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SOIL MONITORING WORK PLAN FOR SITE 413 NS MAYPORT FL

12/1/2010

TETRA TECH NUS

Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62470-01-D-1001

Rev. 1
12/03/10

Soil Monitoring Work Plan
for
Site 413

Naval Station Mayport
Jacksonville, Florida

Contract Task Order JM33

December 2010

NAVFAC Naval Facilities Engineering Command NAVFAC SOUTHEAST

NAS Jacksonville
Jacksonville, Florida 32212-0030

TETRA TECH NUS, Inc.

SOIL MONITORING WORK PLAN
FOR
SITE 413

NAVAL STATION MAYPORT
JACKSONVILLE, FLORIDA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Naval Facilities Engineering Command Southeast
NAS Jacksonville
Jacksonville, Florida 32212-0030

Submitted by:
Tetra Tech NUS, Inc.
600 Clark Avenue, Suite 3
King of Prussia, Pennsylvania 19406-1433

CONTRACT NUMBER N62470-08-D-1001
CONTRACT TASK ORDER JM33

DECEMBER 2010

PREPARED UNDER THE SUPERVISION OF:

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ACRONYMS AND ABBREVIATIONS

AST	Aboveground storage tank
BTEX	Benzene, toluene, ethylbenzene, and xylenes
bls	Below land surface
CLEAN	Comprehensive Long-term Environmental Action Navy
COC	Contaminant of concern
CTO	Contract Task Order
°C	Degree Celsius
DPT	Direct push technology
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	Flame ionization detector
FL-PRO	Florida Petroleum Residual Organic
FOL	Field Operations Leader
GAG	Gasoline analytic group
GCTL	Groundwater Cleanup Target Level
HSO	Health and Safety Officer
IDW	Investigation derived waste
KAG	Kerosene analytic group
LUC	Land use control
mg/kg	Milligram per kilogram
mL	Milliliter
MS	Matrix spike
MSD	Matrix spike duplicate
MTBE	Methyl tert-butyl ether
NAVFAC SE	Naval Facilities Engineering Command Southeast
NAVSTA	Naval Station
OVA	Organic vapor analyzer
PAH	Polynuclear aromatic hydrocarbon
POC	Point of Contact
QA	Quality assurance
QAM	Quality Assurance Manager
QC	Quality control
RBCA	Risk-Based Corrective Action
RMO	Risk Management Option
RPM	Remedial Project Manager

ACRONYMS AND ABBREVIATIONS (continued)

SA	Site assessment
SCTL	Soil Cleanup Target Level
SOP	Standard Operating Procedure
SRCR	Site Rehabilitation Completion Report
TRPH	Total recoverable petroleum hydrocarbon
TtNUS	Tetra Tech NUS, Inc.
USEPA	United States Environmental Protection Agency
VOC	Volatile organic compound
Work Plan	Soil Monitoring Work Plan

1.0 INTRODUCTION

Tetra Tech NUS, Inc. (TtNUS) has prepared this Soil Monitoring Work Plan (Work Plan) for Site 413 at Naval Station (NAVSTA) Mayport, Jacksonville, Florida. This Work Plan was prepared for the United States Navy, Naval Facilities Engineering Command Southeast (NAVFAC SE) under Contract Task Order (CTO) JM33, for the Comprehensive Long-term Environmental Action Navy (CLEAN) Contract Number N624670-08-D-1001.

This Work Plan consists of five sections. Section 1.0 is an introduction, which includes descriptions of the objective, the project management organization, the field organization, deliverables data management, and the project schedule. Section 2.0 provides the site description and investigative history. Section 3.0 describes the sampling rationale and analysis plan. Section 4.0 details the sampling protocol, field tasks, and associated methodologies. Section 5.0 summarizes the NAVSTA Mayport support tasks for the subject work scope. The appendices include Historical Information (Appendix A) and Field Forms (Appendix B).

1.1 WORK PLAN OBJECTIVE

The focus of the Work Plan involves the collection of soil samples above the soil and water interface of which the analytical results will be used as a basis to prepare a Site Rehabilitation Completion Report (SRCR) and determine the area that will become part of the Station-managed land use control (LUC) area.

1.2 PROJECT MANAGEMENT AND ORGANIZATION

At the direction of the NAVFAC SE Remedial Project Manager (RPM), the Contractor is responsible for the overall management of the project including field activities. NAVFAC SE and NAVSTA Mayport personnel will actively support the investigation and will coordinate with Contractor personnel during field activities. The responsible organizations and personnel involved in the management of the project are as follows:

NAVFAC SE
Naval Air Station Jacksonville, Building 903
P.O. Box 30
Jacksonville, Florida 32212
(904) 542-6243

Ms. Beverly Washington
NAVFAC SE RPM

NAVSTA Mayport
PO Box 280067
Jacksonville, Florida 32228-0067
(904) 270-6781

Ms. Diane Fears
Point of Contact (POC)

Responsibilities of other key project personnel are discussed in the following sections.

1.3 FIELD ORGANIZATION

Experienced field personnel will perform the duties of the Field Operations Leader (FOL). The FOL will be responsible for the coordination of on-site project personnel and will provide technical assistance when required. The FOL will coordinate and be present during sampling activities and will ensure the availability and maintenance of sampling materials/equipment. The FOL will be responsible for the completion of sampling and chain-of-custody documentation, will sign chain-of-custody forms for samples, and will ensure the proper handling and shipping of samples.

The Quality Assurance (QA) Manager (QAM), although not formally identified as field personnel, will be responsible for adherence to QA/quality control (QC) guidelines. Strict adherence to these procedures is required for the collection of acceptable and representative data.

The Site Health and Safety Officer (HSO) will be designated before initiation of field activities and will be responsible for ensuring that field personnel adhere to health and safety requirements. The Site HSO will be present during intrusive field activities.

1.4 DELIVERABLES AND DATA MANAGEMENT

A project database will be initiated to promote the proper collection and storage of field data and documentation of activities. On-site data management will include recording of sampling and other activities in the field. All soil analytical data will be subjected to cursory validation. Data validator(s) will review the data to ensure that the analytical results were obtained through the approved methodology and that the appropriate levels of QC were followed QA and QC methods are discussed in further detail in Section 3.3.

All project data will be loaded into the Naval Installation Restoration Information Solution data management system in order to preserve the referential integrity of the data. The QAM will appoint a QA Officer responsible for ensuring that QA/QC requirements are met and inspecting the work activities and project deliverables to ensure QC activities are not compromised.

The contractor will submit a SRCR summarizing the findings of the sampling event and summarizing data from the current and previous investigations. Additionally, the SRCR will provide the determined area for the proposed LUCs and recommendations for a path forward at Site 413.

1.5 PROJECT SCHEDULE

Field activities will commence within 1 month of approval of this document. A Summary Report assimilating the soil sampling analytical data and historical sampling data will be provided to NAVFAC SE, NAVSTA Mayport, and the Florida Department of Environmental Protection (FDEP).

2.0 BACKGROUND INFORMATION

This Work Plan has been established based on previous investigations and results. This section describes the site characteristics of Site 413 and provides a summary of the previous investigations and results. Information from previous investigations is presented in Appendix A.

2.1 SITE DESCRIPTION

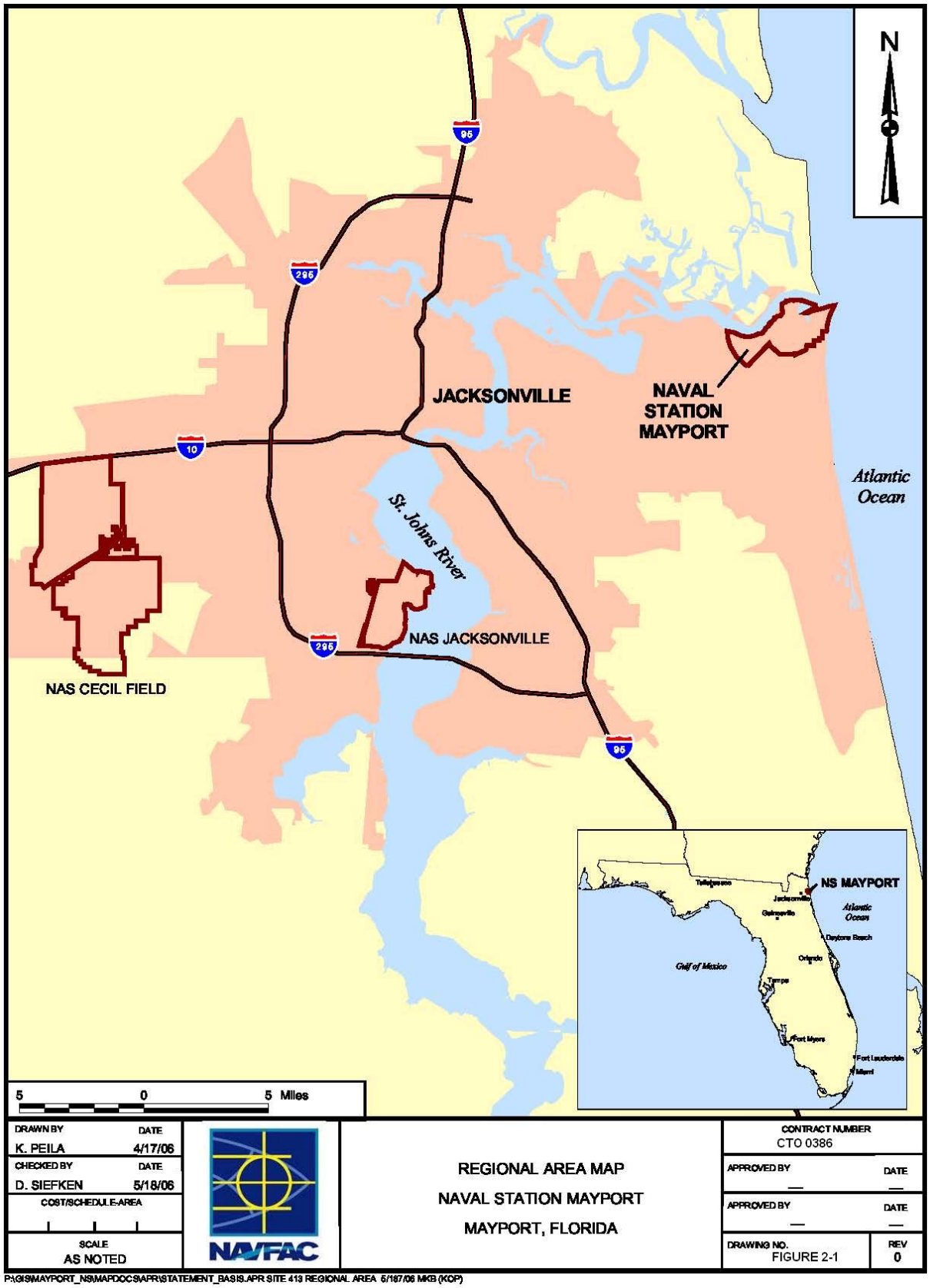
NAVSTA Mayport is located within the corporate limits of the City of Jacksonville, Duval County, Florida, approximately 12 miles to the northeast of downtown Jacksonville and adjacent to the town of Mayport. A regional area map is provided as Figure 2-1. The Station complex is located on the northern end of a peninsula bound by the Atlantic Ocean to the east and the St. Johns River to the north. NAVSTA Mayport occupies the entire northern portion of the peninsula except for the town of Mayport, which is located to the west between the Station and the St. Johns River.

