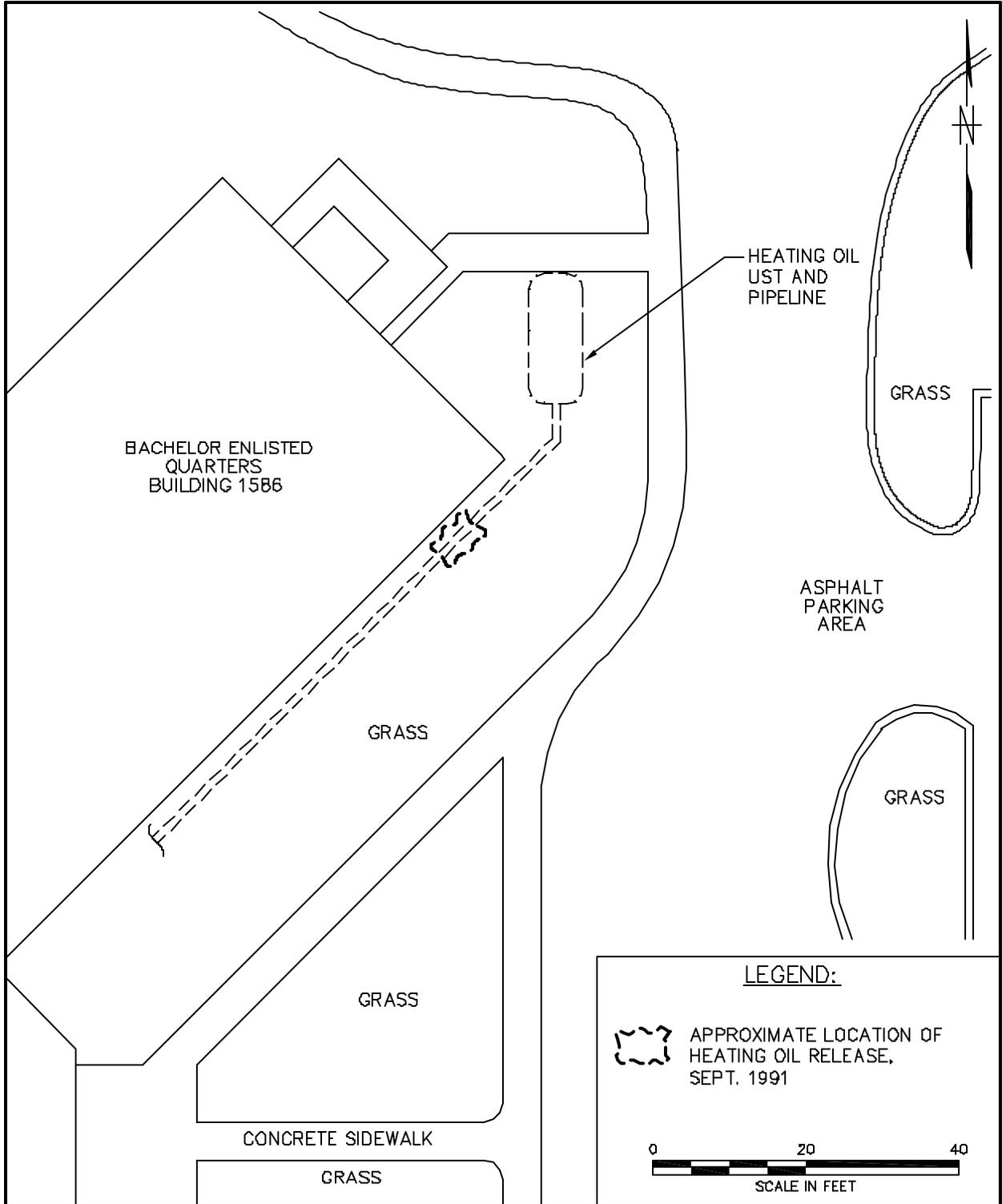
1.7 SITE DESCRIPTION

A site plan showing surface features in the area of investigation is provided as Figure 1-4. Building 1586 is constructed with brick and cement block. The surface surrounding the building is grass. The area under investigation is near the eastern corner of the building where an underground storage tank (UST) containing fuel oil is located. The UST is located under a cement slab and has a flushmount manhole covering the fill port.

Underground utilities traverse the site near the UST and twelve existing monitoring wells were located within the area of investigation prior to initiation of the current SA. Two of the twelve monitoring wells, MW-12s and MW-13s, are unfinished wells (temporary wells) with unprotected polyvinyl chloride (PVC) stick risers that were previously installed by another contractor. Surrounding the UST, gravel has been used as backfill and is covered with sod. This backfilled area extends from the area of the UST approximately 40 ft along the south wall of the building. The area of gravel extends out from the dorm wall 15 to 20 ft to the sidewalk, which outlines the UST area and extends along the south side of the dormitory.

1.8 SITE HISTORY AND OPERATIONS

Tank Site 1586 has been the focus of a SA to evaluate the extent of petroleum hydrocarbons in soil and groundwater that resulted from a 1991 rupture of a fuel line. This work included the installation of monitoring wells and numerous soil borings. Results of these earlier investigations indicated that Tank Site 1586 was a candidate for natural attenuation. Subsequent monitoring of the site conducted in 1999 and 2000 indicated that petroleum constituents were below GCTLs, therefore, the site was



LEGEND:

 APPROXIMATE LOCATION OF HEATING OIL RELEASE, SEPT. 1991

0 20 40
SCALE IN FEET

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eligible for closure. However, on April 30, 2000, the contractor installing a new 5,000-gallon double-walled fiberglass UST in the same tank pit as the previously removed 4,000-gallon fuel oil UST, spilled 1,400 gallons of fuel oil. The release was reported to Mr. Jim Cason of the FDEP. The contractor installed free product recovery wells. However, free product extraction was not immediately initiated despite the Navy's attempts to get the contractor to accept responsibility. Currently the Navy is removing free product via a hand bailer.

1.9 PURPOSE OF CURRENT INVESTIGATION

The objective of the recently completed field investigation was to determine the extent of soil and/or groundwater impacts at the site. The data collected during the investigation was used to prepare this SAR as required by Chapter 62-770.600, FAC. This SAR provides a characterization of site conditions from which to base future courses of action. A SAR summary sheet is provided as Appendix A.

2.0 SUBSURFACE INVESTIGATION METHODS

2.1 QUALITY ASSURANCE

The site investigation was conducted in accordance with Chapter 62-770, FAC and the TtNUS FDEP-approved Comprehensive Quality Assurance Plan (CompQAP) in effect at the time of sampling.

2.2 DETERMINATION OF GROUNDWATER GRADIENT

On August 23, 2002, TtNUS personnel measured depth-to water in eight existing monitoring wells and one newly installed well. Free product was observed in monitoring wells MW06S, MW15S, MW16S, and MW17S, therefore, no water elevation readings were collected from these wells. A heavy sheen was noted on the groundwater in MW04S and its water elevation was recorded.

The groundwater elevations at the subject site for the purpose of determining groundwater flow direction. Water table elevations at each location were determined by subtracting the depth-to-water measurements from the surveyed top-of-casing elevations. A groundwater flow direction (potentiometric) map was generated from the water table elevation data. Results of the groundwater measurements are discussed in Section 3.1.2.

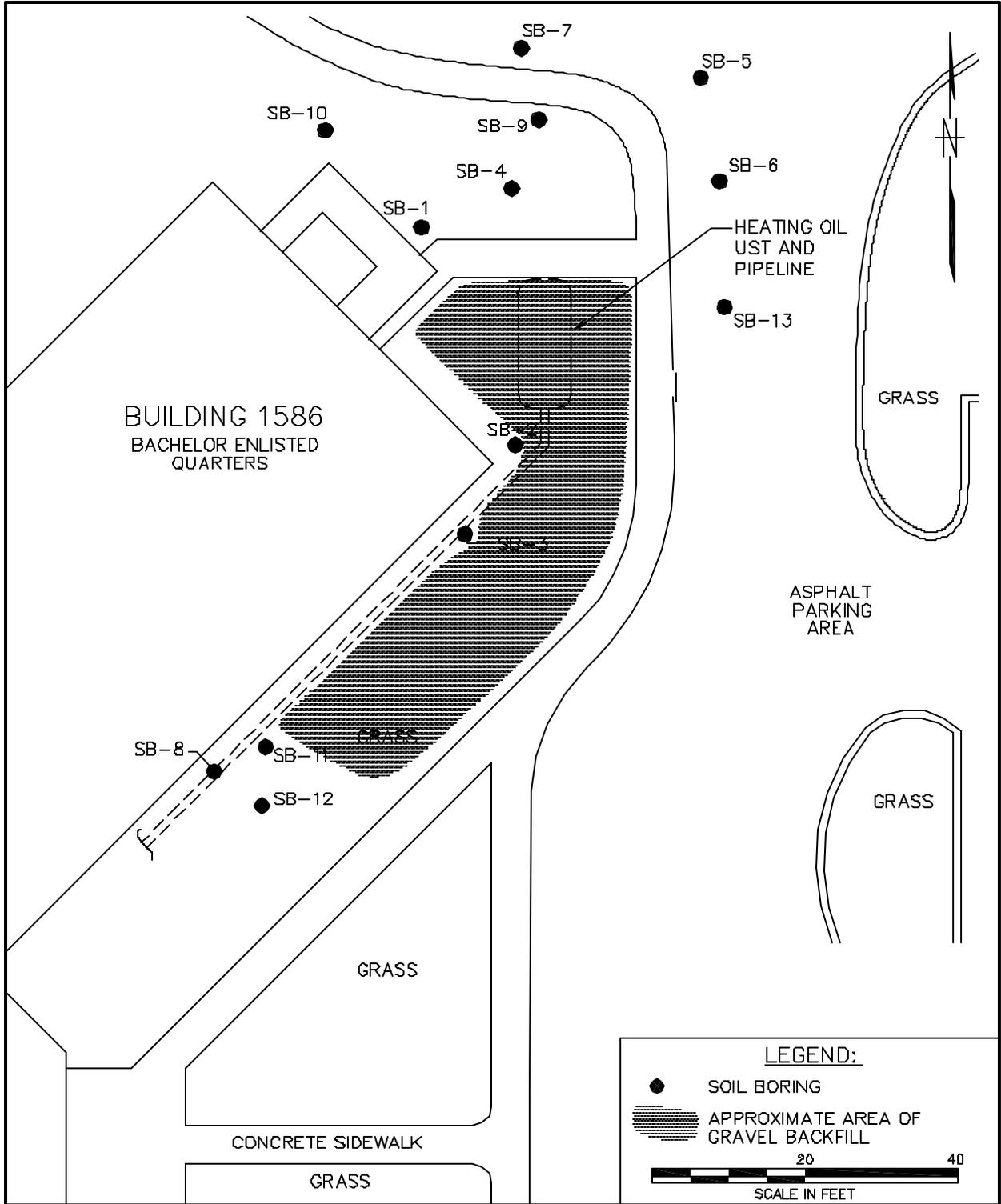
2.3 SOIL QUALITY ASSESSMENT

2.3.1 Soil Borings

A total of 13 shallow soil borings (SB-01 through SB-13) and 1 deep boring (at the location of SB-10) were advanced around the area of the former and current UST on August 3, and 5, 2002. Shallow borings were advanced using a stainless steel, 3-inch, inside diameter (ID) hand-auger assembly, and the deep boring was advanced using a truck mounted DPT rig. Due to the soil excavation work associated with the prior replacement of the UST, much of the area surrounding the UST is filled with gravel. The approximate extent of gravel is shown on Figure 2-1 along with the soil boring locations. The presence of gravel prevented the soil sampling in these areas.

Shallow borings were advanced to an approximate depth of 5 ft bls. A TtNUS geologist described the material encountered during advancement of the borings. Soil boring logs compiled from these descriptions are provided in Appendix B.

Boring SB-10 was advanced to a depth of 40 ft bls to establish a site lithologic profile. The boring was advanced from 5 to 40 ft bls using a DPT push rod attached to a GeoProbe. A 4-ft long, stainless steel



LEGEND:

- SOIL BORING
- ▨ APPROXIMATE AREA OF GRAVEL BACKFILL

20 40
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macrocore sampler lined with plastic sleeves was attached to the end of the DPT push rod. Continuous samples were collected with the macrocore tool from 5 to 40 ft bls. A lithologic description of materials retrieved in the macrocores is also included in Appendix B.

2.3.2 Field Screening Procedures

At the 13 boring locations, soil samples were collected from depths of 1 ft, 3 ft, and 5 ft bls, and screened for organic vapors using an organic vapor analyzer (OVA) equipped with a flame-ionization detector (FID). The water table was encountered at a depth of approximately 6 ft bls on the day the soil vapor survey was performed. Soil vapor analyses were performed in accordance with the headspace screening method described in Chapter 62-770.200(2), FAC. Results of the soil vapor screening survey conducted at Site 1586 are discussed below in Section 3.2.

2.3.3 Soil Sampling Strategy for Laboratory Analysis

2.3.3.1 Mobile Laboratory

One soil sample from each boring was submitted to an on-site mobile laboratory (KB Labs, Inc. of Gainesville, Florida) for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), methyl tertiary-butyl ether (MTBE), naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. Each sample was collected in a 4-ounce glass jar provided by the mobile laboratory. The sample selected for mobile laboratory analysis was a split of the sample exhibiting the highest organic vapor reading at each location. If all OVA values at a particular location were equal to background levels, the sample collected from immediately above the water table (5.0 ft bls) was selected for mobile laboratory analysis. KB Labs provided all bottleware.

2.3.3.2 Fixed-Base Laboratory

Soil samples were collected in accordance with the Chapter 62-770, FAC sampling method for fixed-base laboratory analysis of high, medium, and low, sample concentrations. Samples collected at SB-1 (high concentration), SB-4 (medium concentration), and SB-11 (low concentration) were selected based on the elevated mobile laboratory screening data and OVA-FID screening data. Soil samples SB-1 and SB-4 were collected near the UST location, and soil sample SB-11 was located approximately 40 ft east of the plume location. All three samples were collected at 5 ft bls. The soil samples were collected above the water table but may have been collected in the capillary fringe region. Soil samples collected were moist and not wet. The three samples were collected in accordance with Chapter 62-770, FAC, and the FDEP-approved CompQAP in effect at the time of sampling. Samples were sent to Mitkem Corporation located in Warwick, Rhode Island. The samples were analyzed for volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method 8260B, polynuclear aromatic

hydrocarbons (PAHs) by USEPA Method 8310, and total recoverable petroleum hydrocarbons (TRPH) by Florida Petroleum Range Organics (FL-PRO). All sampling activities were documented in a site-specific field logbook.

2.4 GROUNDWATER ASSESSMENT METHODS

2.4.1 Monitoring Well Installation

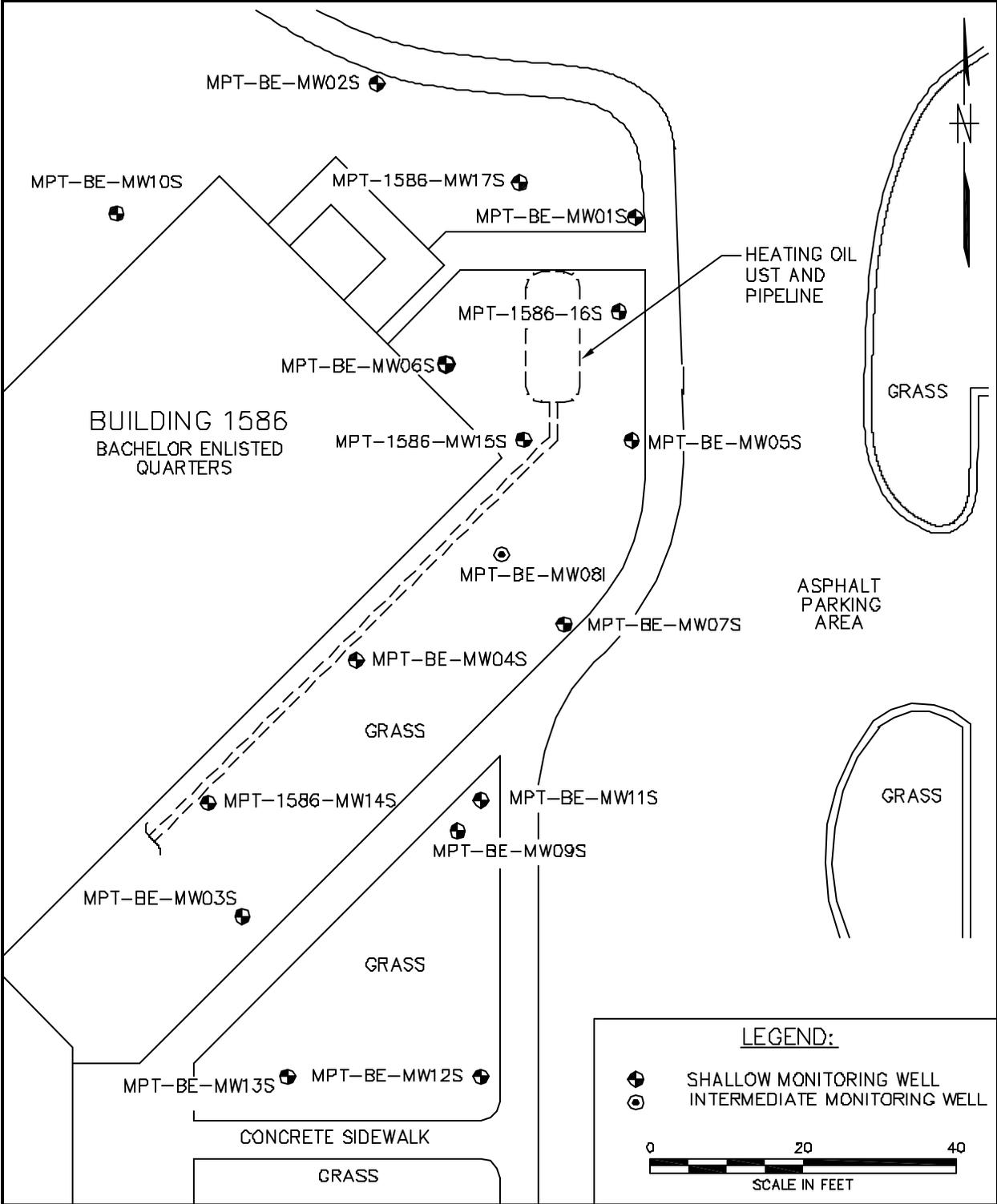
On August 6, 2002, four permanent shallow monitoring wells [MPT-1586-MW14S (MW14S), MW15S, MW16S, and MW17S] were installed by Precision Sampling under the supervision of TtNUS personnel. The well identification was selected as part of the sequential numbering of permanent monitoring wells currently or once located on site. Base personnel cleared underground utilities prior to well installation. Monitoring well MW14S was installed down gradient of the plume to define its extent. MW-15S, MW-16S, and MW17S were installed in the area of free product to determine the extent of the product plume and provide conduits for possible future remedial actions. Monitoring wells from previous investigations at the site were used to define the lateral extent of the plume. Monitoring well locations are shown on Figure 2-2.

2.4.1.1 Borehole Advancement

A posthole digger was used to excavate the boreholes for all monitoring wells from ground surface to a depth of 5 ft bls to verify absence of subsurface utilities. From that point (5 ft bls) to total depth, the borehole was advanced using 4 ¼-inch ID hollow stem augers (HSAs) via a truck-mounted drill rig. Soil cuttings were described during borehole advancement to further characterize site lithology. Soil boring logs are included in Appendix B.