A site location map depicting the subject site and its surroundings is provided as Figure 2-2. Site 413 is located near the northeastern tip of the Station complex. Building 413 is a cement block building used as a classroom training facility, comprises slightly less than 10,000 square feet, and is constructed with its long dimension oriented northeast to southwest. The 560-gallon heating oil aboveground storage tank (AST) is located near the northern corner of the building inside a wood fence enclosure. A former sump, which was used to transfer fuel oil, is buried near the ground surface. The sump is located centrally in the grassy area along the northern end of the cement slab. The tank appears to be in good condition and rests on a cement slab.

Utilities, such as water, electricity, and a communication line parallel a large ditch, are located on the northern side of the building. The communication line enters the eastern side of the building passing nearby to the AST, while the water and electrical lines maintain a close proximity to the road. No other utilities were identified within the area of investigation.

2.2 SITE INVESTIGATIVE HISTORY

In April 2001, closure activities for the underground piping and sumps associated with the AST (Tank Number N413) were completed. No documented leaks of spills or overflows have been reported with this AST system other than what was observed during a Closure Report prepared by Earth Systems of Jacksonville Beach, Florida (see Appendix A).


N
95
295
10
JACKSONVILLE
NAVAL
STATION
MAYPORT
Atlantic
Ocean
St. Johns River
NAS JACKSONVILLE
NAS CECIL FIELD
NS MAYPORT
5 0 5 Miles
DRAWN BY
K. PEILA
DATE
4/17/06
CHECKED BY
D. SIEFKEN
DATE
5/18/06
COST/SCHEDULE-AREA
SCALE
AS NOTED
NAVFAC
REGIONAL AREA MAP
NAVAL STATION MAYPORT
MAYPORT, FLORIDA
CONTRACT NUMBER
CTO 0386
APPROVED BY
DATE
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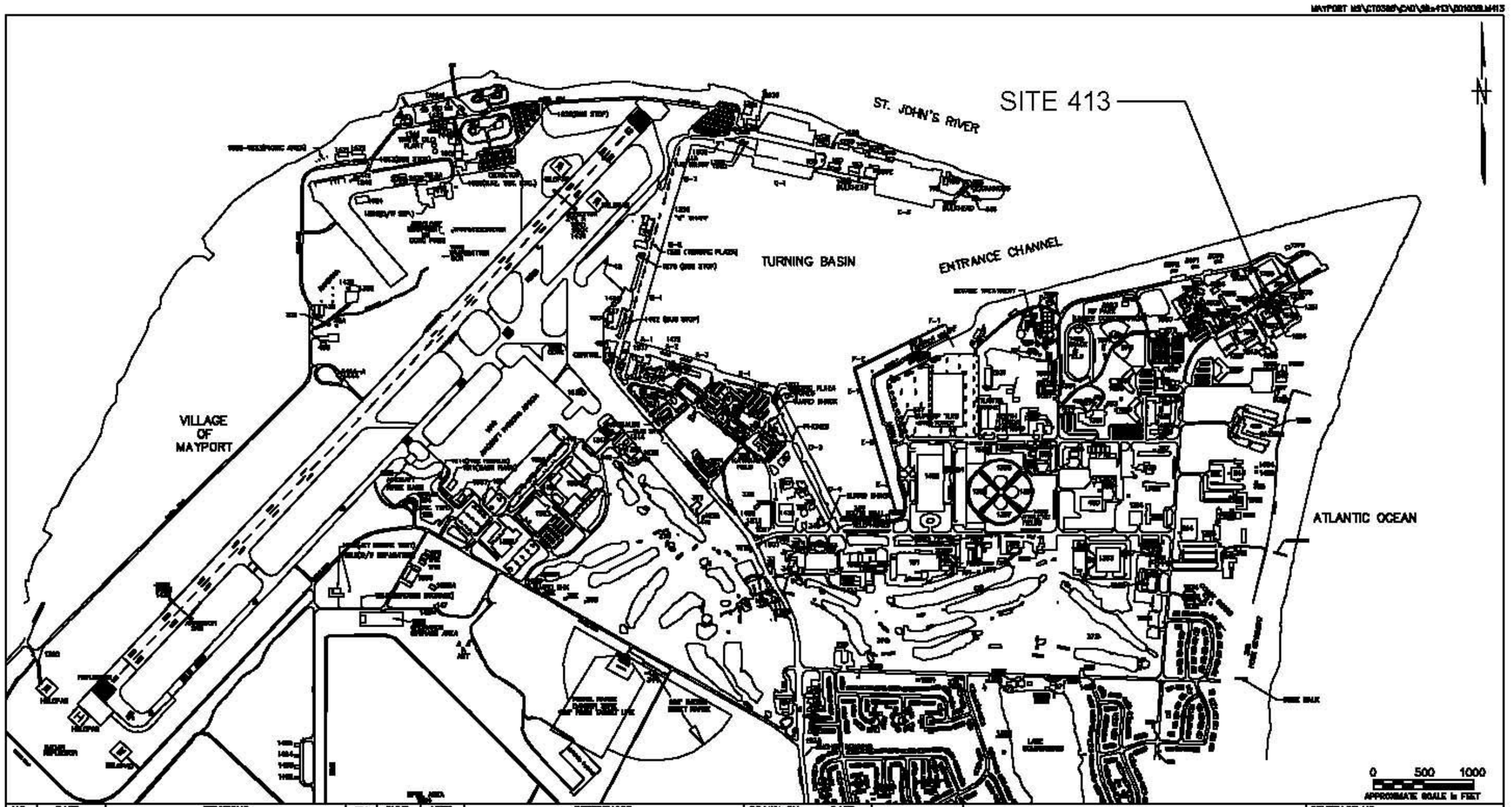
DATE
DRAWING NO.
FIGURE 2-1
REV
0
P:\GIS\MAYPORT_NS\MAPDOCS\APR\STATEMENT_BASIS.APR SITE 413 REGIONAL AREA 5/18/06 MKB (KOP)



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY LLK DATE 9/1/05
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

NAVFAC

SITE LOCATION MAP
SITE 413
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 00103
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 2-2
REV. 0

According to the Closure Report, the piping was removed and the sump was closed in place during April 2001. In July 2004, Earth Systems performed a closure assessment for the underground piping and sump associated with the AST. A copy of the Tank Closure Report is provided as Appendix A. "Excessively contaminated" soil (corrected organic vapor response of 640 parts per million) was identified in a soil sample collected at 3 feet below land surface (bls) at the location of the closed sump on the northern side of the AST. A duplicate of this sample (SB-2) was analyzed by a fixed-base laboratory and total recoverable petroleum hydrocarbons (TRPH) were identified at a concentration of 23,600 milligrams per kilogram (mg/kg) exceeding FDEP's industrial Soil Cleanup Target Level (SCTL) of 2700 mg/kg. Other petroleum constituents including benzene, toluene, ethylbenzene, and total xylenes (BTEX) and the three naphthalene compounds (naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene) were reported at concentrations exceeding leachability SCTLs based on groundwater criteria. The assessment completed by Earth Systems did not identify soil contamination outside of the sump area.

Benzene, ethylbenzene, total xylenes, and naphthalene were identified at concentrations exceeding FDEP Groundwater Cleanup Target Levels (GCTLs) in a groundwater sample collected from a temporary monitoring well installed near the sump. Earth Systems documents the depth to groundwater during their investigation to be 3.5 feet bls.

Soil and groundwater quality was evaluated during a site assessment (SA) conducted at the site in two phases: a screening phase (Phase I) conducted in August 2005 in which soil and groundwater grab samples were collected by direct push technology (DPT) methods and analyzed by an on-site mobile laboratory and a second phase (Phase II) conducted in January 2006.

2.2.1 Phase I, 2005 Site Assessment

Prior to conducting Phase I sampling, four piezometers were installed such that when surveyed and groundwater elevation measurements were taken, groundwater contours for the site could be calculated. The piezometers were installed approximately 3 feet into groundwater table on August 8, 2005, using a DPT rig. Based on the surveyed piezometers groundwater flow pattern was determined to be to the northeast at 0.0026 foot per foot.

Borings SB-01 through SB-12 were completed for groundwater and soil quality assessment during Phase I. Borings were advanced to a depth of 4 feet bls using a stainless steel, 3-inch inside diameter hand auger assembly for the purpose of locating utilities and collecting soil screening samples. Soil vapor samples were collected from each location at depths of 1 foot and 2 feet bls and screened for organic vapors using an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID). Soil vapor analyses were performed in accordance with the headspace screening method described in Chapter 62-770.200(2), Florida Administrative Code (F.A.C.). None of the samples produced a response

greater than background concentrations. Boring SB-11 was advanced from 4 feet bls to 17 feet bls using a DPT to establish a site lithologic profile. A 5-foot long, stainless steel Macro-Core® sampler lined with plastic sleeves was attached to the end of the DPT push rod. Continuous samples were collected with the Macro-Core® sampler from 4 to 17 feet bls where a homogeneous fine sand was observed. The DPT rig met refusal at 17 feet bls due to very fine tightly packed sands.