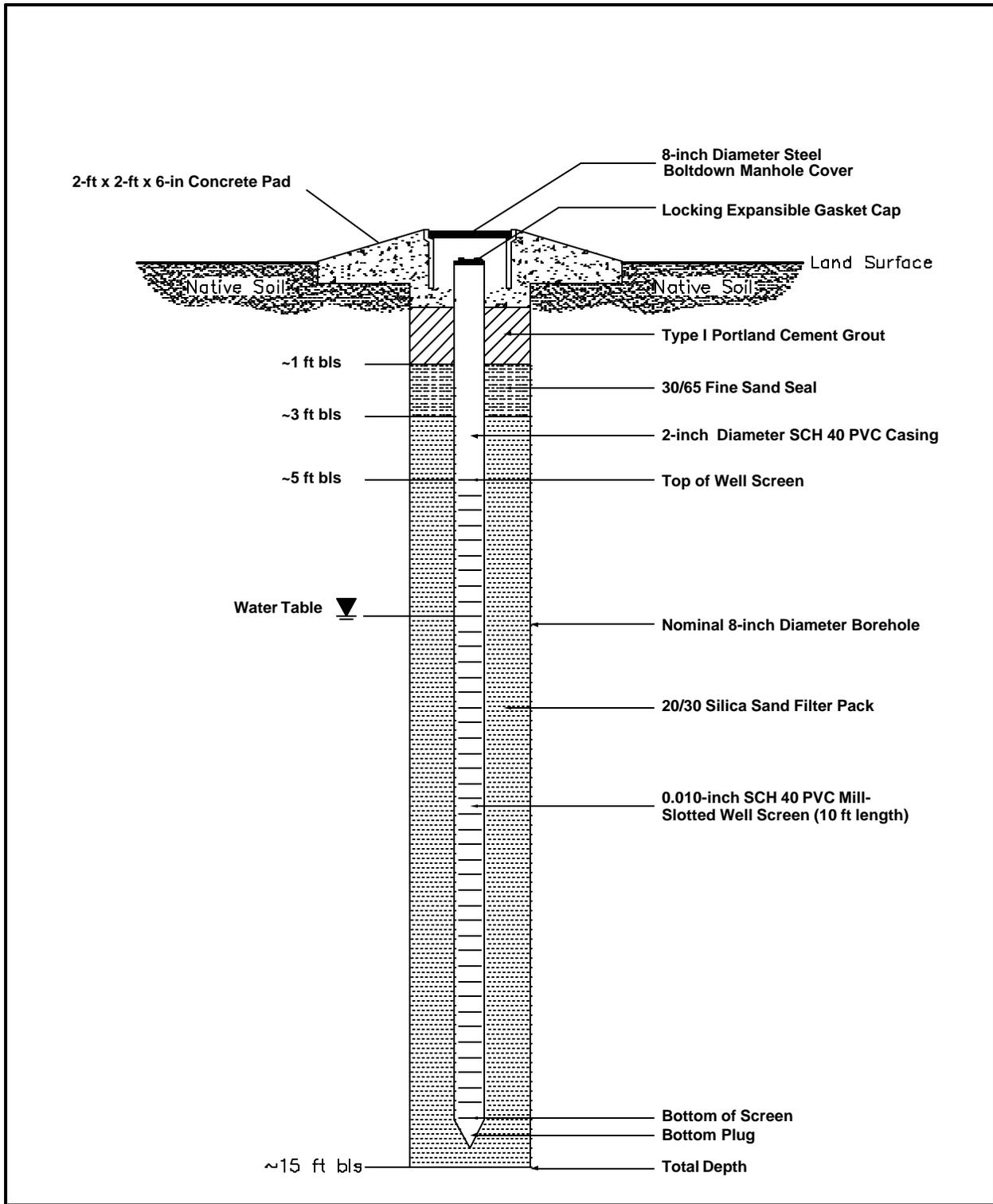
2.4.1.2 Well Construction and Development

The boreholes for MW14S, MW15S, MW16S, and MW17S were advanced to a total depth of 13 ft bls. Wells constructed of 2-inch diameter, 0.010-inch mill slotted Schedule 40 PVC screen (10-ft lengths) and solid riser (flush threaded) were inserted through the HSAs after attaining total depth. Graded 20/30 silica sand was poured between the PVC well and HSAs at the surface, as the augers were being slowly removed from the borehole to create a filter pack in the annular space between borehole and monitoring well. The filter pack was poured into the annular space to a depth approximately 1.5 ft above the top of the screen (i.e., 1.5 ft bls), and was capped by 6 to 12 inches of 30/65 fine sand. The remaining annular space from the top of the fine sand seal to within 6 inches of ground surface was filled with Type I Portland cement grout. The well was completed at the surface with an 8-inch diameter steel manhole equipped



DRAWN BY DM	DATE 9/23/02	MONITORING WELL LOCATIONS SITE 1586 SITE ASSESSMENT REPORT NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NO. 4240	
CHECKED BY	DATE		APPROVED BY	DATE
COST/SCHED-AREA			APPROVED BY	DATE
SCALE AS NOTED			DRAWING NO. FIGURE 2-2	REV. 0

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



DRAWN BY LLK	DATE 10/17/02		TYPICAL MONITORING WELL DESIGN SITE 1586 SITE ASSESSMENT REPORT NAVAL STATION MAYPORT MAYPORT, FLORIDA		CONTRACT NO. 4240
CHECKED BY	DATE		APPROVED BY	DATE	APPROVED BY
COST/SCHED-AREA			APPROVED BY	DATE	DRAWING NO. FIGURE 2-3
SCALE NOT TO SCALE					REV. 0

**TABLE 2-1
Well Construction Details**

Site Assessment Report
Site 1586
Naval Station Mayport
Mayport, Florida

Well ID Number	Date Installed	Top of Casing Elevation (ft msl)	Total Well Depth (ft)	Screened Interval (ft bls)	Well Diameter (inches)	Lithology of Screened Interval
MPT-BE-MW01S	X	7.66	13.00	3 to 13*	2.00	Medium to fine sand
MPT-BE-MW02S	X	7.77	13.00	3 to 13*	2.00	Medium to fine sand
MPT-BE-MW04S	X	8.28	13.00	3 to 13*	2.00	Medium to fine sand
MPT-BE-MW05S	X	7.55	13.00	3 to 13*	2.00	Medium to fine sand
MPT-BE-MW06S	X	9.25	13.00	3 to 13*	2.00	Medium to fine sand
MPT-BE-MW07S	X	7.60	13.00	3 to 13*	2.00	Medium to fine sand
MPT-BE-MW09S	X	8.09	13.00	3 to 13*	2.00	Medium to fine sand
MPT-BE-MW10S	X	8.55	13.00	3 to 13*	2.00	Medium to fine sand
MPT-BE-MW11S	X	8.00	13.00	3 to 13*	2.00	Medium to fine sand
MPT 1586-MW14S	8/6/2002	9.28	13.00	3 to 13	2.00	Medium to fine sand
MPT 1586-MW15S	8/6/2002	8.76	13.00	3 to 13	2.00	Medium to fine sand
MPT 1586-MW16S	8/6/2002	8.21	13.00	3 to 13	2.00	Medium to fine sand
MPT 1586-MW17S	8/6/2002	8.24	13.00	3 to 13	2.00	Medium to fine sand
MPT-BE-MW08I	X	8.04	30.00	25 to 30*	2.00	Medium to fine sand

Notes:

Monitoring wells with the MPT-BE- prefix were not installed by TtNUS, and the installation date was not recorded.

X = unknown date installed

* = presumed screened interval

S = shallow well

I = intermediate well

with bolt-down cover. Manholes were secured in place with concrete pads 2 ft square and 6 inches thick. A typical well construction diagram for a monitoring well is provided as Figure 2-3 and well construction details are listed in Table 2-1. Well completion logs are provided in Appendix C.

Wells were developed using a submersible pump. Field measurements of pH, temperature, and specific conductance were recorded during development. The well was developed until field measurements became stable and purge water clear. Water quality stabilization was determined using the following criteria: temperature ± 5 degrees Celsius ($^{\circ}\text{C}$), pH ± 0.1 unit, and specific conductance ± 10 micro-ohms per centimeter. Monitoring well development records are provided in Appendix D. Development water was containerized for disposal in 55-gallon steel drums. The water in the drums was sampled prior to disposal.

2.4.2 Groundwater Sampling

2.4.2.1 DPT Grab Samples

Groundwater samples were collected at the 13 soil boring locations discussed in Section 2.3.1. Samples were collected from the upper 5 ft of the saturated zone at borings SB-01 through SB-13 using DPT (i.e., Geoprobe) methodology. The samples were collected using a detachable drive tip attached to a 24-inch, retractable stainless steel well screen encased in the lead drive casing. After the water sampler was advanced into the water-bearing zone, the casing was withdrawn 24 inches to allow influx of groundwater to the retractable screen. For groundwater recovery, Tygon[®] tubing was inserted into the probe and connected to a peristaltic pump. Several screen volumes were then pumped from the probe in order to reduce turbidity. After purging, groundwater samples were collected by pumping directly into 40-milliliter vials. The samples were immediately delivered to the on-site mobile laboratory for analysis of BTEX, MTBE, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.

2.4.2.2 Permanent Monitoring Well Samples

On August 23, 2002, TtNUS personnel collected groundwater samples from the existing monitoring wells (MW01S, MW04S, MW07S, MW08I, MW09S, MW05S, MW02S, and MW10S,) and one newly installed monitoring well (MW14S). Monitoring wells MW06S, MW15S, MW16S, and MW17S were not sampled because product was present. Prior to sampling, a minimum three well volumes of groundwater was purged from each well using the low flow quiescent purging method. During purging, field parameters pH, specific conductance, turbidity, dissolved oxygen, temperature, and oxidation-reduction potential were measured periodically using a Horiba U-22 instrument. Groundwater sampling logs and low flow purge sheets, compiled during sampling activities are provided in Appendix D.

Samples were collected in accordance with the procedures described in the FDEP-approved CompQAP in effect at the time of sampling. After collection, samples were immediately placed on ice and shipped under proper chain-of-custody protocol to Mitkem Corporation for analysis of VOCs by USEPA Method 8260B, PAHs by USEPA Method 8310, ethylene dibromide (EDB) by USEPA Method 504.1, lead by USEPA Method 6010, and TRPH by FL-PRO. Sampling activities were documented in a site-specific field logbook.

3.0 RESULTS OF INVESTIGATION

3.1 SITE GEOLOGY AND HYDROGEOLOGY

3.1.1 Lithology

The upper 40 ft of material underlying the site is composed of light brown to green and gray fine sand with varying percentages of shell fragments. Gray colored silt lenses measuring 1 to 2 inches in thickness are present below depths of approximately 30 ft, 37 ft, and 40 ft bls. Soil boring logs are presented in Appendix B.

3.1.2 Groundwater Flow Direction

Using the method discussed in Section 2.2, the direction of groundwater flow in the uppermost surficial aquifer underlying the site was estimated to be northeast. Groundwater elevation data collected on July 31, 2002 and on August 23, 2002 are presented in Table 3-1. The groundwater flow interpreted from the August measurement date is presented as groundwater flow map (Figure 3-1). The July measurement data also inferred a northeast direction. It should be noted that multiple prior determinations of groundwater flow at Site 1586 conducted during the investigation and monitoring of the prior release indicated a northwesterly groundwater flow direction. The reason for the change in direction is not known, however, it may have occurred as a result of the additional well installations providing more data points or some other factor such as changes in precipitation.

3.1.3 Aquifer Classification and Characteristics

The State of Florida classifies the surficial aquifer underlying the site as G-II (USGS, 1992). Previous aquifer test data indicate that the average hydraulic conductivity of the surficial aquifer is approximately 4.34 ft per day (ft/day).

The horizontal groundwater (hydraulic) gradient across the site was evaluated from water level data listed in Table 3-1 and shown on Figure 3-1. The average horizontal hydraulic gradient beneath the site, calculated from potentiometric contours depicted on Figure 3-1, was determined to be 0.003 ft per ft (ft/ft).

Based on information provided by Driscoll (Driscoll, 1986) and on lithologic descriptions of material encountered during the current investigation, the effective porosity of surficial aquifer sediments was estimated to be 0.30.

**TABLE 3-1
Water Table Elevation Data**

Site Assessment Report
Site 1586
Naval Station Mayport
Mayport, Florida

Monitoring Well ID Suffixes	Surveyed Top-of-Casing Elevation (ft)	July 31, 2002		August 23, 2002	
		Depth to Water (ft)	Water Table Elevation	Depth to Water (ft)	Water Table Elevation
MPT-BE-MW01S	7.66	4.83	2.83	4.72	2.94
MPT-BE-MW02S	7.77	4.95	2.82	4.84	2.93
MPT-BE-MW04S	8.28	5.33	2.95	5.16	3.12
MPT-BE-MW05S	7.55	4.69	2.86	4.54	3.01
MPT-BE-MW06S	9.25	FP	FP	FP	FP
MPT-BE-MW07S	7.60	4.65	2.95	4.52	3.08
MPT-BE-MW-8I	8.04	NM	NM	5.19	2.85
MPT-BE-MW09S	8.09	5.07	3.02	4.93	3.16
MPT-BE-MW10S	8.55	5.68	2.87	5.54	3.01
MPT-BE-MW11S	8.00	5.00	3.00	NM	NM
MPT-1586-MW14S	9.28	NP	NP	6.10	3.18
MPT-1586-MW15S	8.76	FP	FP	FP	FP
MPT-1586-MW16S	8.21	FP	FP	FP	FP
MPT-1586-MW17S	8.24	FP	FP	FP	FP

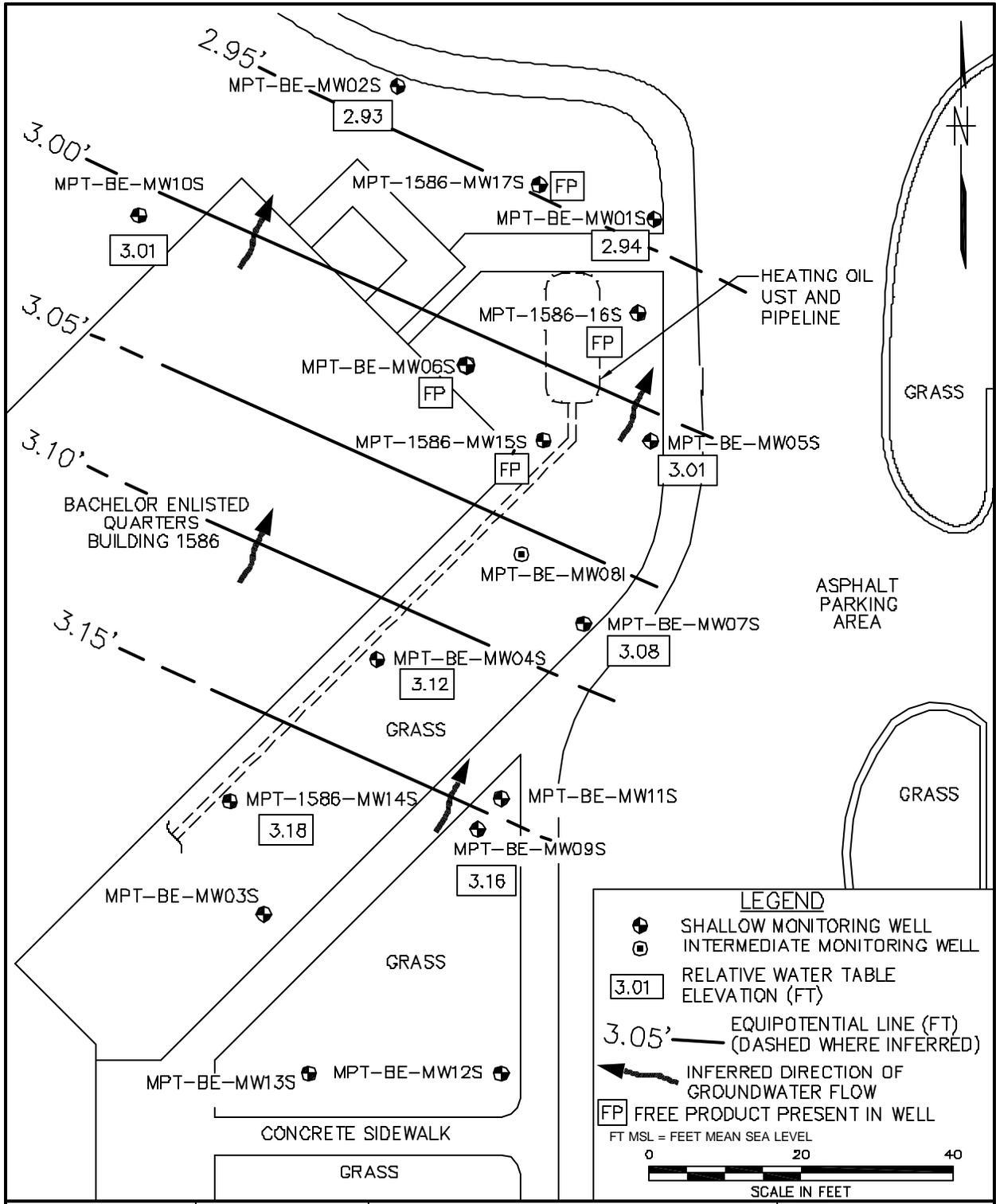
Notes:

MPT-BE-MW11S is a micro well and was not measured in August because the probe diameter was larger than the well diameter. All wells listed were screened at 3 to 13 ft bls.

NM = not measured

NP = not present (measurements were taken before this well was installed)

FP = free product (groundwater elevation not measured)



LEGEND

- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- 3.01 RELATIVE WATER TABLE ELEVATION (FT)
- 3.05' ——— EQUIPOTENTIAL LINE (FT) (DASHED WHERE INFERRED)
- ← INFERRED DIRECTION OF GROUNDWATER FLOW
- FP FREE PRODUCT PRESENT IN WELL

FT MSL = FEET MEAN SEA LEVEL

0 20 40
SCALE IN FEET

DRAWN BY LLK	DATE 1/20/03	GROUNDWATER ELEVATION CONTOUR MAP AUGUST 23, 2002 SITE 1586 SITE ASSESSMENT REPORT NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NO. 4240	
CHECKED BY	DATE		APPROVED BY	DATE
COST/SCHED-AREA	APPROVED BY			
SCALE AS NOTED	DRAWING NO. FIGURE 3-1		REV. 0	

FORM CADD NO. SERV_AV.DWG - REV 0 - 1/20/03

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.

The groundwater seepage velocity was then calculated using the following formula:

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

where:

V = average seepage velocity

K = hydraulic conductivity

n = effective porosity

I = average hydraulic gradient

Using a hydraulic conductivity of 4.34 ft/day, a hydraulic gradient of 0.003 ft/ft, an inferred effective porosity value of 0.30, and Darcy's law, the groundwater seepage velocity across the site was calculated at 0.043 ft/day or 15.84 ft per year in a northeasterly direction.

3.2 SOIL SCREENING RESULTS

Soil vapor screening methods and sampling locations for headspace analyses are discussed in Section 2.3.2. Results of the soil vapor survey are listed on Table 3-2 and illustrated on Figure 3-2. Generally, the highest net organic vapor concentrations were measure on samples collected from the lowest sample depth, just above the soil and water interface. (5 ft bls). Samples from six borings (SB-1, SB-2, SB-3, SB-4, SB-9, and SB-11) were collected from this depth (5 ft bls) produced net OVA-FID readings exceeding 50 parts per million (ppm), indicating "excessively contaminated " soil per Rule 62-770, FAC. These samples also were documented as having a petroleum odor. Values range from 60 ppm (SB-3) to 190 ppm (SB-1) in the six samples. Only one sample collected shallower than 5 ft bls (SB-4 at 3 ft bls) produced a net value exceeding 50 ppm (62 ppm). The depth to groundwater within the soil boring was estimated to be 5.5 ft to 6.0 ft bls. Some soil samples collected from 5 ft bls may have been collected within the capillary fringe. The free product was observed on the water table surface at SB-1 and SB-4.

3.3 SOIL SAMPLE ANALYTICAL RESULTS

3.3.1 Mobile Laboratory

Soil samples from each boring were submitted for mobile laboratory analysis and were collected from a depth of 5 ft bls, per sampling strategy discussed in Section 2.3.3.1. Result are summarized in Table 3-3 and included on Figure 3-3.