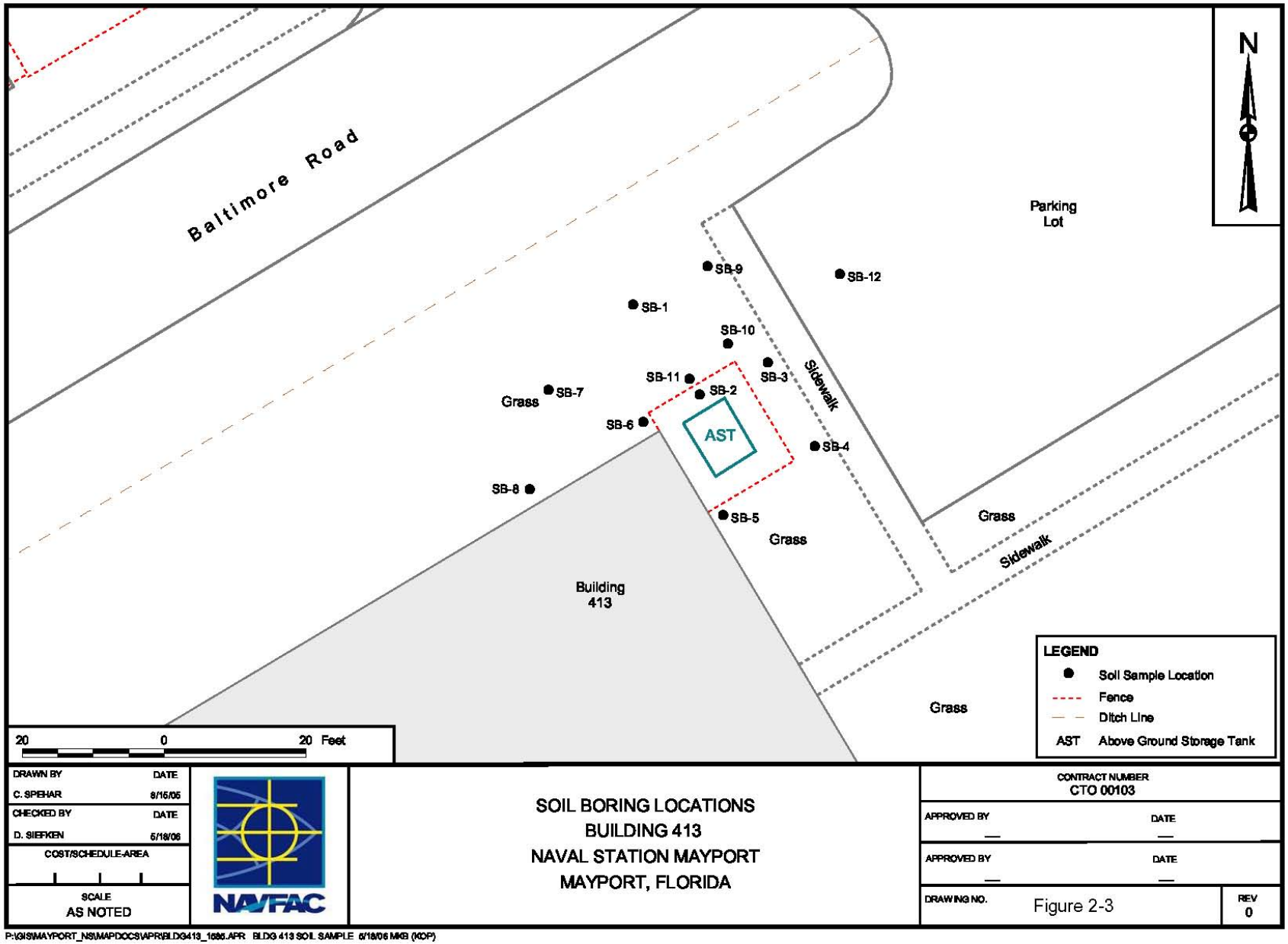
The focus of the Phase I soil screening event was centered on the sump area located at the north-central end of the AST where closure sampling indicated contaminated soil. A small and slender unpaved area of exposed soil was present between the cement slab, upon which the AST was built, and the security fence. Numerous attempts were made at collecting soil samples in this unpaved area of which only one was able to be completed to the desired depth of 2 feet bls due to underground obstructions causing boring advancement refusal. Soil collected from SB-02 at depths of 1 foot and 2 feet bls was screened using an OVA. Soils removed from SB-02 at depths of 3 feet and 4 feet bls were moist and contained petroleum odors. Due to the numerous attempts to collect a sample to depth, the soil in the sump area became mixed allowing for only one representative sample to depth (SB-02). Because of the churned soil, the second closest sample was collected at the closest location from just outside the fence (SB-11). SB-11 is approximately 3 feet from the sump area. Soil samples were collected for screening no deeper than 2 feet bls because the capillary region of the water table extended to 3 feet bls. Soil assessment of the site during Phase I operations included collecting soil samples from borings 1 through 8. These samples were analyzed at a mobile laboratory for BTEX, methyl tert-butyl ether (MTBE), naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. None of the targeted constituents was detected in the eight soil samples analyzed by the mobile laboratory.

The focus of the Phase I groundwater event was to collect groundwater grab samples from the upper 4 feet of the saturated zone and estimate the lateral and vertical extent of contamination in the shallow surficial aquifer, if present. Grab samples were collected by DPT from the approximate depth interval 4 feet to 8 feet bls at 11 of the 12 boring locations. For groundwater samples collected at boring SB-02, a hand auger completed the boring approximately 2 feet into the groundwater. The hand auger was used in place of the probe due to the limited area between the AST and fence. All groundwater samples were collected using a detachable drive tip attached to a 48-inch, retractable stainless steel well screen encased in the lead drive casing. After the water sampler was advanced into the designated zone, the casing was withdrawn 48 inches to allow influx of groundwater to the retractable screen. For groundwater recovery, tubing was inserted into the probe and connected to a peristaltic pump. Several screen volumes were pumped from the probe in order to reduce turbidity. After purging, groundwater samples were collected by pumping directly into 40-milliliter (mL) vials and submitted to the on-site mobile laboratory for analysis of BTEX, MTBE, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.

2.2.2 Phase II, 2006 Site Assessment

Based on the initial assessment (Phase I), two soil samples were collected during Phase II and submitted to Environmental Conservation Laboratories, Inc. of Jacksonville, Florida, a fixed-base laboratory, for analysis of gasoline analytical group (GAG) and kerosene analytical group (KAG), which include volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and TRPH. Soil samples collected during Phase I were all at or below background levels. The basis for the sample collection was then determined on possible location of a subsurface release and the information provided in the Closure Report. Soil in the area of SB-02 was collected from the sump at a similar location as the sample collected by Earth Systems during the Closure Report investigation. Soils in the area of the sump were mixed due to repeated refusal attempts to get to depth and, therefore, a sample was not collected at SB-02. The sample was collected at the closest sample location to the sump (SB-11), which is located approximately 3 feet north of the sump area. The second sample was collected from SB-03 where Phase I groundwater impacts were present. Both fixed-base soil samples were collected at a depth of 2 feet bls. Since there was no high-, medium-, and low-screened sample reading using the OVA and no visible evidence of a release, only two soil samples were collected. Toluene was reported at 2 parts per billion in both soil samples, below FDEP's leachability SCTL. No other detections were recorded. Figure 2-3 depicts the soil boring locations.

Six permanent monitoring wells (MPT-413-MW-01S, MPT-413-MW-02S, MPT-413-MW-03S, MPT-413-MW-04S, MPT-413-MW-05S, and MPT-413-MW-06S) were installed at the site on January 11, 2006, and August 4, 2006, by Partridge Well Drilling, Inc. of Jacksonville, Florida under TtNUS supervision. All wells are shallow monitoring wells with 10-foot screened sections intersecting the water table. Well locations were selected based on analytical results and groundwater flow data generated from piezometers installed during Phase I. The general positions of the new monitoring wells relative to the potential source area(s) of contamination are as follows: MPT-413-MW-06S source area well; MPT-413-MW-01S and MPT-413-MW-02S up gradient; and MPT-413-MW-03S, MPT-413-MW-04S, and MPT-413-MW-05S down gradient. A TtNUS representative recorded depth to groundwater on January 20, 2006, and February 13, 2006. Groundwater elevation measurements were determined by subtracting the measured depth to groundwater for each well from its respective surveyed top of casing elevation. Depth to groundwater measurements taken in January ranged from 3.68 to 4.39 feet bls, and February measurements ranged from 3.73 to 4.48 feet bls. Samples were analyzed for VOCs using United States Environmental Protection Agency (USEPA) Method 8260, PAHs using United States Environmental Protection Agency (USEPA) Method 8270, ethylene dibromide using USEPA Method 504.1, lead using USEPA Method 200.7, and TRPH using the Florida Petroleum Residual Organic (FL-PRO) method. Ethylbenzene, m+p-xylene, PAHs, and TRPH were detected below FDEP GCTLs in MPT-413-MW-06S. No other detections were recorded above FDEP GTLS. Figure 2-4 depicts the well locations.