**TABLE 3-2
Soil Vapor Results**

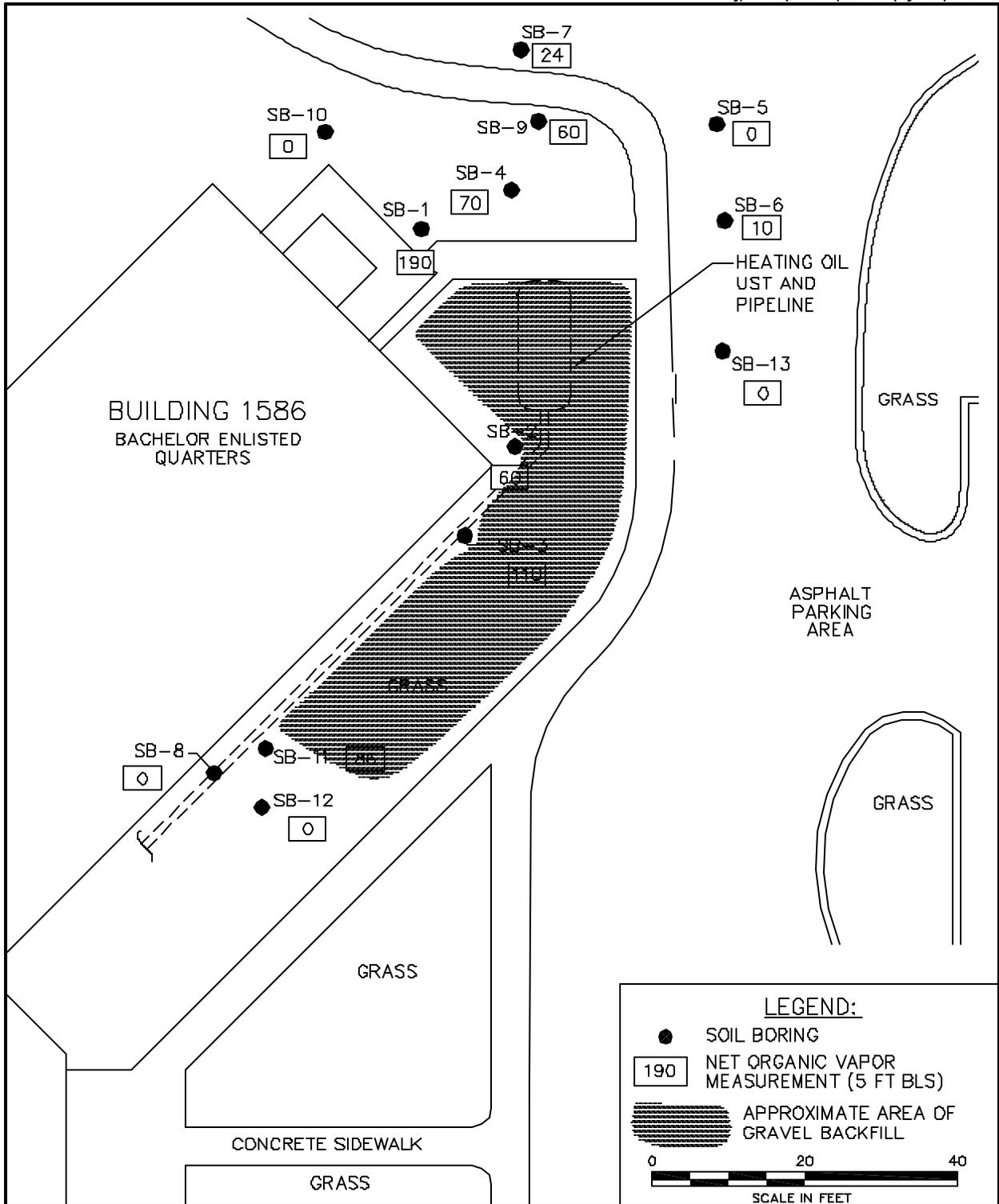
Site Assessment Report
Site 1586
Naval Station Mayport
Mayport, Florida

Soil Boring Number	Date of Measurement	Sample Depth (ft bls)	Headspace Readings (ppm)		
			Total Organic Reading	Carbon Filtered Reading	Net Reading
SB-01	08/03/02	1	24	24	0
		3	20	20	0
		5	200	10	190*
SB-02	08/03/02	1	1	1	0
		3	7	6	1
		5	300	240	60*
SB-03	08/03/02	1	0	0	0
		3	0	0	0
		5	230	120	110*
SB-04	08/03/02	1	0	0	0
		3	230	168	62
		5	330	260	70*
SB-05	08/03/02	1	0	0	0
		3	0	0	0
		5	0	0	0
SB-06	08/03/02	1	0	0	0
		3	0	0	0
		4	0	0	0
SB-07	08/03/02	1	150	140	10
		3	2	2	0
		5	240	216	24
SB-08	08/03/02	1	0	0	0
		3	0	0	0
		5	10	0	0
SB-09	08/03/02	1	0	0	0
		3	0	0	0
		5	60	0	60*
SB-10	08/03/02	1	0	0	0
		3	0	0	0
		5	30	10	20
SB-11	08/03/02	1	0	0	0
		3	0	0	0
		5	208	122	86*
SB-12	08/03/02	1	0	0	0
		3	0	0	0
		5	0	0	0
SB-13	08/05/02	1	0	0	0
		3	0	0	0
		5	0	0	0

Notes:

* = hydrocarbon odor associated with sample

Wet soils were encountered at depths ranging from approximately 5.5 to 6 ft bls.



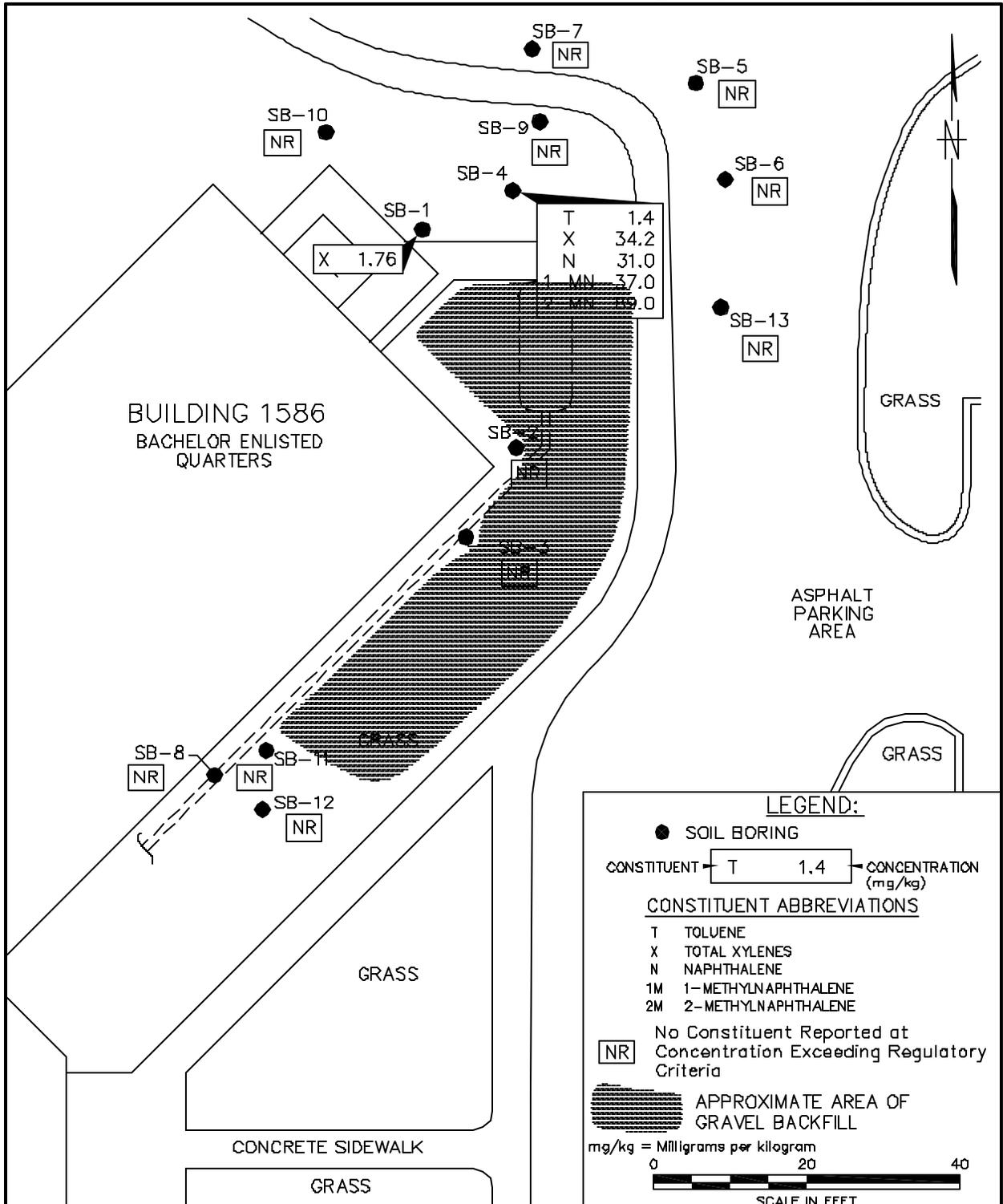
DRAWN BY LLK	DATE 1/14/03
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



SOIL VAPOR MEASUREMENTS
SITE 1586
SITE ASSESSMENT REPORT
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4240	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3-2	REV. 0

TABLE 3-3									
Mobile Laboratory Soil Analytical Results									
Site Assessment Report									
Site 1586									
Naval Station Mayport									
Mayport, Florida									
Compound	FDEP Target Level ¹ (mg/kg)		SB-01	SB-02	SB-03	SB-04	SB-05	SB-06	SB-07
			08/03/02	08/03/02	08/03/02	08/03/02	08/03/02	08/03/02	08/03/02
Sample Interval	Residential	Leachability	5 ft	5 ft	5 ft	5 ft	5 ft	5 ft	5 ft
VOCs (USEPA Method 8021B) (mg/kg)									
MTBE	3200	0.2	<0.025	<0.025	<0.025	<1.0	<0.025	<0.025	<0.025
Benzene	1.1	0.007	<0.005	<0.005	<0.005	<0.2	<0.005	<0.005	<0.005
Toluene	380	0.5	0.18	<0.005	<0.005	1.4	<0.005	<0.005	<0.005
Ethylbenzene	1100	0.6	<0.005	<0.005	<0.005	<0.2	<0.005	<0.005	<0.005
Total Xylenes	5600	0.2	1.76	<0.005	<0.005	34.2	<0.005	<0.005	<0.005
Napthalene	40	1.7	0.61	<0.025	<0.025	31	<0.025	<0.025	<0.025
1-Methylnapthalene	68	2.2	0.39	<0.025	<0.025	37	<0.025	<0.025	<0.025
2-Methylnapthalene	80	6.1	0.71	0.043	<0.025	89	<0.025	<0.025	<0.025
Compound	FDEP Target Level ¹ (mg/kg)		SB-08	SB-09	SB-10	SB-11	SB-12	SB-13	
			08/03/02	08/03/02	08/03/02	08/03/02	08/03/02	08/05/02	
Sample Interval	Residential	Leachability	5 ft	5 ft	5 ft	5 ft	5 ft	5 ft	
VOCs (USEPA Method 8021B) (mg/kg)									
MTBE	3200	0.2	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	
Benzene	1.1	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Toluene	380	0.5	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Ethylbenzene	1100	0.6	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Total Xylenes	5600	0.2	<0.005	<0.005	<0.005	0.042	<0.005	<0.005	
Napthalene	40	1.7	<0.025	<0.025	<0.025	0.32	<0.025	<0.025	
1-Methylnapthalene	68	2.2	<0.025	<0.025	<0.025	0.15	<0.025	<0.025	
2-Methylnapthalene	80	6.1	<0.025	<0.025	<0.025	0.24	<0.025	<0.025	
Notes:									
¹ Chapter 62-770, FAC (April 30, 1999)									
mg/kg - milligrams per kilogram									
Bold indicates values in excess of SCTLs, Chapter 62-770, FAC (April 30, 1999).									



DRAWN BY LLK	DATE 10/15/02	MOBILE LAB SOIL ANALYTICAL RESULTS EXCEEDING SCTLs SITE 1586 SITE ASSESSMENT REPORT NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NO. 4240	
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

Five Target compounds (toluene, total xylenes and three naphthalenes) were reported at concentrations exceeding leachability SCTLs in SB-4. Of these five, only 2-methylnaphthalene reported a value of 89 milligrams per kilogram (mg/kg) exceeded its residential SCTL of 80 mg/kg. No other exceedences of residential SCTLs were reported. Total xylenes were reported at a concentration of 1.76 mg/kg in SB-01, exceeding its leachability SCTL of 0.2 mg/kg. This was the only other leachability exceedence reported for the 13 samples analyzed. Mobile laboratory analytical results are provided in Appendix E.

3.3.2 Fixed-Base Laboratory

Soil samples selected for fixed-base laboratory analysis were SB-01 (high range), SB-04 (medium range), and SB-11 (low range) per sampling strategy discussed in section 2.3.3.2. Analytical results are summarized in Table 3-4 and illustrated on Figure 3-4. A complete lab report from Mitkem Corporation, located in Warwick, Rhode Island is provided as Appendix F.

Due to elevated concentrations of petroleum constituents in these samples, detection limits were increased several orders of magnitude. As a result, detection limits for benzene and PAH constituents were higher than some leachability SCTLs.

The high, medium, and low, sequence (SB-01, SB-04 and SB-11) established during the screening survey was echoed by the fixed-base laboratory results. Benzene concentrations were reported at 0.019 mg/kg in SB-01 and at 0.033 mg/kg in SB-04, exceeding the leachability SCTL of 0.007 mg/kg. Ethylbenzene concentrations are 0.8 mg/kg for SB-01, which exceed the leachability SCTL of 0.6 mg/kg. The total xylenes concentrations of 0.66 mg/kg for SB-01 and 1.6 mg/kg for SB-02 exceed the residential leachability value of 0.2 mg/kg. Soil sample SB-11 naphthalenes (1-methylnaphthalene, 2-methylnaphthalene, and naphthalene) values were reported at concentrations greater than their leachability SCTL. TRPH was reported at 4300 mg/kg in the lower range sample, SB-11. No other constituents other than TRPH were reported in SB-11, but exceedences cannot be ruled out because of the elevated detection limits. The relatively high level of contamination in soil reflects the presence of free product in the area of SB-01 and SB-04.

3.4 GROUNDWATER ANALYTICAL RESULTS

3.4.1 Mobile Laboratory

Groundwater analytical results reported by the mobile laboratory methods are summarized in Table 3-5 and illustrated on Figure 3-5. A complete report submitted by KB Labs, Inc. is included in Appendix E along with the soil analytical data. It should be noted that free product was encountered in some locations (GW-02 and GW-04) and therefore water samples were not collected. Groundwater sample GW-03 was

**TABLE 3-4
Fixed-Base Laboratory Soil Analytical Results**

Site Assessment Report
Site 1586
Naval Station Mayport
Mayport, Florida

Compound	FDEP Target Level ¹ (mg/kg)		SB-01	SB-04	SB-11
			8/5/2002	8/5/2002	8/5/2002
Sample Interval	Residential	Leachability	5 ft	5 ft	5 ft
<u>VOCs (USEPA Method 8021B) (mg/kg)</u>					
MTBE	3200	0.2	< .003	<0.004	<0.004
Benzene	1.1	0.007	0.019	0.033	<0.004
Toluene	380	0.5	< .003	<0.004	<0.004
Ethylbenzene	1100	0.6	0.8	0.027	<0.004
Total Xylenes	5600	0.2	0.66	1.6	<0.004
<u>PAHs (USEPA Method 8310) (mg/kg)</u>					
Fluorene	2200	160	1.2 J	1 J	4U
1-Methylnapthalene	68	2.2	40 J	26	4U*
2-Methylnapthalene	80	6.1	55 J	37	4U
Naphthalene	40	1.7	15J	10	4U*
Phenanthrene	2000	250	1.6 J	9.2	4U
Pyrene	2200	880	1.9J	1.6 J	4U
<u>FL-PRO (USEPA Method 8270) (mg/kg)</u>					
TRPH	340	340	16000	6500	4300

Notes:

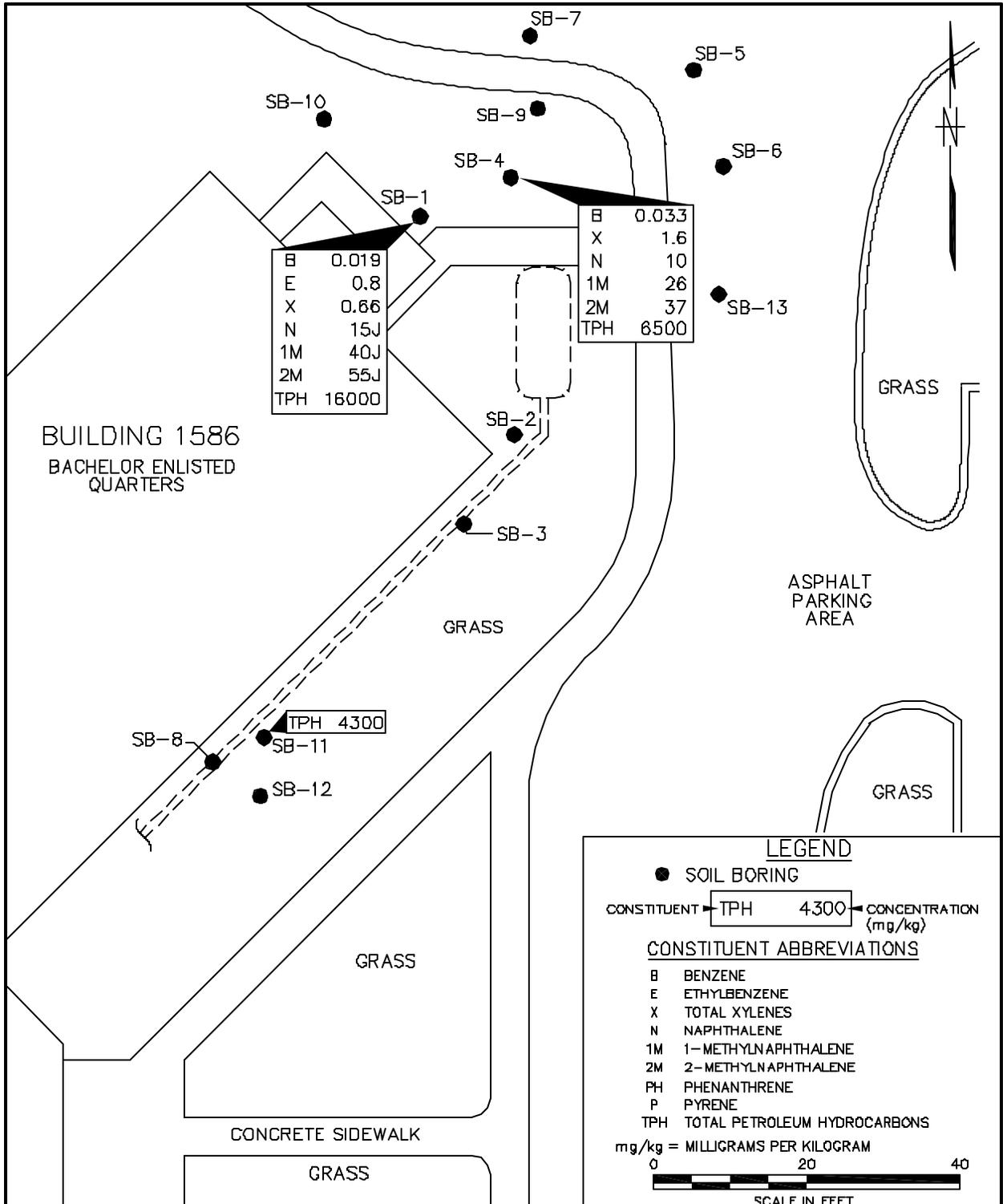
¹Chapter 62-770, FAC (April 30, 1999)

Bold indicates values in excess of SCTLs, Chapter 62-770, FAC (April 30, 1999).

J = estimated value

U = instrument detection analysis limit

*The method detection limit for these analyses was evaluated due to high petroleum constituents.

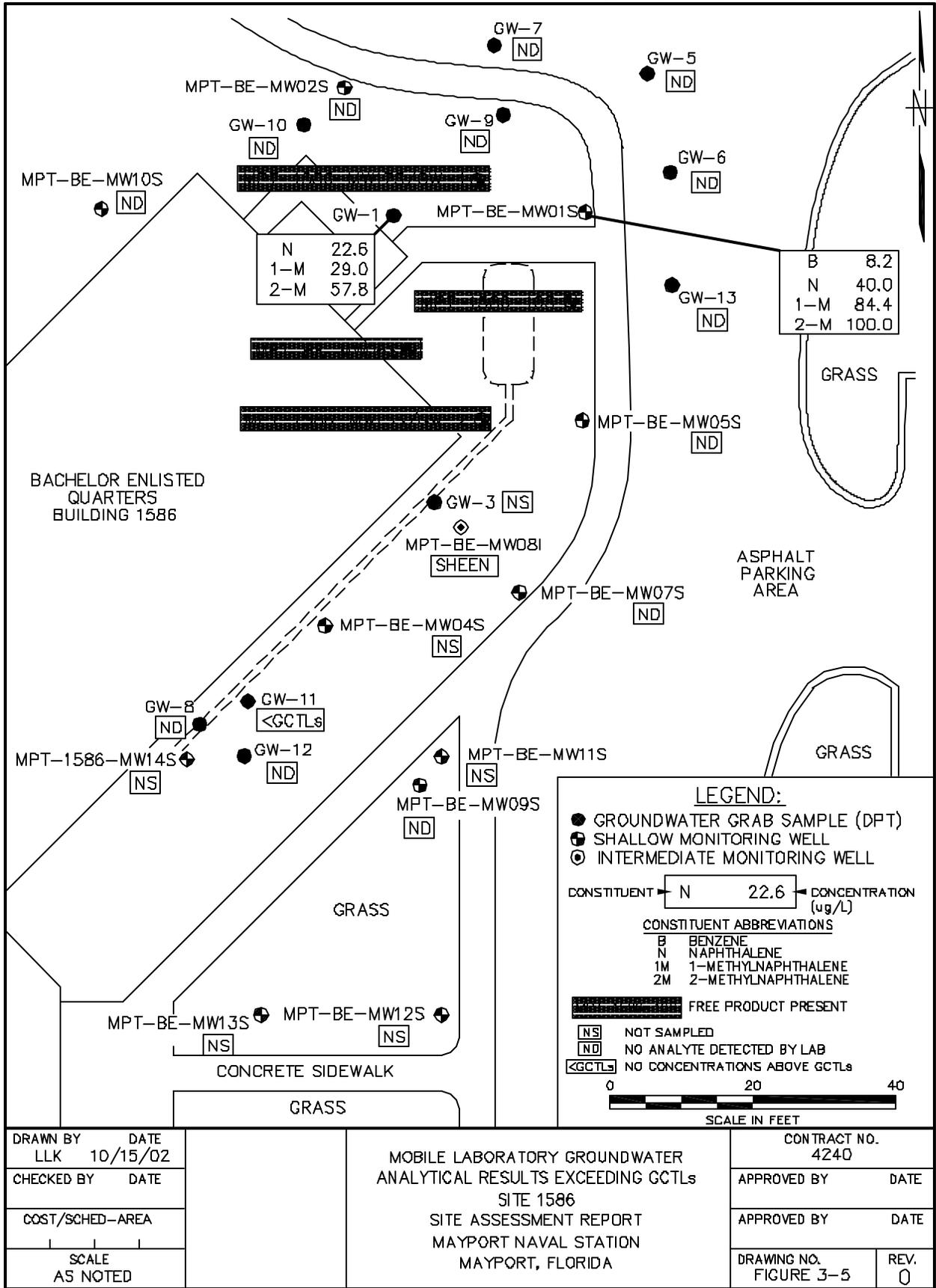


DRAWN BY LLK	DATE 1/20/03	FIXED-BASE LABORATORY SOIL ANALYTICAL RESULTS EXCEEDING SCTLs SITE 1586 SITE ASSESSMENT REPORT NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NO. 4240	
CHECKED BY	DATE		APPROVED BY	DATE
COST/SCHED-AREA			APPROVED BY	DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3-4	REV. 0

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

<p align="center">TABLE 3-5 Mobile Laboratory Groundwater Analytical Results</p> <p align="center">Site Assessment Report Site 1586 Naval Station Mayport Mayport, Florida</p>								
Compound	FDEP Target Level ¹ (µg/L)	GW-01	GW-02	GW-03	GW-04	GW-05	GW-06	GW-07
		08/03/02	08/03/02	08/03/02	08/03/02	08/03/02	08/03/02	08/03/02
Sample Interval		5-9 ft	5-9 ft		5-9 ft	5-9 ft	5-9 ft	5-9 ft
VOCs (USEPA Method 8021B) (µg/L)								
MTBE	50	<5	fp	ns	fp	<5	<5	<5
Benzene	1	<1	fp	ns	fp	<1	<1	<1
Toluene	40	<1	fp	ns	fp	<1	<1	<1
Ethylbenzene	30	3.1	fp	ns	fp	<1	<1	<1
Total Xylenes	20	<1	fp	ns	fp	<1	<1	<1
Naphthalene	20	22.6	fp	ns	fp	<5	<5	<5
1-Methylnaphthalene	20	29.0	fp	ns	fp	<5	<5	<5
2-Methylnaphthalene	20	57.8	fp	ns	fp	<20	<20	<20
Compound	FDEP Target Level ¹ (µg/L)	GW-08	GW-09	GW-10	GW-11	GW-12	GW-10	GW-10
		08/03/02	08/03/02	08/03/02	08/03/02	08/03/02	08/05/02	08/05/02
Sample Interval		5-9 ft	5-9 ft	5-9 ft	5-9 ft	5-9 ft	20 ft	40 ft
VOCs (USEPA Method 8021B) (µg/L)								
MTBE	50	<5	<5	<5	<5	<5	<5	<5
Benzene	1	<1	<1	<1	<1	<1	<1	<1
Toluene	40	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	30	<1	<1	<1	<1	<1	<1	<1
Total Xylenes	20	<1	<1	<1	<1	<1	<1	<1
Naphthalene	20	<5	<5	<5	5.4	<5	<5	<5
1-Methylnaphthalene	20	<5	<5	<5	6	<5	<5	<5
2-Methylnaphthalene	20	<20	<20	<20	<20	<20	<5	<5
See notes at end of table.								

TABLE 3-5 (Continued) Mobile Laboratory Groundwater Analytical Results Site Assessment Report Site 1586 Naval Station Mayport Mayport, Florida									
Compound	FDEP Target Level ¹ (µg/L)	GW-13	MW-01S	MW-02S	MW-05S	MW-06	MW-07S	MW-09S	MW-10S
		08/05/02	08/01/02	08/01/02	08/01/02	08/03/02	08/01/02	08/03/02	08/01/02
Sample Interval		5-9 ft	3-13 ft	3-13 ft	3-13 ft	3-13 ft	3-13 ft	3-13 ft	3-13 ft
VOCs (USEPA Method 8021B) (µg/L)									
MTBE	50	<5	<5	<5	<5	fp	<5	<5	<5
Benzene	1	<1	8.2	<1	<1	fp	<1	<1	<1
Toluene	40	<1	<1	<1	<1	fp	<1	<1	<1
Ethylbenzene	30	<1	<1	<1	<1	fp	<1	<1	<1
Total Xylenes	20	<1	15.1	<1	<1	fp	<1	<1	<1
Naphthalene	20	<5	40	<5	<5	fp	<5	<5	<5
1-Methylnaphthalene	20	<5	84.4	<5	<5	fp	<5	<5	<5
2-Methylnaphthalene	20	<5	100	<5	<5	fp	<5	<5	<5
Notes: ¹ Chapter 62-770, FAC (April 30, 1999) fp = free product Bold indicates exceedance of FDEP GCTLs. µg/L = micrograms per liter ns= not sampled do to refusal									



DRAWN BY LLK	DATE 10/15/02
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	

MOBILE LABORATORY GROUNDWATER
ANALYTICAL RESULTS EXCEEDING GCTLs
SITE 1586
SITE ASSESSMENT REPORT
MAYPORT NAVAL STATION
MAYPORT, FLORIDA

CONTRACT NO. 4240	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3-5	REV. 0

also not collected due to refusal. In addition to collecting groundwater samples from the DPT borings, six permanent monitoring wells were also sampled for mobile laboratory analysis. Concentrations exceeding GCTLs were reported for naphthalene (22.6 µg/L), 1-methylnaphthalene (29.0 µg/L) and 2-methylnaphthalene (57.8 µg/L) in a grab sample collected from GW-01. Groundwater collected from monitoring well MW01S contained 8.2 µg/L benzene, 40 µg/L naphthalene, 84.4 µg/L 1-methylnaphthalene, and 100 µg/L 2-methylnaphthalene. The GCTL for benzene is 1 µg/L and 20 µg/L each of naphthalene constituents. No other samples recorded detections above the laboratory detection limits.

3.4.2 Fixed-Base Laboratory

Results of fixed-base laboratory analyses performed on groundwater samples collected are summarized in Table 3-6 and illustrated on Figure 3-6. A complete validated laboratory report is included in Appendix F. Several GAG and KAG constituents were reported at concentrations exceeding FDEP GCTLs. The area of contamination appears to be centralized around the area of free product. Benzene (4.0 µg/L), 1-methylnaphthalene (33.0 µg/L), and 2-methylnaphthalene (34.0 µg/L) exceeded the groundwater GCTLs for groundwater collected from monitoring well MW01S. Groundwater results for monitoring well MW04S exceed GCTLs for 1-methylnaphthalene (35 µg/L) and chloromethane (6 µg/L). Chloromethane (4 µg/L) was also found in excess of the GCTL for monitoring wells MW07S, MW10S, MW08I, and MW14S. The GCTLs for these reported contaminants are as follows: benzene at 1 µg/L, 1-methylnaphthalene at 20 µg/L, 2-methylnaphthalene at 20 µg/L, and chloromethane at 2.7 µg/L. The chloromethane results are believed to be false positives. The same laboratory method analysis by Mitkem Corporation for a different site had similar chloromethane results. When the groundwater from the other site was sent to a different lab for the analysis of chloromethane (VOCs) none were present. Chloromethane is typically formed during the breakdown of chlorinated solvents which are not present at this site.

3.4.3 Free Product

Free product was measured during field operations using an oil and water interface probe. Four wells had measurable amounts of free phase product. One of the wells containing free product (MPT-BE-MW06S) existed prior to this investigation. Three additional wells (MPT-1586-MW15S, MPT-1586-MW16S, and MPT-1586-MW17S) were installed for the dual purpose of groundwater monitoring and free product recovery. Free product measurements (Table 3-7) taken just after installation ranged from 7 inches in MPT-1586-MW15S to 14 inches in MPT-1586-MW17S. A figure depicting the approximate location of the free product is presented as Figure 3-7. The plume is documented to be in the immediate area surrounding the UST which is also the source area. The product does not appear to be migrating at a fast pace in the directions of the installed monitoring wells or DPT borings. The area beneath Building 1586

<p style="text-align: center;">TABLE 3-6 Summary of Fixed-Base Laboratory Groundwater Analytical Results</p> <p style="text-align: center;">Site Assessment Report Site 1586 Naval Station Mayport Mayport, Florida</p>										
Compound	FDEP Target	MW1S	MW2S	MW4S	MW5S	MW7S	MW8I	MW9S	MW10S	MW14S
Sample Date	Level ¹	08/21/02	08/21/02	08/21/02	08/21/02	08/21/02	08/21/02	08/21/02	08/21/02	08/21/02
VOCs (USEPA Method 8260B) (µg/L)										
Benzene	1	4	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	40	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	30	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Xylenes	20	13	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane	2.7	1	<1	6	2	4	4	2	4	4
MTBE	50	<10	<10	<10	<10	<10	<10	<10	<10	<10
USEPA 504.1 (µg/L)										
EDB	0.02	<0.3	<0.3	< 0.02	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
PAHs (USEPA Method 8310) (µg/L)										
1-Methylnaphthalene	20	33	<1	35	<1	<1	<1	<1	<1	<1
2-Methylnaphthalene	20	34	<1	4	<1	<1	<1	<1	<1	<1
Acenaphthene	20	2.2	<1	4	<1	<1	0.49J	<1	<1	<1
Anthracene	2100	0.34	<1	<1	<1	<1	<1	<1	<1	<1
Fluoranthene	280	1	<1	0.12	<1	<1	<1	<1	<1	<1
Fluorene	280	3	<1	6	0.28	0.22	<1	<1	<1	<1
Phenanthrene	210	1.4	<1	1.8	<1	<1	<1	<1	<1	<1
Acenaphthylene	210	0.36	<1	0.57	<1	<1	<1	<1	<1	<1
Pyrene	210	0.7	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	20	17	<1	5	<1	<1	<1	<1	<1	<1
FL-PRO (USEPA Method 8270) (µg/L)										
TRPH	5000	280	<100	770	<100	<100	<100	<100	<100	<100
Metals Analysis (µg/L)										
Total Lead	15	< 1	1.7	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Notes:										
¹ Chapter 62-770, FAC (April 30, 1999)										
Bold indicates values in excess of GCTLs.										
Monitoring wells MPT-BE-MW06S, MPT-1586-MW15S, MPT-MW-1586-MW16S, and MPT-1586-MW17S were not sampled due to the presence of free product.										

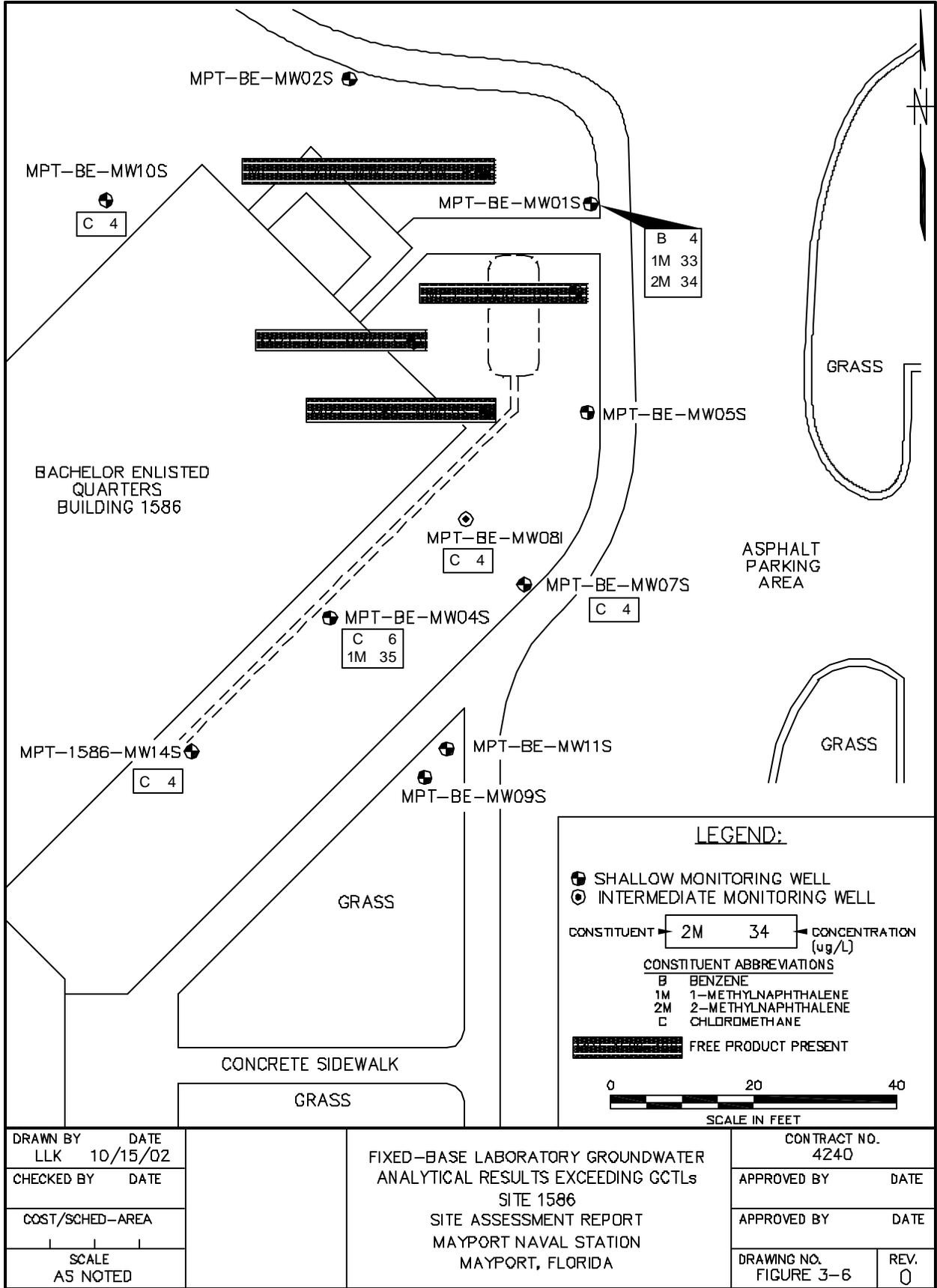
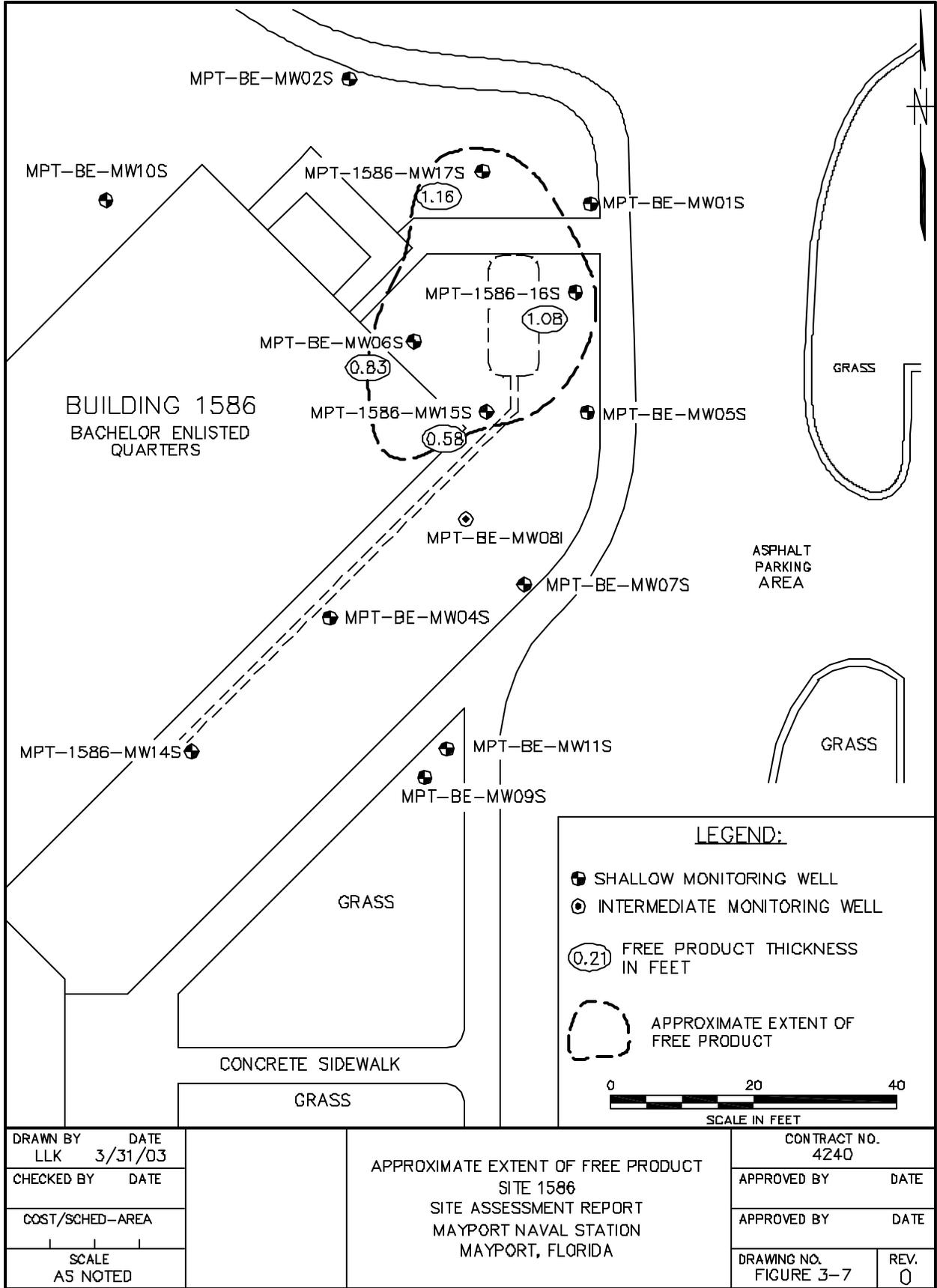


TABLE 3-7
Free Product Measurement

Site Assessment Report
Site 1586
Naval Station Mayport
Mayport, Florida

Well ID	MW06	MW15	MW16	MW17
Date	08/21/03	08/21/03	08/21/03	08/21/03
Product Depth (ft)	0.83	0.58	1.16	1.16



has not been monitored. Given the close proximity of MPT-BE-MW06S and MPT-1586-MW15S to the building, product may be pooled under building 1586.

4.0 CONCLUSION AND RECOMMENDATIONS

Based on results obtained during this SA at site 1586, there is a current impact to the environmental media that would require periodic monitoring or active remediation. The following summarizes the recommendations and conclusion for this site:

- Free product is present in monitoring wells MPT-BE-MW06S, MPT-1586-MW15S, MPT-1586, MW16S, and MPT-1586-MW17S located around the tank pit.
- Free product removal is currently underway via hand bailing, which is being performed by the Navy.
- "Excessively contaminated soil," as defined by Chapter 62-777.200, FAC, is present at the site as determined by OVA-FID headspace analyses. The soil contamination is present, but appears to be mostly limited to the areas of free product and may be associated with the capillary fringe (5 ft bls). One soil measurement from SB-4 (3 ft bls) did report a concentration of 62 ppm. Several contaminants of concern (COCs) were reported in this area at concentrations exceeding leachability SCTLs in confirmatory soil samples submitted to a certified fixed-base laboratory.
- No petroleum constituents exceeded the GCTLs in fixed-based groundwater analysis from the intermediate well located near the source area or in 20 ft and 40 ft bls groundwater samples collected for mobile laboratory analysis.
- The vertical and horizontal extent of COCs identified in groundwater limits by the mobile laboratory or fixed-base laboratory appears to be limited in extent to the area surrounding the tank pit.
- Groundwater flow direction indicates that one additional down gradient well should be installed. The well will be installed and sampled for GAG/KAG constituents. The results will be prepared in a SAR Addendum.