Baltimore Road
Parking Lot
N
SB-9
SB-12
SB-1
SB-10
SB-11
SB-3
SB-2
SB-7
Grass
SB-6
AST
SB-4
SB-8
SB-5
Grass
Sidewalk
Sidewalk
Grass
Building 413
Grass
LEGEND
Soil Sample Location
Fence
Ditch Line
AST Above Ground Storage Tank
20 0 20 Feet
DRAWN BY C. SPEHAR DATE 8/15/05
CHECKED BY D. SIEFKEN DATE 5/18/06
COST/SCHEDULE-AREA
SCALE AS NOTED
NAVFAC
SOIL BORING LOCATIONS
BUILDING 413
NAVAL STATION MAYPORT
MAYPORT, FLORIDA
CONTRACT NUMBER CTO 00103
APPROVED BY — DATE —
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DRAWING NO. Figure 2-3
REV 0
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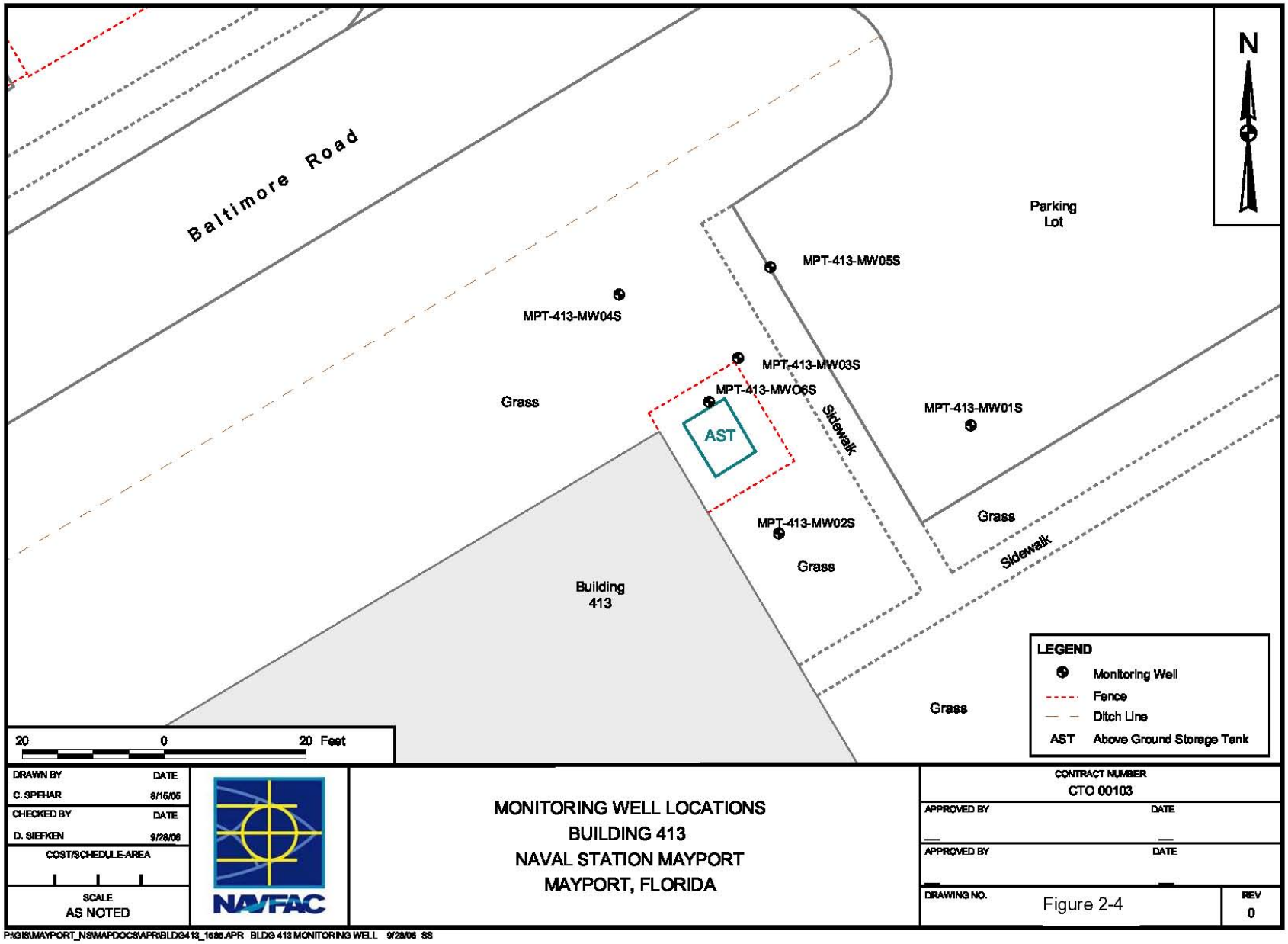
Baltimore Road
Parking Lot
MPT-413-MW05S
MPT-413-MW04S
MPT-413-MW03S
MPT-413-MW06S
MPT-413-MW01S
MPT-413-MW02S
AST
Grass
Sidewalk
Grass
Sidewalk
Grass
Building 413
Grass
N
20 0 20 Feet
LEGEND
Monitoring Well
Fence
Ditch Line
AST Above Ground Storage Tank
DRAWN BY C. SPEHAR DATE 8/16/05
CHECKED BY D. SIEFKEN DATE 9/28/06
COST/SCHEDULE-AREA
SCALE AS NOTED
NAVFAC
MONITORING WELL LOCATIONS
BUILDING 413
NAVAL STATION MAYPORT
MAYPORT, FLORIDA
CONTRACT NUMBER CTO 00103
APPROVED BY DATE
APPROVED BY DATE
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P:\GIS\MAYPORT_NS\MAPDOCS\APR\BLDG413_1585.APR BLDG 413 MONITORING WELL 9/28/06 SS

3.0 SAMPLING RATIONALE AND ANALYSIS PLAN

3.1 SAMPLING OBJECTIVES

3.1.1 Problem Statement

TRPH exceeding the FDEP industrial SCTL and BTEX, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene exceeding the FDEP leachability SCTLs at the area of the closed sump on the northern side of the AST at Site 413 were identified during closure assessment conducted in July 2004. Based on data collected during the SA conducted August 2005 through January 2006, no compounds were detected in soils above FDEP SCTLs or groundwater above GCTLs.

3.1.2 Project Objective

The project objective is to document is to comply with the FDEP criteria of Risk-Based Corrective Action (RBCA) Risk Management Option (RMO) Level II per Chapter 62-780.680(2), F.A.C., and achieve No Further Action with institutional controls for the GAG/KAG constituents, which include TRPH, VOCs, and PAHs previously detected at Site 413. To comply with RBCA RMO Level II, one of the following requirements must be met:

(1) Contaminants of concern (COCs) concentrations are below commercial/industrial SCTLs.

(2) COCs are greater than Level I residential SCTLs, provided engineering controls cover the material (minimum 2 feet of clean soil, concrete pad, etc.) are used to prevent or manage human exposure.

(3) COCs are less than or equal to apportioned alternative commercial/industrial SCTLs calculated using site-specific soil properties

(4) TRPH levels are less than or equal to TRPH commercial/industrial SCTLs for the TRPH fractions provided in Appendix C of Chapter 62-780.680 F.A.C.

3.1.3 Field Objective

The field objectives will be to collect soil samples in the area surrounding the AST to determine if GAG/KAG constituents previously identified at Site 413 persist.

3.1.4 Site Boundary

The site boundary at Site 413 is identified by a fence surrounding the AST positioned to the east of the northern corner of Building 413. The site boundary is identified Site Plan (see Figure 3-1).

3.1.5 Sample and Analysis Approach

The sample and analysis approach for the study is designed to fulfill the FDEP criteria of RBCA RMO Level II per Chapter 62-780.680(2), F.A.C., per Section 3.1.2. To evaluate these objectives, the following sample and analysis approach will be performed:

(1) Collect soil samples for laboratory analysis from borings surrounding the fence bordering site 413. The absence or presence of contaminants at these boring locations will be used to determine the boundary of the LUC.

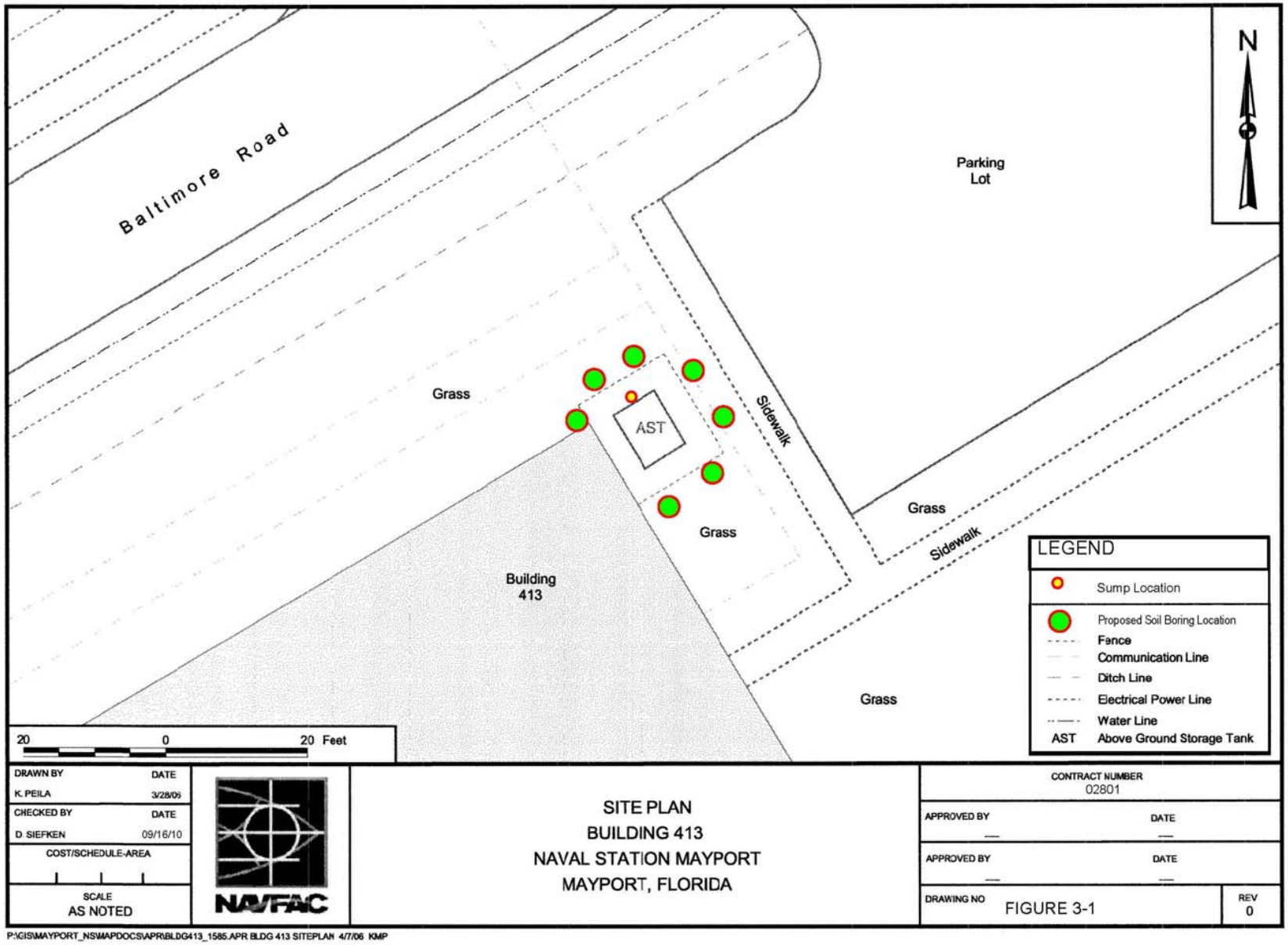
(2) Determine the presence of COCs that are known to have exceeded the FDEP SCTLs. Based on Earth Systems' soil analyses, the COCs include TRPH, select PAHs (naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene), and select VOCs (benzene, toluene, ethyl benzene, and xylenes). Soil borings will be collected from 0 to 6 inches bls, 6 to 12 inches bls, 1 to 2 feet bls, 2 to 3 feet bls, and 3 to 4 feet bls or until groundwater is encountered. Soil will be screened using an organic vapor analyzer (OVA) equipped with a FID. Based on OVA-FID screening results, one sample will be collected from each boring interval to verify clean and impacted soils through laboratory analysis. The presence of the clean and impacted soil samples will be used to determine if NFA with institutional controls is an appropriate remedy.

3.2 FIELD ACTIVITIES

The soil sampling field activities will be discussed in this section.

3.2.1 Soil Sampling Objectives

The objectives of soil sampling field activities are to collect samples for monitoring soil concentrations in seven locations as stated in Section 3.1.5. The seven soil sample locations encircle the sump area, which was determined to be the source area. Soil conditions will be assessed at the end of investigation to determine if the soil at the Site 413 qualifies for institutional controls established according to the FDEP criteria of RBCA RMO Level II per Chapter 62-780.680(2), F.A.C. Soil boring locations are shown on Figure 3-1.


Baltimore Road
Parking Lot
N
Grass
AST
Sidewalk
Grass
Sidewalk
Grass
Building 413
Grass
LEGEND
Sump Location
Proposed Soil Boring Location
Fence
Communication Line
Ditch Line
Electrical Power Line
Water Line
AST Above Ground Storage Tank
20 0 20 Feet
DRAWN BY K. PEILA DATE 3/28/05
CHECKED BY D SIEFKEN DATE 09/16/10
COST/SCHEDULE-AREA
SCALE AS NOTED
NAVFAC
SITE PLAN
BUILDING 413
NAVAL STATION MAYPORT
MAYPORT, FLORIDA
CONTRACT NUMBER 02801
APPROVED BY — DATE —
APPROVED BY — DATE —
DRAWING NO FIGURE 3-1
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P:\GIS\MAYPORT_NS\MAPDOCS\APR\BLDG413_1585.APR BLDG 413 SITEPLAN 4/7/06 KMP

3.2.2 Soil Sampling Procedures

Soil sampling will be conducted in general accordance with FDEP Standard Operating Procedures (SOPs) DEP-SOP-001/01 adopted in 2008. Soil borings will be collected using hand auger (0 to 6 inches, 6 to 12 inches, and 1 to 2 feet bls) to clear any utilities that are present and then a DPT rig for the 2- to 3-foot and 3- to 4-foot intervals.

Samples requiring preservation will be collected in pre-preserved vials provided by the laboratory. All samples will be stored on ice in a closed cooler to insure appropriate thermal preservation. Pertinent sampling data will be recorded on the appropriate sample log sheet and general information will be recorded in the field logbook. See Appendix B for field data sheets.

3.2.3 Soil Sample Handling

Tables 3-1 presents the specifications for analytical methods, preservation, and holding times to be followed for this project. Sample handling procedures will be in accordance with FDEP SOP 001/01 FS 1000 and FS 3000.

TABLE 3-1
SUMMARY OF SOIL SAMPLE ANALYTICAL REQUIREMENTS

SOIL MONITORING WORK PLAN, SITE 413
NAVSTA MAYPORT
JACKSONVILLE, FLORIDA

PARAMETER	PREPARATION ANALYTICAL METHOD	SAMPLE VOLUME	BOTTLE WARE	PRESERVATION REQUIREMENTS	HOLDING TIME
VOCs	USEPA SW-846 5030B/ 8260B	3 pre-weighted 40 mL vials containing 2 deionized water and 1 alcohol	Glass screw cap with Teflon® –lined septum or Terra core or Encore equivalent	Cool to 4 Degrees Celsius (^{o}C)	48 hours from sampling to analysis
PAHs by Selected Ion Method	USEPA SW-846 8270	4 ounce soil jar	Glass Teflon® – lined screw cap	Cool to 4 ^{o}C	14 days to extraction, 40 days from extraction to analysis
TRPHs	FL-PRO	4 ounce soil jar 6.0 mg/kg	Glass Teflon® – lined screw cap	Cool to 4 ^{o}C	14 days to extraction 40 days from extraction to analysis

3.3 LABORATORY ANALYSIS AND QA/QC SAMPLES

As part of the analytical program, QA/QC samples will be collected during soil and groundwater activities as described in this section. The field sampling team will provide the appropriate additional sample

volume as prescribed by the laboratory requirements for laboratory duplicate and matrix spike (MS) samples.

Rinsate blanks are collected to determine whether the source water or the decontamination process have introduced contaminants to the environmental samples collected. The additional samples for analysis of the MS/matrix spike duplicate (MSD) will be collected with a frequency of 1 per 20 samples per matrix. The frequencies for the collection of the field QC samples are detailed in Table 3-2.

TABLE 3-2
FREQUENCY OF FIELD QC SAMPLES

SOIL MONITORING WORK PLAN, SITE 413
NAVSTA MAYPORT
JACKSONVILLE, FLORIDA

Type Of Samples	Frequency
Rinsate Blank	1 per 20 samples per matrix
Trip Blank	Submitted with cooler containing VOCs
MS/MSD	1 per 20 samples per matrix
Temperature Blank	1 per cooler

3.3.1.1 Rinsate Blanks

Rinsate blanks are sampling vials or bottles filled with laboratory grade deionized water that has been poured and collected from a decontaminated piece of sampling equipment. Rinsate blanks can be collected from clean sampling tubing, decontaminated soil collection spoons, decontaminated hand auger buckets, or any other piece of equipment that comes in contact with the sample media during the course of sample collection.

3.3.1.2 Trip Blanks

Trip blank samples are 40-mL glass vials that contain analyte-free water and are prepared by the analytical laboratory prior to the start of field activities. Trip blanks will be stored in a sealed container until they are needed. During sampling activities, one trip blank consisting of one vial will be placed in each cooler that contains environmental samples destined for VOC analysis. Trip blanks are only analyzed for VOCs using USEPA Method 8260.

3.3.1.3 MS/MSD

MS/MSDs are collected in conjunction with normal groundwater and soil samples. Two extra sets of samples are collected for each parameter and submitted to the laboratory. The laboratory utilizes the MS/MSDs to validate the accuracy of the laboratory analytical equipment.

3.3.1.4 Temperature Blanks

Temperature blanks are vials of water inserted into each cooler. The temperature of the temperature blank is measured prior to shipping the cooler to the laboratory and upon receipt at the laboratory to verify that samples were properly cooled during transit.

4.0 SAMPLING PROTOCOL

Adjustments to this Work Plan may be necessary as new data becomes available. If new field investigation methods or changes to existing methods become necessary because of adjustments to the scope of work, then the proposed revisions to this document will be presented by the contractor to the NAVSTA Mayport Environmental Tier I Partnering Team for review and approval.

The planned activities include the following general categories of field investigation activities:

- Collection of soil samples
- Decontamination of investigation equipment
- Sample management
- Field QC, documentation, and record keeping
- Investigation derived waste (IDW) management

4.1 STANDARD OPERATING PROCEDURES

A variety of field investigation activities will be conducted at NAVSTA Mayport to meet the objectives of the Work Plan. Field activities will be conducted in accordance with the Site-Specific Health and Safety Plan and the FDEP SOPs for field activities (FDEP, 2008). In the event the FDEP SOPs do not apply to a specific task, the Contractor will defer to corporate SOPs or NAVFAC SE guidance.

These guidelines will be followed to ensure the data is consistent with regulatory requirements and meet the data quality objectives. A copy of the above-referenced guidance documents along with this Work Plan will be maintained on site by the Contractor field personnel at NAVSTA Mayport and will be reviewed with the field team before work begins.

4.2 FIELD TEAM ORGANIZATION

The field team will consist of staff members who will conduct the field investigation activities. The organization of the field team is as follows:

- The FOL is responsible for the day-to-day direction of personnel in the field. The FOL will assign tasks to field team personnel, direct the sequence of activities, coordinate with NAVSTA Mayport personnel, coordinate subcontractors, and review tasks in progress and those completed. The FOL will ensure that project-specific plans are implemented and that activities comply with appropriate guidelines.

- The Project Safety Officer is responsible for ensuring that proper health and safety procedures are identified and implemented for the project and that project-related health and safety incidents are properly investigated. In the event that only a small number of project staff are required on site, the duties of the Project Safety Officer may be assigned to the FOL or another member of the field team. The Project Safety Officer or designee will report directly to the Director of Health and Safety.

- The Field Geologist or Field Scientist will oversee environmental sampling activities. Duties will include environmental sample collection and handling and ensuring that the approved methods are implemented. The field geologist may also conduct tests for identifying subsurface conditions and characterizing the groundwater flow regime. In the event that only a small number of project staff are required on site, the duties of the Field Geologist may be assigned to FOL or another member of the field team.

- Sampling personnel will be responsible for properly locating, collecting, preserving, packaging, documenting, and shipping environmental samples to the laboratory.

4.3 MOBILIZATION

The Contractor must perform the following internal tasks before field mobilizations:

- Preparation of technical and subcontractor bid specifications.
- Selection and mobilization of subcontractors.
- Acquisition and preparation of equipment for transportation to the field.
- Acquisition and preparation of expendable supplies for transportation to the field.
- Arrangement of transportation and lodging for field personnel.