It is recommended that a Remedial Action Plan be prepared to address the free product and impacted soil and groundwater at Site 1586.

REFERENCES

Driscoll, Fletcher G., 1986. "Groundwater and Wells", St. Paul, Minnesota.

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.

USACE (United States Army Corp of Engineers), 1992. Contamination Assessment Report for Site 1330, NS Mayport. May.

USDA (United States Department of Agriculture) Soil Conservation Services, 1978. Soil Survey of City of Jacksonville Duval, County Florida. 113.

USGS (United States Geological Survey), 1992. USGS Mayport, 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
SAR SUMMARY SHEET

CONTAMINATION ASSESSMENT REPORT SUMMARY SHEET

Facility Name: Site 1586, 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: Installation error Date of Spill: April 2000

(2) Type of Product:	Gasoline Group	Gallons Lost	Kerosene Group	Gallons Lost
<input type="checkbox"/> Leaded	_____	_____	<input type="checkbox"/> Kerosene	_____
<input type="checkbox"/> Unleaded Regular	_____	_____	<input type="checkbox"/> Diesel	<u>1400</u>
<input type="checkbox"/> Unleaded Premium	_____	_____	<input type="checkbox"/> JP-4 Jet Fuel	_____
<input type="checkbox"/> Gasohol	_____	_____	<input type="checkbox"/> Heating Fuel	_____
<input type="checkbox"/> Undetermined	_____	_____	<input type="checkbox"/> Unknown	_____

(3) Description of IRA: _____
 Free product Removal: _____ (gals)
 Soil Removal: _____ (cubic yds)
 Soil Incineration: _____ (cubic yds)

(4) Free Product still present (yes/no) yes Maximum apparent product thickness: 1.16 (feet)

(5) Maximum Groundwater contamination levels (ppb):
 Total VOA: 4 benzene: 4 EDB: < 0.020
 lead: <1 MTBE: <10 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: 190 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: 8/21/02 Date of last soil sampling: 8/5/02

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

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

(12) Average depth to groundwater: 5.6 to 6.0 (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: 0.043 (ft/day)

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

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

(17) Other remarks: None

APPENDIX B
SOIL BORING LOGS AND LITHOLOGIC DESCRIPTIONS



BORING LOG

PROJECT NAME: Tank Site 1586 BORING NUMBER: SB-10 Macrocore
 PROJECT NUMBER: N4240 DATE: 8/5/2002
 DRILLING COMPANY: Precision Sampling GEOLOGIST: DS
 DRILLING RIG: Truck Mounted H.S. DRILLER: Shane

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			U S C S *	Remarks	PID/FID Reading (ppm)				
					Soil Density/Consistency or Rock Hardness	Color	Material Classification			Sample	Sampler BZ	Borehole	Driller BZ	
	0-4	/												
	4-5	/												
	5-10	/												
		/												
		/												
	10-12	/												
	12-20	/												
		/												
	20-22	/												
	22-30	/												
		/												
	30-40	/												
		/												
		/												
		/												
		/												
		/												
		/												
		/												

* When rock coring, enter rock brokenness.
 ** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response read.
 Remarks: _____
 Drilling Area Background (ppm):
 Converted to Well: Yes _____ No _____ Well I.D. #: _____

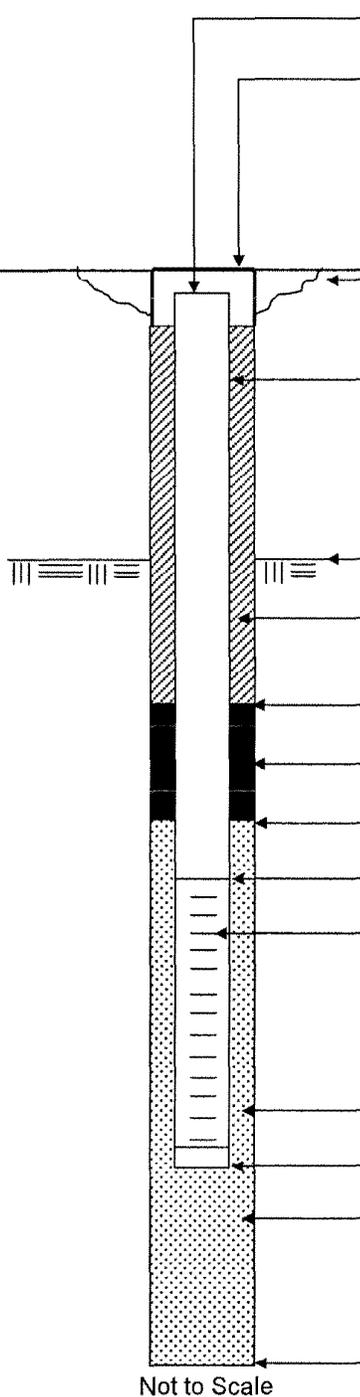
APPENDIX C
WELL COMPLETION LOGS



SHALLOW MONITORING WELL SHEET

PROJECT: CTO 247/ Bld 1586 DRILLING Co.: Precision Sampling BORING No.: MW-14
 PROJECT No.: N4240 DRILLER: Shane DATE COMPLETED: 08/06/02
 SITE: Bld 1586 DRILLING METHOD: H.S.A NORTHING: _____
 GEOLOGIST: DS DEV. METHOD: Submersible EASTING: _____

Ground Elevation =
Datum:



Elevation / Depth of Top of Riser: NA /
 Elevation / Height of Top of Surface Casing: NA /
 I.D. of Surface Casing: NA
 Type of Surface Casing: 8" manhole
 Type of Surface Seal: QUIKREET
 I.D. of Riser: 2"
 Type of Riser: PVC
 Borehole Diameter: 8"
 Elevation / Depth Top of Rock: / NA
 Type of Backfill: TYPE 1 PORTLAND GROUT
 Elevation / Depth of Seal: / 1.5
 Type of Seal: 30/65 SAND
 Elevation / Depth of Top of Filter Pack: / 2.5
 Elevation / Depth of Top of Screen: / 3.0
 Type of Screen: PVC
 Slot Size x Length: 0.010 -INCH
 I.D. of Screen: 2"
 Type of Filter Pack: 20/30
 Elevation / Depth of Bottom of Screen: / 13.0
 Elevation / Depth of Bottom of Filter Pack: / 13.0
 Type of Backfill Below Well: _____
 Elevation / Total Depth of Borehole: / 13.5

Not to Scale



SHALLOW MONITORING WELL SHEET

PROJECT: CTO 247/ Bld 1586 DRILLING Co.: Precision Sampling BORING No.: MW-15
 PROJECT No.: N4240 DRILLER: Shane DATE COMPLETED: 08/06/02
 SITE: Bld 1586 DRILLING METHOD: H.S. NORTHING: _____
 GEOLOGIST: DS DEV. METHOD: Submersible EASTING: _____

	Elevation / Depth of Top of Riser:	<u>NA /</u>
	Elevation / Height of Top of Surface Casing:	<u>NA /</u>
	I.D. of Surface Casing:	<u>NA</u>
	Type of Surface Casing:	<u>8" manhole</u>
	Type of Surface Seal:	<u>QUIKRETE</u>
	I.D. of Riser:	<u>2"</u>
	Type of Riser:	<u>PVC</u>
	Borehole Diameter:	<u>8"</u>
	Elevation / Depth Top of Rock:	<u>/ NA</u>
	Type of Backfill:	<u>TYPE 1 PORTLAND GROUT</u>
	Elevation / Depth of Seal:	<u>/ 1.5</u>
	Type of Seal:	<u>30/65 SAND</u>
	Elevation / Depth of Top of Filter Pack:	<u>/ 2.5</u>
	Elevation / Depth of Top of Screen:	<u>/ 3.0</u>
	Type of Screen:	<u>PVC</u>
Slot Size x Length:	<u>0.010 -INCH</u>	
I.D. of Screen:	<u>2"</u>	
Type of Filter Pack:	<u>20/30</u>	
Elevation / Depth of Bottom of Screen:	<u>/ 13.0</u>	
Elevation / Depth of Bottom of Filter Pack:	<u>/ 13.0</u>	
Type of Backfill Below Well:	_____	
Elevation / Total Depth of Borehole:	<u>/ 13.5</u>	

Ground Elevation = Datum:

Not to Scale



SHALLOW MONITORING WELL SHEET

PROJECT: CTO 247/ Bld 1586 DRILLING Co.: Precision Sampling BORING No.: MW-16
 PROJECT No.: N4240 DRILLER: Shane DATE COMPLETED: 08/06/02
 SITE: Bld 1586 DRILLING METHOD: H.S.A. NORTHING: _____
 GEOLOGIST: DS DEV. METHOD: Submersible EASTING: _____

	Elevation / Depth of Top of Riser:	<u>NA /</u>
	Elevation / Height of Top of Surface Casing:	<u>NA /</u>
	I.D. of Surface Casing:	<u>NA</u>
	Type of Surface Casing:	<u>8" manhole</u>
	Type of Surface Seal:	<u>QUIKRETE</u>
	I.D. of Riser:	<u>2"</u>
	Type of Riser:	<u>PVC</u>
	Borehole Diameter:	<u>8"</u>
	Elevation / Depth Top of Rock:	<u>/ NA</u>
	Type of Backfill: PORTLAND GROUT	<u>TYPE 1</u>
	Elevation / Depth of Seal:	<u>/ 1.5</u>
	Type of Seal:	<u>30/65 SAND</u>
	Elevation / Depth of Top of Filter Pack:	<u>/ 2.5</u>
	Elevation / Depth of Top of Screen:	<u>/ 3.0</u>
	Type of Screen:	<u>PVC</u>
Slot Size x Length:	<u>0.010 -INCH</u>	
I.D. of Screen:	<u>2"</u>	
Type of Filter Pack:	<u>20/30</u>	
Elevation / Depth of Bottom of Screen:	<u>/ 13.0</u>	
Elevation / Depth of Bottom of Filter Pack:	<u>/ 13.0</u>	
Type of Backfill Below Well:	_____	
Elevation / Total Depth of Borehole:	<u>/ 13.5</u>	

Ground Elevation = Datum:

Not to Scale



SHALLOW MONITORING WELL SHEET

PROJECT: CTO 247/ Bld 1586 DRILLING Co.: Precision Sampling BORING No.: MW-17
 PROJECT No.: N4240 DRILLER: Shane DATE COMPLETED: 08/06/02
 SITE: Bld 1586 DRILLING METHOD: H.S.A. NORTHING: _____
 GEOLOGIST: DS DEV. METHOD: Submersible EASTING: _____

	Elevation / Depth of Top of Riser:	<u>NA /</u>
	Elevation / Height of Top of Surface Casing:	<u>NA /</u>
	I.D. of Surface Casing:	<u>NA</u>
	Type of Surface Casing:	<u>8" manhole</u>
	Type of Surface Seal:	<u>QUIKRETE</u>
	I.D. of Riser:	<u>2"</u>
	Type of Riser:	<u>PVC</u>
	Borehole Diameter:	<u>8"</u>
	Elevation / Depth Top of Rock:	<u>/ NA</u>
	Type of Backfill: PORTLAND GROUT	<u>TYPE 1</u>
	Elevation / Depth of Seal:	<u>/ 1.5</u>
	Type of Seal:	<u>30/65 SAND</u>
	Elevation / Depth of Top of Filter Pack:	<u>/ 2.5</u>
	Elevation / Depth of Top of Screen:	<u>/ 3.0</u>
	Type of Screen:	<u>PVC</u>
Slot Size x Length:	<u>0.010 -INCH</u>	
I.D. of Screen:	<u>2"</u>	
Type of Filter Pack:	<u>20/30</u>	
Elevation / Depth of Bottom of Screen:	<u>/ 13.0</u>	
Elevation / Depth of Bottom of Filter Pack:	<u>/ 13.0</u>	
Type of Backfill Below Well:	_____	
Elevation / Total Depth of Borehole:	<u>/ 13.5</u>	

Not to Scale

APPENDIX D

FIELD SAMPLING DATA SHEETS

2002



Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: Site Assessment Tank Sites 163B, 1586 & G365 Project No.: N4240
 Location: NS Mayport/ Bld. 1586 Personnel: DS
 Weather Conditions: _____ Measuring Device: _____
 Tidally Influenced: Yes ___ No X 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 Summit FID
MW10s	7/31	1200			5.68			0
MW02s		1204			4.95			0
MW01s		1206			4.83			10
MW06s		1209			(Product) 8.46	6.12	Product	260
MW05s		1210			4.69			0
MW07s		1214			4.65			140
MW04s		1216			5.33	Heavy Sheen		413
MW11s		1217			5.00	Sheen		48
MW08		1219			5.07	Lt. Sheen		0
MW12s		}	Wells NOT Present					
MW13s								
MW03s								

MDT-36 ..

MW0 well

BUG
0
0
0
0
0
0
0
0

* All measurements to the nearest 0.01 foot



Project Site Name: NS Mayport Tank Sites 1586 Sample ID No.: MPT-1586-MW2s-01
 Project No.: N4240 Sample Location: MW2s
 Domestic Well Data
 Monitoring Well Data
 Other Well Type: _____
 QA Sample Type: _____

Sampled By: _____
 C.O.C. No.: _____
 Type of Sample:
 Low Concentration
 High Concentration

SAMPLING DATA								
Date: <u>8-21-02</u>	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: <u>1530</u>	Visual	Standard	mS/cm	°C	NTU	mg/l	%	
Method: Low Flow Peristaltic								

PURGE DATA	
Date: <u>8-21-02</u>	SEE LOW FLOW PURGE DATA SHEET
Method: Low Flow Peristaltic	
Monitor Reading (ppm):	
Well Casing Diameter: <u>2"</u>	
Well Casing Material: <u>PVC</u>	
Total Well Depth (TD): <u>12.8</u>	
Static Water Level (WL): <u>4.76</u>	
One Casing Volume(gal/L): <u>5.8</u>	
Start Purge (hrs): <u>1445</u>	
End Purge (hrs): <u>1525</u>	
Total Purge Time (min): <u>40</u>	
Total Vol. Purged (gal): <u>20</u>	

SAMPLE COLLECTION INFORMATION					
Analysis	Preservative	Container Requirements	Laboratory	Collected	
PAH	8310	None	1 L	Mitkem	DS
TRPH	FL-Pro	H2SO4	1 L	Mitkem	↓
VOC+MTBE	8260B	HCL	3 - 40 ml	Mitkem	
Total Pb	200.7	HNO3	250 ml Plastic	Mitkem	
EDB	601	none	3- 40 ml	Mitkem	

OBSERVATIONS / NOTES

Ben Dodge
 Mitkem Corp
 175 Metro Center Blvd
 Warwick, RI 02886

Laboratory:
 phone: 401/732-3400
 fax:

Circle if Applicable:		Signature(s): 
MS/MSD	Duplicate ID No.:	



Project Site Name:	<u>NS Mayport Tank Sites 1586</u>	Sample ID No.:	<u>MPT-1586-MW1s-01</u>
Project No.:	<u>N4240</u>	Sample Location:	<u>MW1s</u>
<input type="checkbox"/> Domestic Well Data		Sampled By:	<u>D. S.</u>
<input checked="" type="checkbox"/> Monitoring Well Data		C.O.C. No.:	
<input type="checkbox"/> Other Well Type:		Type of Sample:	
<input type="checkbox"/> QA Sample Type:		<input checked="" type="checkbox"/> Low Concentration	
		<input type="checkbox"/> High Concentration	

SAMPLING DATA

Date:	<u>8-21-02</u>	Color		pH		S.C.		Temp.		Turbidity		DO		Salinity		Other
Time:	<u>1425</u>	Visual		Standard		ms/cm		°C		NTU		mg/l		<u>ORP</u>		
Method:	<u>Low Flow Peristaltic</u>	<u>CL</u>		<u>6.65</u>		<u>0.973</u>		<u>28.1</u>		<u>0</u>		<u>0.32</u>		<u>-140</u>		

PURGE DATA

Date:	<u>8-21-02</u>	SEE LOW FLOW PURGE DATA SHEET
Method:	<u>Low Flow Peristaltic</u>	
Monitor Reading (ppm):	<u>0</u>	
Well Casing Diameter:	<u>2"</u>	
Well Casing Material:	<u>PVC</u>	
Total Well Depth (TD):	<u>12.05</u>	
Static Water Level (WL):	<u>4.64</u>	
One Casing Volume (gal):	<u>04.6</u>	
Start Purge (hrs):	<u>1325</u>	
End Purge (hrs):	<u>1410</u>	
Total Purge Time (min):	<u>45</u>	
Total Vol. Purged (gal):	<u>0.15.5</u>	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
PAH	8310 None	1 L	Mitkem	<input checked="" type="checkbox"/>
TRPH	FL-Pro H2SO4	1 L	Mitkem	<input checked="" type="checkbox"/>
VOC+MTBE	8260B HCL	3 - 40 ml	Mitkem	<input checked="" type="checkbox"/>
Total Pb	200.7 HNO3	250 ml Plastic	Mitkem	<input checked="" type="checkbox"/>
EDB	601 none HCL	3 - 40 ml	Mitkem	<input checked="" type="checkbox"/>

OBSERVATIONS / NOTES

Ben Dodge
Mitkem Corp
175 Metro Center Blvd
Warwick, RI 02886

Laboratory:

phone: 401/732-3400
fax: _____

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):



Project Site Name:	<u>NS Mayport Tank Sites 1586</u>	Sample ID No.:	<u>MPT-1586-MW4s-01</u>
Project No.:	<u>N4240</u>	Sample Location:	<u>MW4s</u>
<input type="checkbox"/> Domestic Well Data		Sampled By:	<u>CM</u>
<input checked="" type="checkbox"/> Monitoring Well Data		C.O.C. No.:	
<input type="checkbox"/> Other Well Type:		Type of Sample:	
<input type="checkbox"/> QA Sample Type:		<input checked="" type="checkbox"/> Low Concentration	
		<input type="checkbox"/> High Concentration	

SAMPLING DATA

Date:	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time:	Visual	Standard	mS/cm	°C	NTU	mg/l	0AP%	
<u>8-21-02</u>	<u>grayish</u>	<u>7.18</u>	<u>0.789</u>	<u>23.0</u>	<u>4.3</u>	<u>0.7</u>	<u>-310</u>	

PURGE DATA

Date:	<u>8-21-02</u>
Method:	Low Flow Peristaltic
Monitor Reading (ppm):	
Well Casing Diameter:	<u>2"</u>
Well Casing Material:	<u>PVC</u>
Total Well Depth (TD):	<u>13.1</u>
Static Water Level (WL):	<u>5.10</u>
One Casing Volume (gal):	<u>4.9</u>
Start Purge (hrs):	<u>1210</u>
End Purge (hrs):	<u>1242</u>
Total Purge Time (min):	<u>32</u>
Total Vol. Purged (gal):	<u>16</u>

SEE LOW FLOW PURGE DATA SHEET

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
PAH	8910 None	1 L	Mitkem	<input checked="" type="checkbox"/>
TRPH	FL-Pro H2SO4	1 L	Mitkem	<input checked="" type="checkbox"/>
VOC+MTBE	8260B HCL	3 - 40 ml	Mitkem	<input checked="" type="checkbox"/>
Total Pb	200.7 HNO3	250 ml Plastic	Mitkem	<input checked="" type="checkbox"/>
EDB	601 none HCl	3- 40 ml	Mitkem	<input checked="" type="checkbox"/>

OBSERVATIONS / NOTES

Ben Dodge
Mitkem Corp
175 Metro Center Blvd
Warwick, RI 02886

Laboratory:

phone: 401/732-3400
fax:

Circle If Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Charles Mott



Project Site Name: <u>NS Mayport Tank Sites 1586</u>		Sample ID No.: <u>MPT-1586-MW5s-01</u>	
Project No.: <u>N4240</u>		Sample Location: <u>MW5s</u>	
[] Domestic Well Data		Sampled By: <u>CM</u>	
[X] Monitoring Well Data		C.O.C. No.: _____	
[] Other Well Type: _____		Type of Sample:	
[] QA Sample Type: _____		[X] Low Concentration	
		[] High Concentration	

SAMPLING DATA							
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	Other
Time:	Visual	Standard	mS/cm	°C	NTU	mg/l	Salinity
8-21-02	Clear	7.75	0.99	270	0	0.4	0.0%
Method: Low Flow Peristaltic							

PURGE DATA	
Date: 8-21-02	SEE LOW FLOW PURGE DATA SHEET
Method: Low Flow Peristaltic	
Monitor Reading (ppm):	
Well Casing Diameter: 2"	
Well Casing Material: PVC	
Total Well Depth (TD): 18.2	
Static Water Level (WL): 4.49	
One Casing Volume (gal): 0.62	
Start Purge (hrs): 1320	
End Purge (hrs): 1405	
Total Purge Time (min): 45	
Total Vol. Purged (gal): 2.0	

SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
PAH	8310 None	1 L	Mitkem	✓
TRPH	FL-Pro H2SO4	1 L	Mitkem	✓
VOC+MTBE	8260B HCL	3 - 40 ml	Mitkem	✓
Total Pb	200.7 HNO3	250 ml Plastic	Mitkem	✓
EDB	601 none	3- 40 ml	Mitkem	✓

OBSERVATIONS / NOTES	
Ben Dodge Mitkem Corp 175 Metro Center Blvd Warwick, RI 02886	Laboratory: phone: 401/732-3400 fax:

Circle if Applicable:		Signature(s): <i>Charles Met</i>
MS/MSD	Duplicate ID No.:	



Project Site Name:	<u>NS Mayport Tank Sites 1586</u>	Sample ID No.:	<u>MPT-1586-MW7s-01</u>
Project No.:	<u>N4240</u>	Sample Location:	<u>MW7s</u>
<input type="checkbox"/> Domestic Well Data		Sampled By:	<u>DS</u>
<input checked="" type="checkbox"/> Monitoring Well Data		C.O.C. No.:	
<input type="checkbox"/> Other Well Type:		Type of Sample:	
<input type="checkbox"/> QA Sample Type:		<input checked="" type="checkbox"/> Low Concentration	
		<input type="checkbox"/> High Concentration	

SAMPLING DATA

Date:	<u>8-21-02</u>	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time:	<u>1300</u>	Visual	Standard	mS/cm	°C	NTU	mg/l	<u>0.0</u>	
Method: Low Flow Peristaltic	<u>2L</u>	<u>6.93</u>	<u>0.819</u>	<u>27.3</u>	<u>0</u>	<u>0.04</u>	<u>-6.5</u>		

PURGE DATA

Date:	<u>8-21-02</u>	SEE LOW FLOW PURGE DATA SHEET
Method: Low Flow Peristaltic		
Monitor Reading (ppm):	<u>0</u>	
Well Casing Diameter:	<u>2</u>	
Well Casing Material:	<u>pvc</u>	
Total Well Depth (TD):	<u>13.4</u>	
Static Water Level (WL):	<u>4.46</u>	
One Casing Volume(gal/L):	<u>5.6</u>	
Start Purge (hrs):	<u>12:15</u>	
End Purge (hrs):	<u>12:55</u>	
Total Purge Time (min):	<u>40</u>	
Total Vol. Purged (gal/L):	<u>20.2</u>	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
PAH	8310 None	1 L	Mitkem	<u>DS</u>
TRPH	FL-Pro H2SO4	1 L	Mitkem	<u>I</u>
VOC+MTBE	8260B HCL	3 - 40 ml	Mitkem	<u>I</u>
Total Pb	200.7 HNO3	250 ml Plastic	Mitkem	<u>I</u>
EDB	601 none	3- 40 ml	Mitkem	<u>I</u>

OBSERVATIONS / NOTES

Ben Dodge
Mitkem Corp
175 Metro Center Blvd
Warwick, RI 02886

Laboratory:

phone: 401/732-3400
fax:

Circle if Applicable:	Signature(s):
MS/MSD Duplicate ID No.:	<u>DS</u>



MW 8i

Project Site Name: NS Mayport Tank Sites 1586 Sample ID No.: MPT-1586-MW8i-01
 Project No.: N4240 Sample Location: MW8s
 Sampled By: DS/CM
 C.O.C. No.: _____
 Type of Sample: _____
 Domestic Well Data
 Monitoring Well Data
 Other Well Type: _____
 QA Sample Type: _____
 Low Concentration
 High Concentration

SAMPLING DATA								
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time:	Visual	Standard	mS/cm	°C	NTU	mg/l	‰	
8-23-02	<i>OK</i>	7.47	0.771	25.1	3.1	0.49	180	
Method: Low Flow Peristaltic								

PURGE DATA	
Date: 8-23-02	SEE LOW FLOW PURGE DATA SHEET
Method: Low Flow Peristaltic	
Monitor Reading (ppm): 0	
Well Casing Diameter: 2"	
Well Casing Material: PVC	
Total Well Depth (TD): 5.20 30.4	
Static Water Level (WL): 5.20	
One Casing Volume (gal): 6.2	
Start Purge (hrs): 1005	
End Purge (hrs): 1043	
Total Purge Time (min): 1120	
Total Vol. Purged (gal): 20	

SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
PAH	8310	None	1 L	Mitkem
TRPH	FL-Pro	H2SO4	1 L	Mitkem
VOC+MTBE	8260B	HCL	3 - 40 ml	Mitkem
Total Pb	200.7	HNO3	250 ml Plastic	Mitkem
EDB	601	none	3- 40 ml	Mitkem

OBSERVATIONS / NOTES

Ben Dodge
 Mitkem Corp
 175 Metro Center Blvd
 Warwick, RI 02886

Laboratory:
 phone: 401/732-3400
 fax:

Circle If Applicable:		Signature(s): <i>Chad Metz</i>
MS/MSD	Duplicate ID No.:	



Project Site Name:	<u>NS Mayport Tank Sites 1586</u>	Sample ID No.:	<u>MPT-1586-MW9s-01</u>
Project No.:	<u>N4240</u>	Sample Location:	<u>MW9s</u>
<input type="checkbox"/> Domestic Well Data		Sampled By:	<u>DS</u>
<input checked="" type="checkbox"/> Monitoring Well Data		C.O.C. No.:	
<input type="checkbox"/> Other Well Type:		Type of Sample:	
<input type="checkbox"/> QA Sample Type:		<input checked="" type="checkbox"/> Low Concentration	
		<input type="checkbox"/> High Concentration	

SAMPLING DATA								
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
<u>8-21-02</u>	Visual	Standard	mS/cm	°C	NTU	mg/l	<u>ORP</u>	
Time: <u>1120</u>								
Method: Low Flow Peristaltic	<u>CL</u>	<u>6.83</u>	<u>1.32</u>	<u>27.5</u>	<u>3.2</u>	<u>0.64</u>	<u>30</u>	

PURGE DATA	
Date: <u>8-21-02</u>	SEE LOW FLOW PURGE DATA SHEET
Method: Low Flow Peristaltic	
Monitor Reading (ppm): <u>0</u>	
Well Casing Diameter: <u>2</u>	
Well Casing Material: <u>PVC</u>	
Total Well Depth (TD): <u>~13 ft</u>	
Static Water Level (WL): <u>4.87</u>	
One Casing Volume(gal/L): <u>5.6</u>	
Start Purge (hrs): <u>10:25</u>	
End Purge (hrs): <u>11:05</u>	
Total Purge Time (min): <u>40</u>	
Total Vol. Purged (gal/L): <u>6.20</u>	

SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
<u>PAH</u>	8310 None	1 L	Mitkem	<u>DS</u>
<u>TRPH</u>	FL-Pro H2SO4 <u>HCL</u>	1 L	Mitkem	
<u>VOC+MTBE</u>	8260B HCL	3 - 40 ml	Mitkem	
<u>Total Pb</u>	200.7 HNO3	250 ml Plastic	Mitkem	
<u>EDB</u>	601 none <u>HCL</u>	3 - 40 ml	Mitkem	

OBSERVATIONS / NOTES	
<p>Ben Dodge Mitkem Corp 175 Metro Center Blvd Warwick, RI 02886</p>	<p><u>Laboratory:</u> phone: 401/732-3400 fax:</p>

Circle if Applicable:		Signature(s): 
MS/MSD	Duplicate ID No.:	



Project Site Name: NS Mayport Tank Sites 1586 Sample ID No.: 1PT-1586-MW10s-01
 Project No.: N4240 Sample Location: MW10s
 [] Domestic Well Data Sampled By: CM
 [X] Monitoring Well Data C.O.C. No.: _____
 [] Other Well Type: _____ Type of Sample: _____
 [] QA Sample Type: _____ [X] Low Concentration
 [] High Concentration

SAMPLING DATA								
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
<u>8-21-02</u>	Visual	Standard	mS/cm	°C	NTU	mg/l	<u>ORP</u>	
Time: <u>1525</u>								
Method: Low Flow Peristaltic	<u>Clear</u>	<u>7.15</u>	<u>0.714</u>	<u>25.2</u>	<u>0.3</u>	<u>1.2</u>	<u>9</u>	

PURGE DATA	
Date: <u>8-21-02</u>	SEE LOW FLOW PURGE DATA SHEET
Method: Low Flow Peristaltic	
Monitor Reading (ppm):	
Well Casing Diameter: <u>2"</u>	
Well Casing Material: <u>PVC</u>	
Total Well Depth (TD): <u>12.55</u>	
Static Water Level (WL): <u>5.49</u>	
One Casing Volume (gal): <u>0.43</u>	
Start Purge (hrs): <u>14 32</u>	
End Purge (hrs):	
Total Purge Time (min):	
Total Vol. Purged (gal): <u>0</u>	

SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected
<u>PAH</u>	8310 None	1 L	Mitkem	<input checked="" type="checkbox"/>
<u>TRPH</u>	FL-Pro H2O2 <u>HCL</u>	1 L	Mitkem	<input checked="" type="checkbox"/>
<u>VOC+MTBE</u>	8260B HCL	3 - 40 ml	Mitkem	<input checked="" type="checkbox"/>
<u>Total Pb</u>	200.7 HNO3	250 ml Plastic	Mitkem	<input checked="" type="checkbox"/>
<u>EDB</u>	601 none <u>HCL</u>	3- 40 ml	Mitkem	<input checked="" type="checkbox"/>

OBSERVATIONS / NOTES

Ben Dodge
 Mitkem Corp
 175 Metro Center Blvd
 Warwick, RI 02886

Laboratory:
 Mitkem
 phone: 401/732-3400
 fax:

Circle if Applicable:		Signature(s): <u>Charles MEO</u>
MS/MSD	Duplicate ID No.:	



Project Site Name: NS Mayport Tank Sites 1586
 Project No.: N4240

Domestic Well Data
 Monitoring Well Data
 Other Well Type: _____
 QA Sample Type: _____

Sample ID No.: APT-1586-MW14s-01
 Sample Location: MW14s
 Sampled By: CM
 C.O.C. No.: _____
 Type of Sample:
 Low Concentration
 High Concentration

SAMPLING DATA

Date:	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity	Other
8-20-01								
Time: 1100								
Method: Low Flow Peristaltic	yellow	7.37	0.6/6	25.4	5.1	0.4	ORP -90	

PURGE DATA

Date: 8-21-02
 Method: Low Flow Peristaltic
 Monitor Reading (ppm): 0
 Well Casing Diameter: 2"
 Well Casing Material: PVC
 Total Well Depth (TD): 13.3
 Static Water Level (WL): 6.02
 One Casing Volume(gal/L): 4.3
 Start Purge (hrs): 1020
 End Purge (hrs): 1052
 Total Purge Time (min): 32
 Total Vol. Purged (gal/L): 15

SEE LOW FLOW PURGE DATA SHEET

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected
PAH 8310	None	1 L	Mitkem	✓
TRPH FL-Pro	H2SO4	1 L	Mitkem	✓
VOC+MTBE 8260B	HCL	3 - 40 ml	Mitkem	✓
Total Pb 200.7	HNO3	250 ml Plastic	Mitkem	✓
EDB 601	none HCL	3- 40 ml	Mitkem	✓

OBSERVATIONS / NOTES

Ben Dodge
 Mitkem Corp
 175 Metro Center Blvd
 Warwick, RI 02886

Laboratory:

phone: 401/732-3400
 fax:

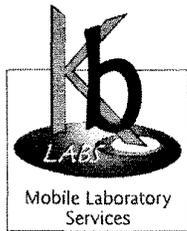
Circle if Applicable:

MS/MSD Duplicate ID No.:

Signature(s):

APPENDIX E

MOBILE LABORATORY ANALYTICAL RESULTS

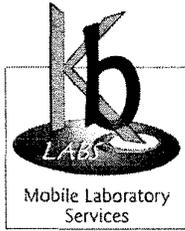


KB LABS, INC.

Final Data Report
 Project Number 02-065-1
 NS Mayport CTO247
 Mayport, FL

Prepared for: Tetra Tech NUS

Well ID	Analysis Date	Matrix	Dilution Factor	MTBE	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Naphthalene	2-Methylnaphthalene	1-Methylnaphthalene
MPT-BE MW01S	8/1/02	Water	1	<5	8.2	<1	<1	15.1	<1	40.0	100	84.4
MPT-BE MW02S	8/1/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-BE MW05S	8/1/02	Water	1	<5	<1	1.6	<1	<1	<1	<5	<5	<5
MPT-BE MW07S	8/1/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-BE MW10S	8/1/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-365 MW-2	8/1/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-365 TW-1	8/1/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-365 TW-2	8/1/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-365 TW-3	8/1/02	Water	1	<5	28.4	3.2	<1	<1	<1	<5	<5	<5
MPT-365 TW-3 20'	8/1/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-365 TW-3 40'	8/1/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-365 TW-4	8/1/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-365 TW-5	8/1/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-365 TW-6	8/1/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-365 TW-7	8/1/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-365 TW-8	8/1/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-365 SB1-03	8/1/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-365 SB2-03	8/1/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-365 SB3-03	8/1/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-365 SB4-03	8/1/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-365 SB5-03	8/1/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-365 SB6-03	8/1/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-365 SB7-03	8/1/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-365 SB8-03	8/1/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-163 MW-1	8/2/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-163 TW-1	8/2/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-163 TW-2	8/2/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-163 TW-2 20'	8/2/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-163 TW-2 40'	8/2/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-163 TW-3	8/2/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5

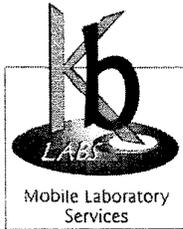


KB LABS, INC.

Final Data Report
 Project Number 02-065-1
 NS Mayport CTO247
 Mayport, FL

Prepared for: Tetra Tech NUS

Well ID	Analysis Date	Matrix	Dilution Factor	MTBE	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Naphthalene	2-Methylnaphthalene	1-Methylnaphthalene
MPT-63 TW-4	8/2/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-63 TW-5	8/2/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-63 TW-6	8/2/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-63 TW-7	8/2/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-63 TW-8	8/2/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-63 SB1-07	8/2/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-63 SB2-07	8/2/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-63 SB3-07	8/2/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-63 SB4-07	8/2/02	Soil	1	<0.025	<0.005	0.008	<0.005	<0.005	0.006	<0.025	<0.025	<0.025
MPT-63 SB5-07	8/2/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-63 SB6-07	8/2/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-63 SB7-07	8/2/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-63 SB8-07	8/2/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-BE MW9	8/3/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-1586 TW-1	8/3/02	Water	1	<5	<1	<1	3.1	<1	<1	22.6	57.8	29.0
MPT-1586 TW-10	8/3/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-1586 TW-11	8/3/02	Water	1	<5	<1	<1	<1	<1	<1	5.4	9.7	6.0
MPT-1586 TW-12	8/3/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-1586 TW-5	8/3/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-1586 TW-6	8/3/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-1586 TW-7	8/3/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-1586 TW-8	8/3/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-1586 TW-9	8/3/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-1586 SB1-03	8/3/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-1586 SB2-03	8/3/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-1586 SB3-03	8/3/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-1586 SB4-03	8/3/02	Soil	40/100	<1.0	<0.2	1.4	<0.2	30	4.2	31	89	37
MPT-1586 SB1-05	8/3/02	Soil	1	<0.025	<0.005	0.18	<0.005	1.3	0.46	0.61	0.71	0.39
MPT-1586 SB2-05	8/3/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	0.043	<0.025
MPT-1586 SB5-05	8/3/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025



KB LABS, INC.

Final Data Report

Project Number 02-065-1

NS Mayport CTO247

Mayport, FL

Prepared for: Tetra Tech NUS

Well ID	Analysis Date	Matrix	Dilution Factor	MTBE	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Naphthalene	2-Methylnaphthalene	1-Methylnaphthalene
MPT-1586 SB6-05	8/3/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-1586 SB7-05	8/3/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-1586 SB8-05	8/3/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-1586 SB9-05	8/3/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-1586 SB10-05	8/3/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-1586 SB11-05	8/3/02	Soil	1	<0.025	<0.005	<0.005	<0.005	0.042	<0.005	0.32	0.24	0.15
MPT-1586 SB12-05	8/3/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025
MPT-1586 TW-10 20'	8/5/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-1586 TW-10 40'	8/5/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-1586 TW-13	8/5/02	Water	1	<5	<1	<1	<1	<1	<1	<5	<5	<5
MPT-1586 SB13-05	8/5/02	Soil	1	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.025

APPENDIX F

FIXED-BASE LABORATORY ANALYTICAL RESULTS

Re-analysis of sample MPT-1586-SB-11-05 was not used for validation because the original analysis was compliant and the results for both analyses were the same.

The VOC analyses were missing several compounds from the requested analysis list. The laboratory provided the missing parameters upon request.

PAH

Samples MPT-1586-SB-1-05 (20X), MPT-1586-SB-11-05 (10X), and MPT-1586-SB-4-05 (20X) were analyzed at dilutions due to matrix interference. High concentrations of hydrocarbon were present in the aforementioned samples as evidenced by the pattern of the chromatograms. This accounts for the elevated reporting limits for all non-detected compounds in the aforementioned samples.

Field duplicate imprecision defined as a relative percent difference (RPD) >50% exists in the field duplicate pair for 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, fluorene, and pyrene. All results for the aforementioned compounds in the field duplicate pair were qualified as estimated (J).

Dibenzofuran was reported as a PAH. This compound is not considered a PAH. It was removed from the database.

Action levels for benzo(a)pyrene and dibenzo(a,h)anthracene were exceeded in the undiluted samples.

TPH

The surrogate (o-terphenyl) was diluted out of samples MPT-1586-SB-1-05, MPT-1586-SB-11-05, and MPT-1586-SB-4-05 due to the presence of petroleum hydrocarbons at significant concentrations (>100ppm). No action was taken on this basis.

The concentration of TPH in sample MPT-1586-SB-11-05 exceeded the linear calibration range of the instrument. The result for TPH was qualified as estimated (J).

The laboratory did not include the calibration reports with the data package. The laboratory faxed the data upon request.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Incomplete data package was submitted. The reporting limits for 2 PAHs were exceeded in the undiluted samples.