In addition to internal efforts, external mobilization efforts will be coordinated with the NAVSTA Mayport POC. A list of the steps to be taken includes the following:

- Select staging areas for equipment and IDW.
- Select decontamination area(s).
- Ensure supplies of potable water are accessible.
- Coordinate with Station personnel to acquire an excavation/digging permit from the Public Works Office.

Multiple decontamination facilities may be selected or constructed by the drilling subcontractor before the beginning of field activities at locations deemed appropriate by the NAVSTA Mayport POC and the

contractor. Site reconnaissance will be performed before initiation of field activities. Some of the following activities will be performed with the assistance of NAVSTA Mayport personnel:

- Locating and setting up of decontamination facilities.
- Identifying the potable water source(s), electrical outlets, and other utilities to be used during field activities.
- Locating temporary storage for soil cuttings and purge/development water drums as well as solid wastes generated during field activities (e.g., Tyvek suites, gloves, plastic sheeting).
- Marking/staking sample locations.
- Locating underground and aboveground utilities (water, gas, sanitary sewer lines, drainage lines, telephone cable, and electric lines) within the work areas. Overhead electric lines may be shielded, if necessary.
- Erecting any necessary barricades and/or temporary fencing.

4.4 FIELD LOGBOOKS AND FORMS

Field logbooks and standard data collection forms will be completed for field investigation, sample description, and data collection activities. These forms include sample log sheets (for soil samples), a daily record of drilling activities, and equipment calibration logs. Copies of these forms can be found in Appendix B.

A bound, weatherproof field logbook shall be maintained by each sampling event leader. The FOL or designee will record the information related to sampling or field activities. This information may include sampling time, weather conditions, unusual events (e.g., well tampering), field measurements, descriptions of photographs, or other such details. A site logbook shall be maintained by the FOL. This book will contain a summary of daily site activities.

Each field team member who is supervising a drilling subcontractor must complete a daily record of drilling activity. This form documents the stage, hours, methods, materials, and supplies used during daily drilling activities. The information contained on this form is used for billing verification and progress reports. The driller's signature is required at the end of each working day to verify work accomplished, hours worked, standby time, and material used. An example of this form is provided in Appendix B.

At the completion of field activities, the FOL will submit to the Task Order Manager field records, data, field logbooks, site logbooks, chain-of-custody receipts, sample log sheets, daily logs, and other such forms.

4.5 SAMPLE HEAD SPACE ANALYSIS

Soil vapor head space analyses will be performed in general accordance with the method described in Chapter 62-770.200(2), F.A.C. Soil samples will be analyzed for their total hydrocarbon content using an OVA-FID. Charcoal filters will be used to differentiate between methane (a naturally occurring gas) and petroleum hydrocarbon vapors. This information will be recorded in the field logbook.

The following steps will be used to prepare soil samples for head space analysis:

- Each soil sample to be analyzed will be equally split and placed into two clean, 8-ounce glass jars.
- Each sample jar will be filled to approximately one-half of its volume, if sufficient sample volume is available.
- Aluminum foil covers will be sealed over the open end of the glass jar using a threaded, metal ring.
- The sample jars will be allowed to equilibrate under a temperature range of 20 to 32 °C for approximately 5 minutes.
- The head space will be measured by piercing the aluminum foil with the FID probe and recording the highest sustained reading.
- The FID will be calibrated daily and calibration will be confirmed every 20 samples.
- If FID readings above background are detected in the first jar, the second sample jar will be measured using an in-line charcoal filter to determine the portion of the total reading attributable to methane gas.

4.6 SOIL SAMPLING

Soil samples will be collected as part of identification of the free product smear zone efforts. Samples will be collected in accordance with DEP-SOP-001/01 Section FS3000 (FDEP, 2008). Soil samples will be immediately placed into laboratory-supplied containers. The samples will be labeled, preserved on ice, and transported to the laboratory. Soil samples will be analyzed for VOCs (MTBE and BTEX), PAHs, and TRPH in conformance with FL-PRO methodology with complete Contract Laboratory Program-like data packages to allow for data validation. QA/QC specifications are summarized in Table 4-1.

Excess soil cuttings produced from soil sample collection will be returned to the same depth interval they were removed. Soil cuttings that have detections during the screening process will be containerized into an appropriate IDW storage drum.

TABLE 4-1
FIELD QA/QC SPECIFICATIONS

SOIL MONITORING WORK PLAN, SITE 413
NAVAL STATION MAYPORT
JACKSONVILLE, FLORIDA

Analysis	Control Parameter	Control Limit	Corrective Action	FDEP SOP Number
Soil screening using an OVA	Daily check of calibration of FID	Calibration to manufacturer's specifications	Recalibrate. If unable to calibrate, replace.	None

4.7 FIELD MEASUREMENTS

Field measurements to be recorded during field and sampling operations includes screening soil samples with a FID. FIDs will be calibrated as per the manufacturer's recommendations.

Instrument calibration is recorded on an Equipment Calibration Log Sheet provided in Appendix B. During calibration, a maintenance check is performed on each piece of equipment. If damaged or defective parts are identified during the maintenance check and it is determined that the damage could have an impact on the instrument's performance, the instrument will be removed from service until the defective parts can be repaired or the instrument replaced.

4.7.1 Field Instrument Control Limits

Table 4-1 shows the control parameters to be assessed, control limits, and corrective actions to be implemented. The Contractor representative on site at each well and boring will confirm measurements of total depth of holes, dimensions, and placement of well screens and casings, and volume and placement of filter pack and grout materials by independent observation or measurement. The FOL will review field forms and field logbook entries for indications of measurement data outside of the control range.

4.7.2 Manufacturers' Specifications

The FOL shall collect copies of the available manufacturers' specifications and material safety data sheets, if applicable, for supplies and equipment that are used in the collection of environmental samples. This shall apply, but not be limited, to the following:

- Calibration gases
- Sample containers
- Decontamination solvents and detergents

- Laboratory-grade/analyte-free water
- Reagents
- Tubing

The manufacturers' specifications will be included in the project files at the end of the field mobilization.

4.8 DECONTAMINATION PROCEDURES

The decontamination of equipment will minimize the spread of contamination to clean zones, reduce cross-contamination of samples when equipment is used at more than one sampling location, and minimize exposure to site personnel. FDEP SOPs for decontamination (FDEP-SOP FC 1000) will be followed (FDEP, 2008).

Stainless steel spoons, bowls, hand auger, DPT, and other soil-sampling equipment will be decontaminated after each use. The decontamination procedure outlined in FDEP SOP FC 1000 will be used (FDEP, 2008). Disposable trowels may be used for collection of soil samples.

4.9 SAMPLE HANDLING

4.9.1 Sample Containers, Preservation, Holding Times, and Analysis

The samples containers, preservatives, holding times, and specific analysis are provided in Tables 3-1 and 3-2.

4.9.2 Laboratory Sample Identification

The sample identification system to be used in the field to identify each sample taken during the field effort will be in accordance with FDEP SOP FD 5000 (FDEP, 2008). The coding system provides a tracking record to allow the retrieval of information about a particular sample and to ensure that each sample is uniquely identified.

Each sample will be assigned a unique codified sample identification number. The unique nomenclature established for this sampling event is as follows:

1		2		3		4
MPT-413	-	SSXX SBXX	-	XX	-	YYYYMMDD

Sample nomenclatures for soil and groundwater samples are as follows:

- MPT-413 = NAVSTA Mayport, site 413
- SBXX = represents a subsurface soil sample where XX is a consecutive number beginning with '01'
  SSXX = represents a surface soil sample where XX is a consecutive number beginning with '01'
- XX = bottom depth sample was collected (feet below land surface [bls]) (not used for groundwater samples)
- YYYYMMDD = year, month and day of sample collection

An example of the above nomenclature is as follows:

- A surface soil sample collected at 0.5 foot bls on August 29, 2010, from soil location SS01 at Site 413 would be represented by MPT-413-SS01-0.5-20100829.
- A subsurface soil sample collected at 3 feet bls on August 29, 2010, from soil location SB01 at Site 413 would be represented by MPT-413-SB01-3.0-20100829.

QA/QC samples required for the analytical program are summarized in Table 3-3. QA/QC samples collected during the field activities will be labeled in ascending order identifying the nature of the sample (rinsate, duplicate, MS/MSD). The following are examples of labeling for these samples:

- Rinsates: Rinsate samples will be labeled in ascending sequential order beginning with -01. For example, the first rinsate blank sample would be designated MPT-413-RINSATE01-20100829.

- MS/MSD: MS/MSD samples will be labeled in ascending sequential order beginning with -01 for samples collected. An example of this is as follows: a second MS/MSD sample would be designated MPT-413-MS02-20100829.

- Trip Blanks: Trip blank samples will be packaged in coolers containing VOC samples. Trip blanks will be labeled TRIPBLANK on the cooler's corresponding chain of custody form.

- Temperature Blanks: One temperature blank will be packaged in every cooler containing samples prior to laboratory delivery. Temperature blanks will be labeled TEMPBLANK.

Pre-preserved, certified-clean bottleware will be supplied by the subcontracted laboratory for all samples.

4.9.3 Sample Packaging and Shipping

Custody of samples must be maintained and documented at all times. Chain-of-custody begins with the collection of the samples in the field. FDEP SOP 001/01 FS 1000 and TtNUS SOP SA-6.3 provide a description of the chain-of-custody procedures to be followed (FDEP, 2008 and TtNUS, 2004).

Samples will be packaged and shipped in accordance with FDEP SOP 001/01 FS 1000: General Sampling Procedures and applicable sections of FS 2200 (FDEP, 2008).

The FOL will be responsible for completion of the following forms when samples are collected for shipping:

- Sample labels
- Chain-of-custody labels
- Appropriate labels applied to shipping coolers
- Chain-of-custody forms
- Federal Express air bills

FDEP SOP FS 1000 also addresses the topics of containers and sample preservation.

Custody of samples must be maintained and documented at all times. Chain-of-custody begins with the collection of the samples in the field.