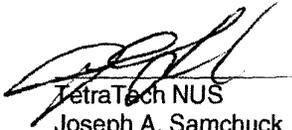
Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99) and the NFESC guidelines. 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
Bernard F. Spada III
Chemist/Data Validator



TetraTech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

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

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

- A = Lab Blank Contamination
- B = Field Blank Contamination
- C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
- D = MS/MSD Noncompliance
- E = LCS/LCSD Noncompliance
- F = Lab Duplicate Imprecision
- G = Field Duplicate Imprecision
- H = Holding Time Exceedance
- I = ICP Serial Dilution Noncompliance
- J = GFAA PDS - GFAA MSA's $r < 0.995$
- K = ICP Interference - include ICSAB % R's
- L = Instrument Calibration Range Exceedance
- M = Sample Preservation
- N = Internal Standard Noncompliance
- N01 = Internal Standard Noncompliance Dioxins
- N02 = Recovery Standard Noncompliance Dioxins
- N03 = Clean-up Standard Noncompliance Dioxins
- O = Poor Instrument Performance (i.e., base-time drifting)
- P = Uncertainty near detection limit ($< 2 \times$ IDL for inorganics and $<$ CRQL for organics)
- Q = Other problems (can encompass a number of issues)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = Pest/PCD% between columns for positive results
- V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
- W = EMPC result
- X = Signal to noise response drop
- Y = Percent solids $< 30\%$
- Z = Uncertainty at 2 sigma deviation is less than sample activity

PROJ_NO: 4240

SDG: A1164 MEDIA: SOIL DATA FRACTION: PAH

nsample MPT-1586 SB1 DUP-05
 samp_date 8/3/2002
 lab_id A1164-07A
 qc_type NM
 units UG/KG
 Pct_Solids 77
 DUP_OF: MPT-1586-SB-1-05

nsample MPT-1586-SB-1-05
 samp_date 8/5/2002
 lab_id A1164-01B
 qc_type NM
 units UG/KG
 Pct_Solids 87
 DUP_OF:

nsample MPT-1586-SB-11-05
 samp_date 8/5/2002
 lab_id A1164-02B
 qc_type NM
 units UG/KG
 Pct_Solids 82
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	2100	J	G
2-METHYLNAPHTHALENE	1600	J	G
ACENAPHTHENE	420	U	
ACENAPHTHYLENE	420	U	
ANTHRACENE	420	U	
BENZO(A)ANTHRACENE	420	U	
BENZO(A)PYRENE	420	U	
BENZO(B)FLUORANTHENE	420	U	
BENZO(G,H,I)PERYLENE	420	U	
BENZO(K)FLUORANTHENE	420	U	
CHRYSENE	420	U	
DIBENZO(A,H)ANTHRACENE	420	U	
FLUORANTHENE	420	U	
FLUORENE	590	J	G
INDENO(1,2,3-CD)PYRENE	420	U	
NAPHTHALENE	560	J	G
PHENANTHRENE	990		
PYRENE	200	J	GP

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	40000	J	G
2-METHYLNAPHTHALENE	55000	J	G
ACENAPHTHENE	7500	U	
ACENAPHTHYLENE	7500	U	
ANTHRACENE	7500	U	
BENZO(A)ANTHRACENE	7500	U	
BENZO(A)PYRENE	7500	U	
BENZO(B)FLUORANTHENE	7500	U	
BENZO(G,H,I)PERYLENE	7500	U	
BENZO(K)FLUORANTHENE	7500	U	
CHRYSENE	7500	U	
DIBENZO(A,H)ANTHRACENE	7500	U	
FLUORANTHENE	7500	U	
FLUORENE	1200	J	GP
INDENO(1,2,3-CD)PYRENE	7500	U	
NAPHTHALENE	15000	J	G
PHENANTHRENE	1600	J	P
PYRENE	1900	J	GP

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	4000	U	
2-METHYLNAPHTHALENE	4000	U	
ACENAPHTHENE	4000	U	
ACENAPHTHYLENE	4000	U	
ANTHRACENE	4000	U	
BENZO(A)ANTHRACENE	4000	U	
BENZO(A)PYRENE	4000	U	
BENZO(B)FLUORANTHENE	4000	U	
BENZO(G,H,I)PERYLENE	4000	U	
BENZO(K)FLUORANTHENE	4000	U	
CHRYSENE	4000	U	
DIBENZO(A,H)ANTHRACENE	4000	U	
FLUORANTHENE	4000	U	
FLUORENE	4000	U	
INDENO(1,2,3-CD)PYRENE	4000	U	
NAPHTHALENE	4000	U	
PHENANTHRENE	4000	U	
PYRENE	4000	U	

PROJ_NO: 4240

SDG: A1164 MEDIA: SOIL DATA FRACTION: PAH

nsample MPT-1586-SB-4-05
 samp_date 8/5/2002
 lab_id A1164-03B
 qc_type NM
 units UG/KG
 Pct_Solids 83
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	26000		
2-METHYLNAPHTHALENE	37000		
ACENAPHTHENE	7900	U	
ACENAPHTHYLENE	7900	U	
ANTHRACENE	7900	U	
BENZO(A)ANTHRACENE	7900	U	
BENZO(A)PYRENE	7900	U	
BENZO(B)FLUORANTHENE	7900	U	
BENZO(G,H,I)PERYLENE	7900	U	
BENZO(K)FLUORANTHENE	7900	U	
CHRYSENE	7900	U	
DIBENZO(A,H)ANTHRACENE	7900	U	
FLUORANTHENE	7900	U	
FLUORENE	1000	J	P
INDENO(1,2,3-CD)PYRENE	7900	U	
NAPHTHALENE	10000		
PHENANTHRENE	9200		
PYRENE	1600	J	P

nsample MPT-163-SB-2-07
 samp_date 8/5/2002
 lab_id A1164-06B
 qc_type NM
 units UG/KG
 Pct_Solids 82
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	400	U	
2-METHYLNAPHTHALENE	400	U	
ACENAPHTHENE	400	U	
ACENAPHTHYLENE	400	U	
ANTHRACENE	400	U	
BENZO(A)ANTHRACENE	400	U	
BENZO(A)PYRENE	400	U	
BENZO(B)FLUORANTHENE	400	U	
BENZO(G,H,I)PERYLENE	400	U	
BENZO(K)FLUORANTHENE	400	U	
CHRYSENE	400	U	
DIBENZO(A,H)ANTHRACENE	400	U	
FLUORANTHENE	400	U	
FLUORENE	400	U	
INDENO(1,2,3-CD)PYRENE	400	U	
NAPHTHALENE	400	U	
PHENANTHRENE	400	U	
PYRENE	400	U	

nsample MPT-365-SB3-03
 samp_date 8/5/2002
 lab_id A1164-05B
 qc_type NM
 units UG/KG
 Pct_Solids 82
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	400	U	
2-METHYLNAPHTHALENE	400	U	
ACENAPHTHENE	400	U	
ACENAPHTHYLENE	400	U	
ANTHRACENE	400	U	
BENZO(A)ANTHRACENE	400	U	
BENZO(A)PYRENE	400	U	
BENZO(B)FLUORANTHENE	400	U	
BENZO(G,H,I)PERYLENE	400	U	
BENZO(K)FLUORANTHENE	400	U	
CHRYSENE	400	U	
DIBENZO(A,H)ANTHRACENE	400	U	
FLUORANTHENE	400	U	
FLUORENE	400	U	
INDENO(1,2,3-CD)PYRENE	400	U	
NAPHTHALENE	400	U	
PHENANTHRENE	400	U	
PYRENE	400	U	

PROJ_NO: 4240

SDG: A1164 MEDIA: SOIL DATA FRACTION: PET

nsample MPT-1586-SB-1-05
samp_date 8/5/2002
lab_id C208201*1
qc_type NM
units MG/KG
Pct_Solids 85
DUP_OF:

nsample MPT-1586-SB-11-05
samp_date 8/5/2002
lab_id C208201*2
qc_type NM
units MG/KG
Pct_Solids 80
DUP_OF:

nsample MPT-1586-SB-4-05
samp_date 8/5/2002
lab_id C208201*3
qc_type NM
units MG/KG
Pct_Solids 79
DUP_OF:

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	16000		

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	4300	J	L

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	6500		

PROJ_NO: 4240

SDG:A1164 MEDIA: SOIL DATA FRACTION: OV

nsample MPT-1586-SB-1-05
 samp_date 8/5/2002
 lab_id A1164-01A
 qc_type NM
 units UG/KG
 Pct_Solids 87.0
 DUP_OF:

nsample MPT-1586-SB-1-05
 samp_date 8/5/2002
 lab_id A1164-01A
 qc_type NM
 units UG/KG
 Pct_Solids 87.0
 DUP_OF:

nsample MPT-1586-SB-11-05
 samp_date 8/5/2002
 lab_id A1164-02A
 qc_type NM
 units UG/KG
 Pct_Solids 82.0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	3.00	U	
1,1,2,2-TETRACHLOROETHANE	0.70	U	
1,1,2-TRICHLOROETHANE	3.00	U	
1,1-DICHLOROETHANE	3.00	U	
1,1-DICHLOROETHENE	3.00	U	
1,2-DIBROMOETHANE	3.00	U	
1,2-DICHLOROETHANE	3.00	U	
1,2-DICHLOROPROPANE	3.00	U	
2-CHLOROETHYL VINYL ETHER	3.00	UR	C
BENZENE	19.00		
BROMODICHLOROMETHANE	3.00	U	
BROMOFORM	3.00	U	
BROMOMETHANE	3.00	U	
CARBON TETRACHLORIDE	3.00	U	
CHLOROBENZENE	3.00	U	
CHLORODIBROMOMETHANE	2.00	U	
CHLOROETHANE	3.00	U	
CHLOROFORM	3.00	U	
CHLOROMETHANE	3.00	U	
CIS-1,2-DICHLOROETHENE	3.00	U	
CIS-1,3-DICHLOROPROPENE	0.70	U	
ETHYLBENZENE	800.00		
METHYL TERT-BUTYL ETHER	3.00	U	
METHYLENE CHLORIDE	3.00	U	
TETRACHLOROETHENE	3.00	U	
TOLUENE	3.00	U	
TOTAL XYLENES	660.00		
TRANS-1,2-DICHLOROETHENE	3.00	U	
TRANS-1,3-DICHLOROPROPENE	0.70	U	
TRICHLOROETHENE	3.00	U	

Parameter	Result	Val Qual	Qual Code
VINYL CHLORIDE	3.00	U	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	4.00	U	
1,1,2,2-TETRACHLOROETHANE	0.80	U	
1,1,2-TRICHLOROETHANE	4.00	U	
1,1-DICHLOROETHANE	4.00	U	
1,1-DICHLOROETHENE	4.00	U	
1,2-DIBROMOETHANE	4.00	U	
1,2-DICHLOROETHANE	4.00	U	
1,2-DICHLOROPROPANE	4.00	U	
2-CHLOROETHYL VINYL ETHER	4.00	UR	C
BENZENE	4.00	U	
BROMODICHLOROMETHANE	4.00	U	
BROMOFORM	4.00	U	
BROMOMETHANE	4.00	U	
CARBON TETRACHLORIDE	4.00	U	
CHLOROBENZENE	4.00	U	
CHLORODIBROMOMETHANE	2.00	U	
CHLOROETHANE	4.00	U	
CHLOROFORM	4.00	U	
CHLOROMETHANE	4.00	U	
CIS-1,2-DICHLOROETHENE	4.00	U	
CIS-1,3-DICHLOROPROPENE	0.80	U	
ETHYLBENZENE	4.00	U	
METHYL TERT-BUTYL ETHER	4.00	U	
METHYLENE CHLORIDE	4.00	U	
TETRACHLOROETHENE	4.00	U	
TOLUENE	4.00	U	
TOTAL XYLENES	4.00	U	
TRANS-1,2-DICHLOROETHENE	4.00	U	
TRANS-1,3-DICHLOROPROPENE	0.80	U	
TRICHLOROETHENE	4.00	U	

PROJ_NO: 4240

SDG: A1164 MEDIA: SOIL DATA FRACTION: OV

nsample MPT-1586-SB-11-05
 samp_date 8/5/2002
 lab_id A1164-02A
 qc_type NM
 units UG/KG
 Pct_Solids 82.0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
VINYL CHLORIDE	4.00	U	

nsample MPT-1586-SB-4-05
 samp_date 8/5/2002
 lab_id A1164-03A
 qc_type NM
 units UG/KG
 Pct_Solids 83.0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	4.00	U	
1,1,2,2-TETRACHLOROETHANE	0.80	U	
1,1,2-TRICHLOROETHANE	4.00	U	
1,1-DICHLOROETHANE	4.00	U	
1,1-DICHLOROETHENE	4.00	U	
1,2-DIBROMOETHANE	4.00	U	
1,2-DICHLOROETHANE	4.00	U	
1,2-DICHLOROPROPANE	4.00	U	
2-CHLOROETHYL VINYL ETHER	4.00	UR	C
BENZENE	33.00		
BROMODICHLOROMETHANE	4.00	U	
BROMOFORM	4.00	U	
BROMOMETHANE	4.00	U	
CARBON TETRACHLORIDE	4.00	U	
CHLOROBEZENE	4.00	U	
CHLORODIBROMOMETHANE	2.00	U	
CHLOROETHANE	4.00	U	
CHLOROFORM	4.00	U	
CHLOROMETHANE	4.00	U	
CIS-1,2-DICHLOROETHENE	4.00	U	
CIS-1,3-DICHLOROPROPENE	0.80	U	
ETHYLBENZENE	27.00		
METHYL TERT-BUTYL ETHER	4.00	U	
METHYLENE CHLORIDE	4.00	U	
TETRACHLOROETHENE	4.00	U	
TOLUENE	4.00	U	
TOTAL XYLENES	1600.00		
TRANS-1,2-DICHLOROETHENE	4.00	U	
TRANS-1,3-DICHLOROPROPENE	0.80	U	
TRICHLOROETHENE	4.00	U	

nsample MPT-1586-SB-4-05
 samp_date 8/5/2002
 lab_id A1164-03A
 qc_type NM
 units UG/KG
 Pct_Solids 83.0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
VINYL CHLORIDE	4.00	U	

TO: PETERSON, M. – PAGE 2
DATE: OCTOBER 24, 2002

Laboratory Blank Noncompliance

The following contaminant was present in the laboratory method/preparation blanks at the following maximum concentration:

<u>Analyte</u>	<u>Maximum Concentration</u>	<u>Action Level</u>
Barium ⁽¹⁾	0.49 mg/kg	2.45 mg/kg

⁽¹⁾ Maximum concentration present in soil preparation blank.

An action level of 5X the maximum concentration was used to evaluate the sample data for blank contamination. Sample aliquot, percent solids, and dilution factors, where applicable, were taken into consideration when evaluation for blank contamination. Barium was not qualified for blank contamination because the sample value was greater than the action level.

Notes

Sample MPT-163-MW1S-01 was incorrectly labeled in the database as MPT-163-01. The data reviewer amended the database for this sample.

Executive Summary

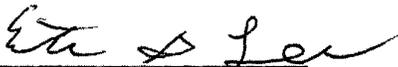
Laboratory Performance: Barium was present in the laboratory method/preparation blanks.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", July 2002 and the NFESC document entitled "Navy IRCDQM" (September 1999).

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

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



Tetra Tech NUS
Ethan G. Lee
Environmental Scientist



Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

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

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

- A = Lab Blank Contamination
- B = Field Blank Contamination
- C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
- D = MS/MSD Noncompliance
- E = LCS/LCSD Noncompliance
- F = Lab Duplicate Imprecision
- G = Field Duplicate Imprecision
- H = Holding Time Exceedance
- I = ICP Serial Dilution Noncompliance
- J = GFAA PDS - GFAA MSA's $r < 0.995$
- K = ICP Interference - include ICSAB % R's
- L = Instrument Calibration Range Exceedance
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- N = Internal Standard Noncompliance
- N01 = Internal Standard Noncompliance Dioxins
- N02 = Recovery Standard Noncompliance Dioxins
- N03 = Clean-up Standard Noncompliance Dioxins
- O = Poor Instrument Performance (i.e., base-time drifting)
- P = Uncertainty near detection limit ($< 2 \times$ IDL for inorganics and $<$ CRQL for organics)
- Q = Other problems (can encompass a number of issues)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = Pest/PCD% between columns for positive results
- V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
- W = EMPC result
- X = Signal to noise response drop
- Y = Percent solids $< 30\%$
- Z = Uncertainty at 2 sigma deviation is less than sample activity

PROJ_NO: 4240

SDG: A1272 MEDIA: WATER DATA FRACTION: M

nsample MPT-1586-EQUIP-03
samp_date 8/23/2002
lab_id A1272-03C
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

Parameter	Result	Val Qual	Qual Code
LEAD	1.0	U	

nsample MPT-1586-MW8I-01
samp_date 8/23/2002
lab_id A1272-02C
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

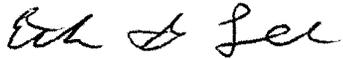
Parameter	Result	Val Qual	Qual Code
LEAD	1.0	U	

nsample MPT-163-MW1S-01
samp_date 8/23/2002
lab_id A1272-06C
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

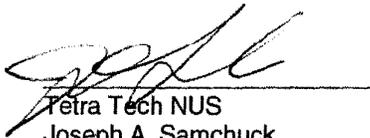
Parameter	Result	Val Qual	Qual Code
LEAD	1.0	U	

TO: PETERSON, M. – PAGE 2
DATE: OCTOBER 24, 2002

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Tetra Tech NUS
Ethan G. Lee
Environmental Scientist



Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

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- G = Field Duplicate Imprecision
- H = Holding Time Exceedance
- I = ICP Serial Dilution Noncompliance
- J = GFAA PDS - GFAA MSA's $r < 0.995$
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- L = Instrument Calibration Range Exceedance
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- Q = Other problems (can encompass a number of issues)
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- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = Pest/PCD% between columns for positive results
- V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
- W = EMPC result
- X = Signal to noise response drop
- Y = Percent solids $< 30\%$
- Z = Uncertainty at 2 sigma deviation is less than sample activity

PROJ_NO: 4240

SDG: A1259 MEDIA: WATER DATA FRACTION: M

nsample MPT-1586-MW10S-01
samp_date 8/21/2002
lab_id A1259-08C
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

Parameter	Result	Val Qual	Qual Code
LEAD	1.0	U	

nsample MPT-1586-MW14S-01
samp_date 8/21/2002
lab_id A1259-01C
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

Parameter	Result	Val Qual	Qual Code
LEAD	1.0	U	

nsample MPT-1586-MW1S-01
samp_date 8/21/2002
lab_id A1259-05C
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

Parameter	Result	Val Qual	Qual Code
LEAD	1.0	U	

PROJ_NO: 4240

SDG: A1259 MEDIA: WATER DATA FRACTION: M

nsample MPT-1586-MW2S-01
samp_date 8/21/2002
lab_id A1259-07C
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

Parameter	Result	Val Qual	Qual Code
LEAD	1.7		

nsample MPT-1586-MW5S-01
samp_date 8/21/2002
lab_id A1259-06C
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

Parameter	Result	Val Qual	Qual Code
LEAD	1.0	U	

nsample MPT-1586-MW7S-01
samp_date 8/21/2002
lab_id A1259-04C
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

Parameter	Result	Val Qual	Qual Code
LEAD	1.0	U	

PROJ_NO: 4240

SDG: A1259 MEDIA: WATER DATA FRACTION: M

nsample MPT-1586-MW9S-01
samp_date 8/21/2002
lab_id A1259-02C
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

Parameter	Result	Val Qual	Qual Code
LEAD	1.0	U	

nsample MTP-1586-MW4S-01
samp_date 8/21/2002
lab_id A1259-03C
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

Parameter	Result	Val Qual	Qual Code
LEAD	1.0	U	

The positive result for benzene below the reporting limit in sample MPT-1586-MW1S-01 was qualified as estimated (J) due to uncertainty near the detection limit.

The VOC analyses were missing several compounds from the requested analysis list. The laboratory provided the missing parameters upon request.

Ethylene dibromide

The laboratory did not include the results for ethylene dibromide in the initial EDD. The data was sent upon request.

Ethylene dibromide (EDB) was reported as a positive result in all samples except MPT-1586-MW5S-01 in the Method 504 analyses. However, using Method 8260B analysis to confirm the presence of EDB yielded only non-detected result despite sufficiently high concentrations reported in some 504 analysis. Therefore, due to the absence of GC/MS confirmation, all EDB results except MPT-1586-MW5S-01 were reported using the 8260B analyses. The laboratory provided correspondence regarding this issue and a copy is included within the support documentation appendix (C).

PAH

The laboratory did not include the initial calibration and associated DFTPP instrument tune (Forms V and VI) from September 3 with the data package. The laboratory faxed the data upon request.

TPH

The following compound was detected in the aqueous method blank:

<u>Compound</u>	<u>Maximum Concentration</u>	<u>Blank Action Level</u>
TPH	250 µg/L	1250 µg/L

Sample aliquot and dilution factors were taken into consideration when applying the blank action levels. All positive results below the action level were qualified as non-detected (U).

The laboratory did not include the calibration reports with the data package. The laboratory faxed the data upon request.

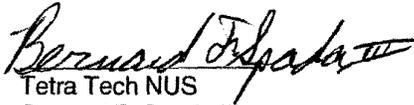
EXECUTIVE SUMMARY

Laboratory Performance Issues: The laboratory did not initially provide a complete compound list as detailed in the lab specifications.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99) and the NFESC guidelines. 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
Bernard F. Spada III
Chemist/Data Validator



Tetra Tech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

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- 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
- N01 = Internal Standard Noncompliance Dioxins
- N02 = Recovery Standard Noncompliance Dioxins
- N03 = Clean-up Standard Noncompliance Dioxins
- O = Poor Instrument Performance (i.e., base-time drifting)
- P = Uncertainty near detection limit ($< 2 \times$ IDL for inorganics and $< CRQL$ for organics)
- Q = Other problems (can encompass a number of issues)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = Pest/PCD% between columns for positive results
- V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
- W = EMPC result
- X = Signal to noise response drop
- Y = Percent solids $< 30\%$
- Z = Uncertainty at 2 sigma deviation is less than sample activity

PROJ_NO: 4240

SDG: A1259 MEDIA: WATER DATA FRACTION: OV

nsample MPT-1586-MW10S-01
 samp_date 8/21/2002
 lab_id A1259-08A
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

nsample MPT-1586-MW10S-01
 samp_date 8/21/2002
 lab_id A1259-08A
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

nsample MPT-1586-MW14S-01
 samp_date 8/21/2002
 lab_id A1259-01A
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	0.4	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.3	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	1	UR	C
BENZENE	1	U	
BROMODICHLOROMETHANE	0.6	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROENZENE	1	U	
CHLORODIBROMOMETHANE	0.4	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	4		
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	0.2	U	
ETHYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	10	U	
METHYLENE CHLORIDE	2	U	
TETRACHLOROETHENE	1	U	
TOLUENE	1	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U	
TRICHLOROETHENE	1	U	

Parameter	Result	Val Qual	Qual Code
VINYL CHLORIDE	1	U	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	0.4	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.3	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	1	UR	C
BENZENE	1	U	
BROMODICHLOROMETHANE	0.6	U	
BROMOFORM	3		
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROENZENE	1	U	
CHLORODIBROMOMETHANE	2		
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	0.2	U	
ETHYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	10	U	
METHYLENE CHLORIDE	2	U	
TETRACHLOROETHENE	1	U	
TOLUENE	1	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U	
TRICHLOROCETHENE	1	U	

PROJ_NO: 4240

SDG: A1259 MEDIA; WATER DATA FRACTION: OV

nsample MPT-1586-MW14S-01
 samp_date 8/21/2002
 lab_id A1259-01A
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
VINYL CHLORIDE	1	U	

nsample MPT-1586-MW1S-01
 samp_date 8/21/2002
 lab_id A1259-05A
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	0.4	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.3	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	1	UR	C
BENZENE	4		
BROMODICHLOROMETHANE	0.6	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	0.4	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1		
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	0.2	U	
ETHYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	10	U	
METHYLENE CHLORIDE	2	U	
TETRACHLOROETHENE	1	U	
TOLUENE	1	U	
TOTAL XYLENES	13		
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U	
TRICHLOROETHENE	1	U	

nsample MPT-1586-MW1S-01
 samp_date 8/21/2002
 lab_id A1259-05A
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
VINYL CHLORIDE	1	U	

PROJ_NO: 4240

SDG: A1259 MEDIA: WATER DATA FRACTION: OV

nsample MPT-1586-MW2S-01
 samp_date 8/21/2002
 lab_id A1259-07A
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

nsample MPT-1586-MW2S-01
 samp_date 8/21/2002
 lab_id A1259-07A
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

nsample MPT-1586-MW5S-01
 samp_date 8/21/2002
 lab_id A1259-06A
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	0.4	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.3	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	1	UR	C
BENZENE	1	U	
BROMODICHLOROMETHANE	0.6	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	0.4	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	0.2	U	
ETHYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	10	U	
METHYLENE CHLORIDE	2	U	
TETRACHLOROETHENE	1	U	
TOLUENE	1	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U	
TRICHLOROETHENE	1	U	

Parameter	Result	Val Qual	Qual Code
VINYL CHLORIDE	1	U	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	0.4	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.02	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	1	UR	C
BENZENE	1	U	
BROMODICHLOROMETHANE	0.6	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	0.4	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	2		
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	0.2	U	
ETHYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	10	U	
METHYLENE CHLORIDE	2	U	
TETRACHLOROETHENE	1	U	
TOLUENE	1	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U	
TRICHLOROETHENE	1	U	

PROJ_NO: 4240

SDG: A1259 MEDIA: WATER DATA FRACTION: OV

nsample MPT-1586-MW5S-01
 samp_date 8/21/2002
 lab_id A1259-06A
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
VINYL CHLORIDE	1	U	

nsample MPT-1586-MW7S-01
 samp_date 8/21/2002
 lab_id A1259-04A
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	0.4	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.3	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	1	UR	C
BENZENE	1	U	
BROMODICHLOROMETHANE	0.6	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	0.4	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	4		
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	0.2	U	
ETHYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	10	U	
METHYLENE CHLORIDE	2	U	
TETRACHLOROETHENE	1	U	
TOLUENE	1	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U	
TRICHLOROETHENE	1	U	

nsample MPT-1586-MW7S-01
 samp_date 8/21/2002
 lab_id A1259-04A
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
VINYL CHLORIDE	1	U	

PROJ_NO: 4240

SDG: A1259 MEDIA: WATER DATA FRACTION: OV

nsample MPT-1586-MW9S-01
 samp_date 8/21/2002
 lab_id A1259-02A
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

nsample MPT-1586-MW9S-01
 samp_date 8/21/2002
 lab_id A1259-02A
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

nsample MTP-1586-MW4S-01
 samp_date 8/21/2002
 lab_id A1259-03A
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	0.4	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.3	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	1	UR	C
BENZENE	1	U	
BROMODICHLOROMETHANE	0.6	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	0.4	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	2		
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	0.2	U	
ETHYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	10	U	
METHYLENE CHLORIDE	2	U	
TETRACHLOROETHENE	1	U	
TOLUENE	1	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U	
TRICHLOROETHENE	1	U	

Parameter	Result	Val Qual	Qual Code
VINYL CHLORIDE	1	U	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	0.4	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.3	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	1	UR	C
BENZENE	1	U	
BROMODICHLOROMETHANE	0.6	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	0.4	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	6		
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	0.2	U	
ETHYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	10	U	
METHYLENE CHLORIDE	2	U	
TETRACHLOROETHENE	1	U	
TOLUENE	1	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U	
TRICHLOROETHENE	1	U	

PROJ_NO: 4240

SDG: A1259 MEDIA: WATER DATA FRACTION: OV

nsample MTP-1586-MW4S-01
samp_date 8/21/2002
lab_id A1259-03A
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

Parameter	Result	Val Qual	Qual Code
VINYL CHLORIDE	1		U

PROJ_NO: 4240

SDG: A1259 MEDIA: WATER DATA FRACTION: PAH

nsample MPT-1586-MW10S-01
 samp_date 8/21/2002
 lab_id A1259-08E
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

nsample MPT-1586-MW14S-01
 samp_date 8/21/2002
 lab_id A1259-01E
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

nsample MPT-1586-MW1S-01
 samp_date 8/21/2002
 lab_id A1259-05E
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	1	U	
ACENAPHTHYLENE	1	U	
ANTHRACENE	1	U	
BENZO(A)ANTHRACENE	1	U	
BENZO(A)PYRENE	1	U	
BENZO(B)FLUORANTHENE	1	U	
BENZO(G,H,I)PERYLENE	1	U	
BENZO(K)FLUORANTHENE	1	U	
CHRYSENE	1	U	
DIBENZO(A,H)ANTHRACENE	1	U	
FLUORANTHENE	1	U	
FLUORENE	1	U	
INDENO(1,2,3-CD)PYRENE	1	U	
NAPHTHALENE	1	U	
PHENANTHRENE	1	U	
PYRENE	1	U	

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	1	U	
ACENAPHTHYLENE	1	U	
ANTHRACENE	1	U	
BENZO(A)ANTHRACENE	1	U	
BENZO(A)PYRENE	1	U	
BENZO(B)FLUORANTHENE	1	U	
BENZO(G,H,I)PERYLENE	1	U	
BENZO(K)FLUORANTHENE	1	U	
CHRYSENE	1	U	
DIBENZO(A,H)ANTHRACENE	1	U	
FLUORANTHENE	1	U	
FLUORENE	1	U	
INDENO(1,2,3-CD)PYRENE	1	U	
NAPHTHALENE	1	U	
PHENANTHRENE	1	U	
PYRENE	1	U	

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	33		
2-METHYLNAPHTHALENE	34		
ACENAPHTHENE	2.2		
ACENAPHTHYLENE	0.36		
ANTHRACENE	1	U	
BENZO(A)ANTHRACENE	1	U	
BENZO(A)PYRENE	1	U	
BENZO(B)FLUORANTHENE	1	U	
BENZO(G,H,I)PERYLENE	1	U	
BENZO(K)FLUORANTHENE	1	U	
CHRYSENE	1	U	
DIBENZO(A,H)ANTHRACENE	1	U	
FLUORANTHENE	1		
FLUORENE	3		
INDENO(1,2,3-CD)PYRENE	1	U	
NAPHTHALENE	17		
PHENANTHRENE	1.4		
PYRENE	1	U	

PROJ_NO: 4240

SDG: A1259 MEDIA: WATER DATA FRACTION: PAH

nsample MPT-1586-MW2S-01
 samp_date 8/21/2002
 lab_id A1259-07E
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

nsample MPT-1586-MW5S-01
 samp_date 8/21/2002
 lab_id A1259-06E
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

nsample MPT-1586-MW7S-01
 samp_date 8/21/2002
 lab_id A1259-04E
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	1	U	
ACENAPHTHYLENE	1	U	
ANTHRACENE	1	U	
BENZO(A)ANTHRACENE	1	U	
BENZO(A)PYRENE	1	U	
BENZO(B)FLUORANTHENE	1	U	
BENZO(G,H,I)PERYLENE	1	U	
BENZO(K)FLUCRANTHENE	1	U	
CHRYSENE	1	U	
DIBENZO(A,H)ANTHRACENE	1	U	
FLUORANTHENE	1	U	
FLUORENE	1	U	
INDENO(1,2,3-CD)PYRENE	1	U	
NAPHTHALENE	1	U	
PHENANTHRENE	1	U	
PYRENE	1	U	

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	1	U	
ACENAPHTHYLENE	1	U	
ANTHRACENE	1	U	
BENZO(A)ANTHRACENE	1	U	
BENZO(A)PYRENE	1	U	
BENZO(B)FLUORANTHENE	1	U	
BENZO(G,H,I)PERYLENE	1	U	
BENZO(K)FLUORANTHENE	1	U	
CHRYSENE	1	U	
DIBENZO(A,H)ANTHRACENE	1	U	
FLUORANTHENE	1	U	
FLUORENE	0.28		
INDENO(1,2,3-CD)PYRENE	1	U	
NAPHTHALENE	1	U	
PHENANTHRENE	1	U	
PYRENE	1	U	

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	0.12		
ACENAPHTHYLENE	1	U	
ANTHRACENE	1	U	
BENZO(A)ANTHRACENE	1	U	
BENZO(A)PYRENE	1	U	
BENZO(B)FLUORANTHENE	1	U	
BENZO(G,H,I)PERYLENE	1	U	
BENZO(K)FLUORANTHENE	1	U	
CHRYSENE	1	U	
DIBENZO(A,H)ANTHRACENE	1	U	
FLUORANTHENE	1	U	
FLUORENE	0.22		
INDENO(1,2,3-CD)PYRENE	1	U	
NAPHTHALENE	1	U	
PHENANTHRENE	1	U	
PYRENE	1	U	

PROJ_NO: 4240

SDG: A1259 MEDIA: WATER DATA FRACTION: PAH

nsample MPT-1586-MW9S-01
samp_date 8/21/2002
lab_id A1259-02E
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

nsample MTP-1586-MW4S-01
samp_date 8/21/2002
lab_id A1259-03E
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	1	U	
ACENAPHTHYLENE	1	U	
ANTHRACENE	1	U	
BENZO(A)ANTHRACENE	1	U	
BENZO(A)PYRENE	1	U	
BENZO(B)FLUORANTHENE	1	U	
BENZO(G,H,I)PERYLENE	1	U	
BENZO(K)FLUORANTHENE	1	U	
CHRYSENE	1	U	
DIBENZO(A,H)ANTHRACENE	1	U	
FLUORANTHENE	1	U	
FLUORENE	1	U	
INDENO(1,2,3-CD)PYRENE	1	U	
NAPHTHALENE	1	U	
PHENANTHRENE	1	U	
PYRENE	1	U	

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	35		
2-METHYLNAPHTHALENE	4		
ACENAPHTHENE	4		
ACENAPHTHYLENE	0.57		
ANTHRACENE	0.34		
BENZO(A)ANTHRACENE	1	U	
BENZO(A)PYRENE	1	U	
BENZO(B)FLUORANTHENE	1	U	
BENZO(G,H,I)PERYLENE	1	U	
BENZO(K)FLUORANTHENE	1	U	
CHRYSENE	1	U	
DIBENZO(A,H)ANTHRACENE	1	U	
FLUORANTHENE	0.12		
FLUORENE	6		
INDENO(1,2,3-CD)PYRENE	1	U	
NAPHTHALENE	5		
PHENANTHRENE	1.8		
PYRENE	0.7		

PROJ_NO: 4240

SDG: A1259 MEDIA: WATER DATA FRACTION: PET

nsample MPT-1586-MW10S-01
samp_date 8/21/2002
lab_id C208592*8
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

nsample MPT-1586-MW14S-01
samp_date 8/21/2002
lab_id C208592*1
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

nsample MPT-1586-MW1S-01
samp_date 8/21/2002
lab_id C208592*5
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	100	U	

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	100	U	

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	280	U	A

PROJ_NO: 4240

SDG: A1259 MEDIA: WATER DATA FRACTION: PET

nsample MPT-1586-MW2S-01
samp_date 8/21/2002
lab_id C208592*7
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	100	U	

nsample MPT-1586-MW4S-01
samp_date 8/21/2002
lab_id C208592*3
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	770	U	A

nsample MPT-1586-MW5S-01
samp_date 8/21/2002
lab_id C208592*6
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	100	U	

PROJ_NO: 4240

SDG: A1259 MEDIA: WATER DATA FRACTION: PET

nsample MPT-1586-MW7S-01
samp_date 8/21/2002
lab_id C208592*4
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

nsample MPT-1586-MW9S-01
samp_date 8/21/2002
lab_id C208592*2
qc_type NM
units UG/L
Pct_Solids 0
DUP_OF:

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	100	U	

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	100	U	

were not detected in the associated samples and qualification of the data was not necessary.

EDB

No qualification of the data was necessary.

PAHs

No qualification of the data was necessary.

TPH

No qualification of the data was necessary.

Additional Comments:

Positive results reported below the quantitation limit but above the method detection limit were qualified as estimated, J.

The reporting limits for 1,1,2,2-tetrachloroethane, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene were greater than the reporting limit requested by Tetra Tech NUS. No action was taken on this basis.

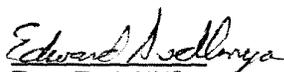
EXECUTIVE SUMMARY

Laboratory Performance Issues: The laboratory did not initially provide a complete compound list as detailed in the lab specifications.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), and the NFESC guidelines IRCDQM (Sept., 1999). The text of this report has been formulated to address only those problem areas affecting data quality.

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


Tetra Tech NUS

Edward Sedlmyer
Chemist/Data Validator


TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

- A = Lab Blank Contamination
- B = Field Blank Contamination
- C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
- D = MS/MSD Noncompliance
- E = LCS/LCSD Noncompliance
- F = Lab Duplicate Imprecision
- G = Field Duplicate Imprecision
- H = Holding Time Exceedance
- I = ICP Serial Dilution Noncompliance
- J = GFAA PDS - GFAA MSA's $r < 0.995$
- K = ICP Interference - include ICSAB % R's
- L = Instrument Calibration Range Exceedance
- M = Sample Preservation
- N = Internal Standard Noncompliance
- N01 = Internal Standard Noncompliance Dioxins
- N02 = Recovery Standard Noncompliance Dioxins
- N03 = Clean-up Standard Noncompliance Dioxins
- O = Poor Instrument Performance (i.e., base-time drifting)
- P = Uncertainty near detection limit ($< 2 \times$ IDL for inorganics and $<$ CRQL for organics)
- Q = Other problems (can encompass a number of issues)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = Pest/PCD% between columns for positive results
- V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
- W = EMPC result
- X = Signal to noise response drop
- Y = Percent solids $< 30\%$
- Z = Uncertainty at 2 sigma deviation is less than sample activity

PROJ_NO: 4240

SDG: A1272 MEDIA: WATER DATA FRACTION: OV

nsample MPT-1586-EQUIP-03
 samp_date 8/23/2002
 lab_id A1272-03B
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

nsample MPT-1586-EQUIP-03
 samp_date 8/23/2002
 lab_id A1272-03B
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

nsample MPT-1586-MW81-01
 samp_date 8/23/2002
 lab_id A1272-02B
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	0.4	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.02	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	1	UR	C
BENZENE	1	U	
BROMODICHLOROMETHANE	0.6	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	0.4	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	0.2	U	
ETHYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	10	U	
METHYLENE CHLORIDE	2	U	
TETRACHLOROETHENE	1	U	
TOLUENE	1	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U	
TRICHLOROETHENE	1	U	

Parameter	Result	Val Qual	Qual Code
VINYL CHLORIDE	1	U	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	0.4	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.02	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	1	UR	C
BENZENE	1	U	
BROMODICHLOROMETHANE	0.6	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	0.4	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	0.2	U	
ETHYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	10	U	
METHYLENE CHLORIDE	2	U	
TETRACHLOROETHENE	1	U	
TOLUENE	1	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U	
TRICHLOROETHENE	1	U	

PROJ_NO: 4240

SDG: A1272 MEDIA: WATER DATA FRACTION: OV

nsample MPT-1586-MW8I-01
 samp_date 8/23/2002
 lab_id A1272-02B
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
VINYL CHLORIDE	1	U	

nsample MPT-1586-TRIPBLANK
 samp_date 8/31/2002
 lab_id A1272-05B
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2-TETRACHLOROETHANE	0.4	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	1	UR	C
BENZENE	1	U	
BROMODICHLOROMETHANE	0.6	U	
BROMOFORM	2		
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	3		
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	0.2	U	
ETHYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	10	U	
METHYLENE CHLORIDE	2	U	
TETRACHLOROETHENE	1	U	
TOLUENE	1	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U	
TRICHLOROETHENE	1	U	
VINYL CHLORIDE	1	U	

nsample MPT-163-MW1S-01
 samp_date 8/23/2002
 lab_id A1272-06B
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2-TETRACHLOROETHANE	0.4	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.02	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	1	UR	C
BENZENE	1	U	
BROMODICHLOROMETHANE	0.6	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	0.4	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	0.2	U	
ETHYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	10	U	
METHYLENE CHLORIDE	2	U	
TETRACHLOROETHENE	1	U	
TOLUENE	1	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	0.2	U	
TRICHLOROETHENE	1	U	

PROJ_NO: 4240

SDG: A1272 MEDIA: WATER DATA FRACTION: PAH

nsample MPT-1586-EQUIP-03
 samp_date 8/23/2002
 lab_id A1272-03D
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

nsample MPT-1586-MW8I-01
 samp_date 8/23/2002
 lab_id A1272-02D
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

nsample MPT-163-MW1S-01
 samp_date 8/23/2002
 lab_id A1272-06D
 qc_type NM
 units UG/L
 Pct_Solids 0
 DUP_OF:

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	1	U	
ACENAPHTHYLENE	1	U	
ANTHRACENE	1	U	
BENZO(A)ANTHRACENE	1	U	
BENZO(A)PYRENE	1	U	
BENZO(B)FLUORANTHENE	1	U	
BENZO(G,H,I)PERYLENE	1	U	
BENZO(K)FLUORANTHENE	1	U	
CHRYSENE	1	U	
DIBENZO(A,H)ANTHRACENE	1	U	
FLUORANTHENE	1	U	
FLUORENE	1	U	
INDENO(1,2,3-CD)PYRENE	1	U	
NAPHTHALENE	1	U	
PHENANTHRENE	1	U	
PYRENE	1	U	

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	0.49	J	P
ACENAPHTHYLENE	1	U	
ANTHRACENE	1	U	
BENZO(A)ANTHRACENE	1	U	
BENZO(A)PYRENE	1	U	
BENZO(B)FLUORANTHENE	1	U	
BENZO(G,H,I)PERYLENE	1	U	
BENZO(K)FLUORANTHENE	1	U	
CHRYSENE	1	U	
DIBENZO(A,H)ANTHRACENE	1	U	
FLUORANTHENE	1	U	
FLUORENE	1	U	
INDENO(1,2,3-CD)PYRENE	1	U	
NAPHTHALENE	1	U	
PHENANTHRENE	1	U	
PYRENE	1	U	

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	1	U	
ACENAPHTHYLENE	1	U	
ANTHRACENE	1	U	
BENZO(A)ANTHRACENE	1	U	
BENZO(A)PYRENE	1	U	
BENZO(B)FLUORANTHENE	1	U	
BENZO(G,H,I)PERYLENE	1	U	
BENZO(K)FLUORANTHENE	1	U	
CHRYSENE	1	U	
DIBENZO(A,H)ANTHRACENE	1	U	
FLUORANTHENE	1	U	
FLUORENE	1	U	
INDENO(1,2,3-CD)PYRENE	1	U	
NAPHTHALENE	1	U	
PHENANTHRENE	1	U	
PYRENE	1	U	