4.10 INVESTIGATION DERIVED WASTE

IDW generated during field activities will be containerized in drums and stored on site until analysis of the media has been reviewed and the appropriate disposal of the waste can be made at a state licensed facility. Purge water, decontamination water, and soil cuttings will be collected and containerized in Department of Transportation-approved (Specification 17C) 55-gallon drums. Each drum will be sealed, labeled, and left at a drum staging area pending groundwater analytical analyses. Upon obtaining analyses, drums will be transported to a state licensed disposal facility.

Weekly IDW inspections will occur for IDW temporarily stored on site to ensure that IDW is properly secured and labeled, that IDW drums are not compromised, and that IDW is removed from the site in a timely manner. Once the field events are completed and analytical results obtained, the IDW will be transported and disposed of offsite by a subcontractor.

5.0 NAVSTA MAYPORT SUPPORT

The NAVSTA Mayport facility POC will be responsible for the following activities:

- Answer questions related to NAVSTA Mayport policies and procedures.
- Sign manifests associated with IDW disposal, conduct IDW disposal, and provide the Contractor with copies of the manifests for inclusion in reports.

REFERENCES

FDEP (Florida Department of Environmental Protection), 1999. Chapter 62-770, F.A.C., "Petroleum Contamination Site Cleanup Criteria". August.

FDEP, 2005. Technical Report: Development of Cleanup Target Levels for Chapter 62-777, F.A.C., Division of Waste Management, Tallahassee, Florida, February.

FDEP, 2008. Department of Environmental Protection Standard Operating Procedures for Field Activities DEP-SOP-001/01, Bureau of Laboratories Environmental Assessment Section, Tallahassee, Florida. March.

TtNUS (Tetra Tech NUS, Inc.), 2004. Corporate Standard Operating Procedures.

TtNUS, 2007. Site Assessment Report for Site 413. Prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina. March.

APPENDIX A

HISTORICAL INFORMATION

ORDER OF DOCUMENTS IN APPENDIX A

1. Contamination Assessment Report (CAR) Summary Sheet
2. Tank Closure Report, Earth Systems, August 2004
3. Contamination Assessment Plan (CAP), Tetra Tech NUS, July 2005
4. Site Assessment Report for Site 413, March 2007

CONTAMINATION ASSESSMENT REPORT SUMMARY SHEET

Facility Name: Site 413 Reimbursement Site: ☐

Location: NS Mayport , Mayport, FL State Contract Site: ☐

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

Date Reviewed: _____ Local Government: _____

(1) Source of Spill: Break in piping system of AST Date of Spill: Unknown

(2) Type of Product:

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

(3) Description of IRA: none
Line break.

☐ Free product Removal: _____ (gals)
☐ Soil Removal: _____ (cubic yds)
☐ Soil Incineration: _____ (cubic yds)

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

(5) Maximum Groundwater contamination levels (ppb): Total VOA: 0.40 µg.L benzene: BDL EDB: BDL lead: BDL MTBE: BDL other: _____

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

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

Highest current soil concentration (OVA: 0 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: 1/17/06 Date of last soil sampling: 8/12/05

(10) QAPP approved? (yes/no) Date: NA

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

(12) Average depth to groundwater: 4.0 (ft)

(13) Observed range of seasonal groundwater fluctuations: 0.1 ft (ft) (Based on water level data collected during the CAR investigation)

(14) Estimated rate of groundwater flow: 0.0376 (ft/day)

(15) Hydraulic gradient across site: 0.0026 (ft/ft)

(16) Aquifer characteristics:

	Values	Units	Method
Hydraulic conductivity	4.34	ft/day	Kasenow & Pare, 1995
Storage coefficient	-	ft/ft	-
Aquifer thickness		ft	Literature
Effective soil porosity	0.30	%	Literature
Transmissivity		gal/day/ft	Specific Capacity Tests

(17) Other remarks: None

CLOSURE ASSESSMENT REPORT
Naval Station Building 413
Naval Station Mayport, Florida

August 2004

Prepared For:

Jim Bryant
Johnson Controls-Hill, LLC
P.O. Box 77
Naval Station Mayport, Florida 32212

Prepared By:

EARTH SYSTEMS, INC.
223 12th Avenue North
Jacksonville Beach, Florida 32250

EARTH SYSTEMS

August 5, 2004

Mr. Jim Bryant
Johnson Controls-Hill, LLC
P.O. Box 77
Naval Station Mayport, Florida, 32212

Re: Closure Assessment Results
Naval Station Building 413
Naval Station Mayport, Florida, 32212

Dear Mr. Bryant:

Earth Systems, Inc. (Earth Systems) completed a Closure Assessment for the underground piping and sumps associated with aboveground storage tank (AST) N413. The underground piping was closed in place and the sumps were removed in April 2001. Under this scope of work, Earth Systems installed five soil borings, converted one of the borings into a temporary monitoring well, and collected soil and groundwater samples for laboratory analysis. Sampling was performed in accordance with Earth Systems' comprehensive quality assurance plan. As detailed below, closure results indicate that petroleum impacted soil and groundwater were encountered in the vicinity of the removed sump on the northern side of the AST. A site plan showing the location of the soil borings and temporary well is provided as **Figure 1.**

Soil Assessment

On July 8, 2004, Earth Systems installed five soil borings (SB-1 and SB-5) in the vicinity of the removed product lines and closed sumps. The soil borings were completed to a depth of one foot below the water table. The soil samples were screened with an organic vapor analyzer (OVA) in accordance with the methodology prescribed in 62-770 Florida Administrative Code (FAC). The depth to water was approximately 3.5 feet below land surface (BLS). Vadose zone methane corrected OVA responses ranged from 0 to greater than 640 parts per million (ppm).

A duplicate soil sample was retained for laboratory analysis from soil boring SB-2 at 3 feet BLS. The sample produced a methane corrected OVA response of 640 ppm. The soil sample was collected in accordance with Florida Department of Environmental Protection (FDEP) Standard Operating Procedure PCS-004. The soil sample was delivered to IntraLabs, Inc. and analyzed for Volatile Organic Aromatics (VOAs), Polynuclear Aromatic Hydrocarbons (PAHs), and Total Recoverable Petroleum Hydrocarbons (TRPH).

Soil sample SB-2 contained Benzene (0.181 mg/kg), Toluene (3.78 mg/kg), Ethylbenzene (3.61 mg/kg), Total Xylenes (33.1 mg/kg) TRPH (23600 mg/kg), Naphthalene (12.1 mg/kg), 1-Methyl Naphthalene (16.1 mg/kg), and 2-Methyl Naphthalene (26.90 mg/kg) in concentrations that exceed Soil Cleanup Target Levels (SCTLs).

A summary of the headspace data is provided on **Table 1**. The soil analytical results are summarized on **Table 2**. The soil boring locations, their highest methane corrected OVA vadose zone results, and the soil analytical results are illustrated on **Figure 2**. Soil boring logs are provided in **Appendix A.** A copy of the soil analytical report is included in **Appendix B.**

Groundwater Assessment

On July 8, 2004, soil boring SB-2 was converted into temporary well TMW-1. The temporary monitoring well was installed using a stainless steel hand auger to a depth of six feet BLS. After its installation, the well was purged and sampled in accordance with FDEP's Standard Operating Procedures. The groundwater sample was then delivered to IntraLabs and analyzed for VOAs, PAHs, and TRPH.

The groundwater sample from well TMW-1 contained Benzene [28.8 micrograms per liter (ug/L)], Ethylbenzene (45.6 ug/L), Total Xylenes (233 ug/L), Naphthalene (32 ug/L), 1-Methyl Naphthalene (22.3 ug/L), and 2-Methyl Naphthalene (24.9 ug/L) in concentrations that exceed Florida's Groundwater Cleanup Target Levels (GCTLs). The horizontal and vertical extent of the groundwater impacts has not been delineated.

Groundwater analytical data is summarized on **Table 3**. Groundwater analytical results are illustrated on **Figure 3**. Copies of the groundwater analytical report and the groundwater sampling log are included in **Appendix B**.

Summary and Recommendation

Earth Systems has completed a closure assessment at the subject property for the underground piping and sumps associated with the AST N413. The underground piping was closed in place and the sumps were removed in April 2001.

On July 8, 2004, Earth Systems installed five soil borings, converted one of the borings into a temporary monitoring well, and collected soil and groundwater samples for laboratory analysis. Analytical testing confirmed the presence of petroleum impacted soil and groundwater in the vicinity of the sump on the northern side of AST N413. Soil and groundwater contaminant levels exceed cleanup levels and will require further assessment.

Based upon the results of this investigation, Earth Systems recommends the following:

- A Discharge Reporting Form (DRF) should be submitted to the Jacksonville Environmental Resources Management Department (ERMD). The DRF will document the presence of petroleum impacts on the property.
- A source removal excavation should be performed to remove petroleum-impacted soils from the site.
- Following completion of the closure assessment and within nine months of submittal of the DRF, a Site Assessment Report should be submitted to ERMD. The report will describe the vertical and horizontal extent of soil and groundwater contamination and make recommendations for further environmental activities, as conditions warrant.

If you have any questions concerning this Closure Assessment Report, please call me at (904) 247-0740.

Sincerely,

EARTH SYSTEMS

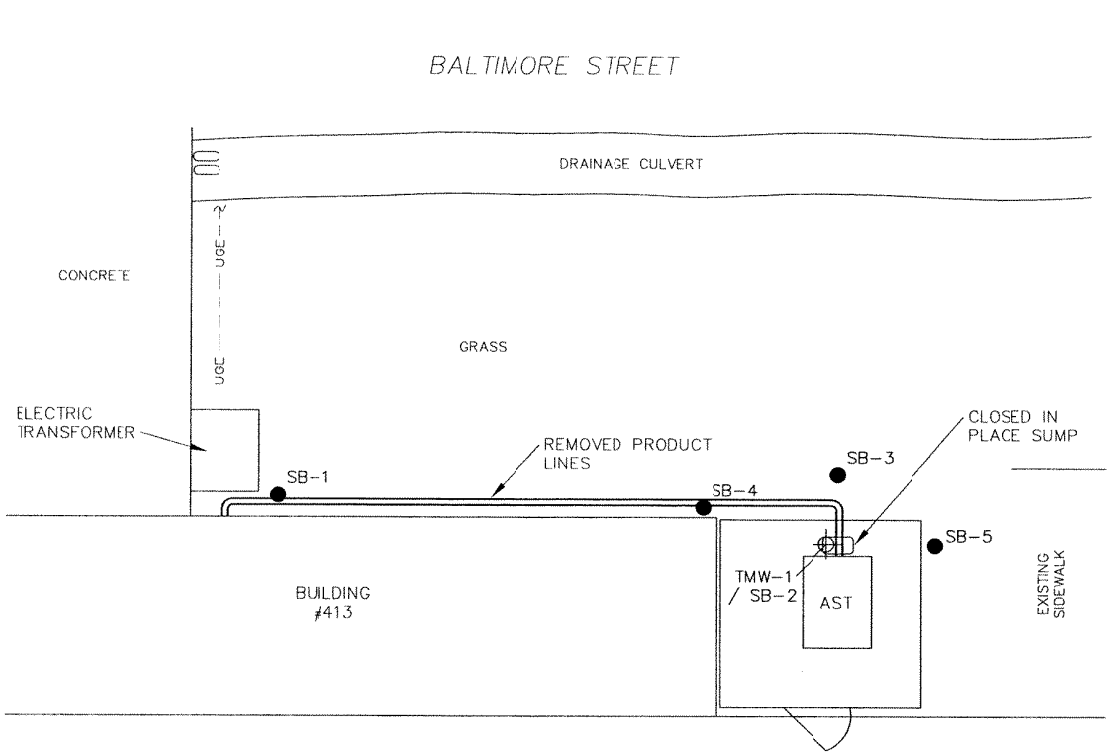
James Paxton
Project Manager

Certification:
I hereby certify that I have supervised the field work and preparation of this report, in accordance with Florida Rules and Regulations. As a registered professional geologist and/or professional engineer, as authorized by Chapters 471 or 492, Florida Statutes, I certify that I am a qualified groundwater professional, as defined by the Florida State Board of Professional Geologists.

Consultant Name: Samuel P. Pratt, PG No. 01824

Signature: _____

Date: 8/5/04



LEGEND

TEMPORARY WELL LOCATION

SOIL BORING LOCATION

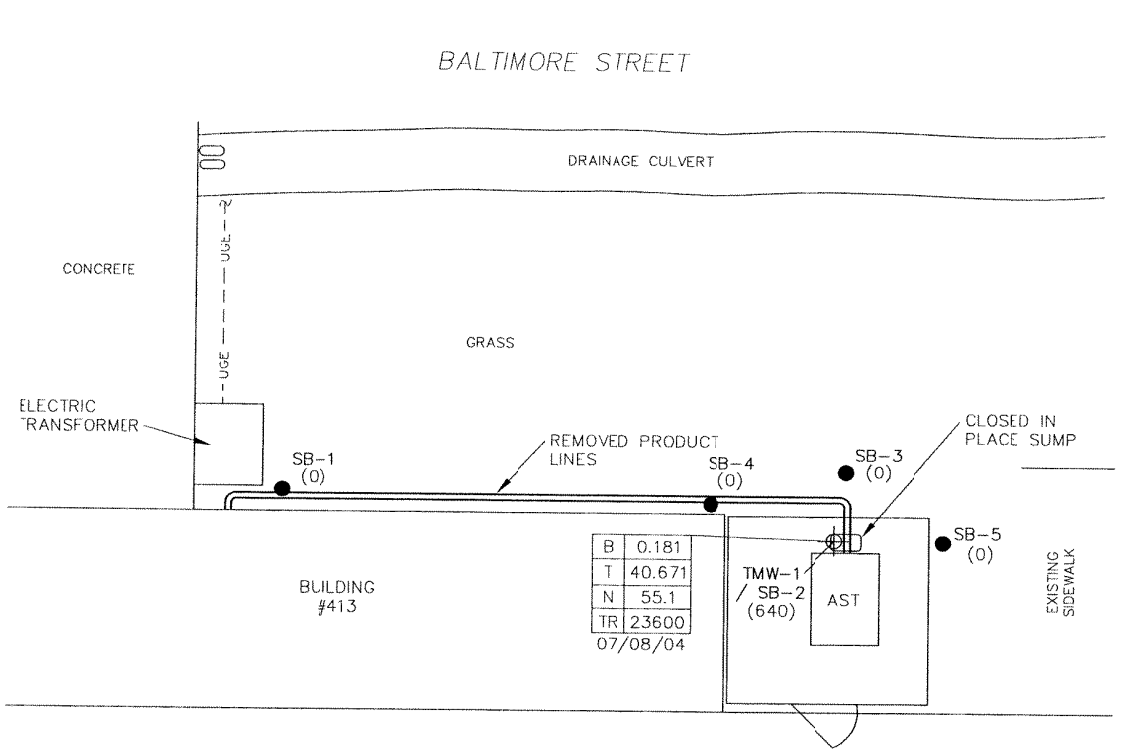
0 FT. 5 FT. 10 FT.

DATE:	08/04
DRAWN BY:	KMM
SCALE:	1" = 10'
FILENAME:	FIG1

FIGURE 1
SITE PLAN WITH SOIL BORING & TEMPORARY WELL LOCATION

EARTH SYSTEMS
223 12TH AVENUE NORTH
JACKSONVILLE BEACH, FL 32250
OFFICE (904) 247-0740 FAX (904) 247-7650

MAYPORT NAVAL STATION
BUILDING #413
MAYPORT, FLORIDA



LEGEND

⊕	TEMPORARY WELL LOCATION
●	SOL BORING LOCATION
B	BENZENE (ug/L)
T	TOTAL BTEX (ug/L)
N	TOTAL NAPHTHALENES (ug/L)
TR	TRPH (ug/L)

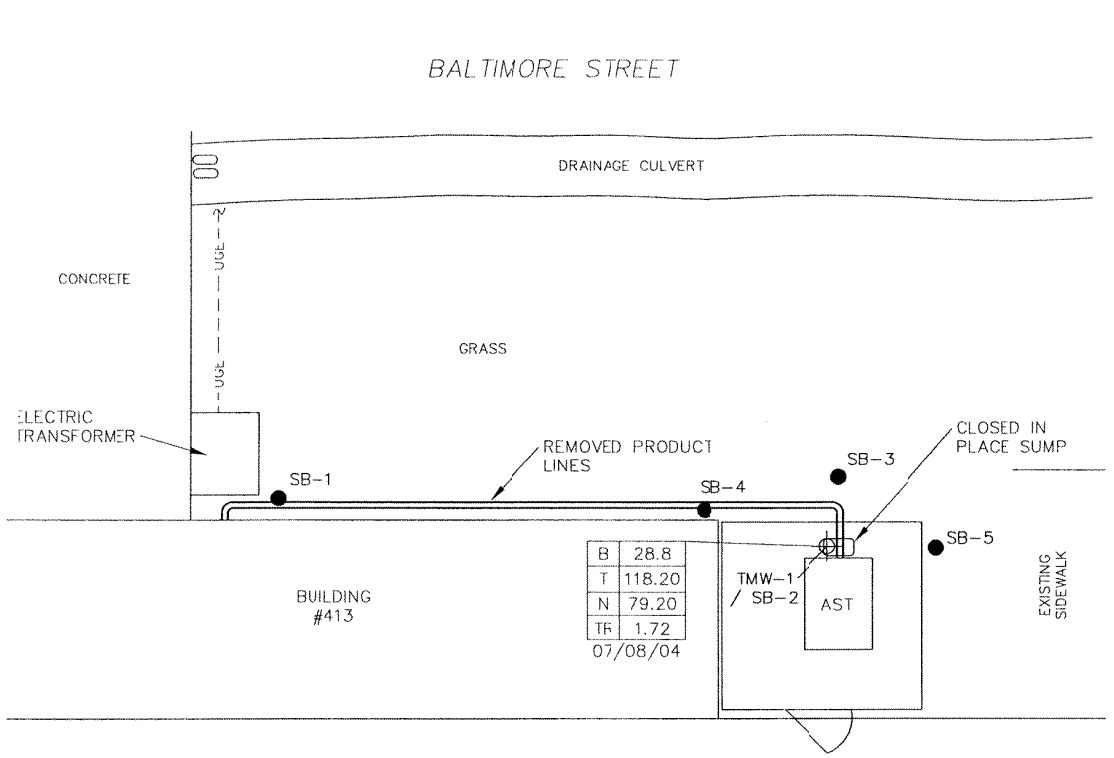
0 FT. 5 FT. 10 FT.

DATE:	08/04
DRAWN BY:	KMM
SCALE:	1" = 10'
FILENAME:	FIG2

FIGURE 2
VADOSE ZONE OVA & SOIL ANALYTICAL RESULTS MAP

EARTH SYSTEMS
223 12TH AVENUE NORTH
JACKSONVILLE BEACH, FL 32250
OFFICE (904) 247-0740 FAX (904) 247-7650

MAYPORT NAVAL STATION
BUILDING #413
MAYPORT, FLORIDA



LEGEND

⊕	TEMPORARY WELL LOCATION
●	SOIL BORING LOCATION
B	BENZENE (ug/L)
T	TOTAL BTEX (ug/L)
N	TOTAL NAPHTHALENES (ug/L)
TR	TRPH (ug/L)

0 FT. 5 FT. 10 FT.

DATE	08/04
DRAWN BY:	KMM
SCALE:	1" = 10'
FILENAME:	FIG3

FIGURE 3
GROUNDWATER ANALYTICAL RESULTS

EARTH SYSTEMS
223 12TH AVENUE NORTH
JACKSONVILLE BEACH, FL 32250
OFFICE (904) 247-0740 FAX (904) 247-7650

MAYPORT NAVAL STATION
BUILDING #413
MAYPORT, FLORIDA

TABLE 1: SOIL SCREENING SUMMARY

Facility Name: Mayport Naval Station Bldg. 413

SAMPLE				OVA SCREENING RESULTS			
BORING NO.	DATE COLLECTED	DEPTH TO WATER	SAMPLE INTERVAL (FBLS)	TOTAL READING (ppm)	CARBON FILTERED (ppm)	NET READING (ppm)	COMMENTS
SB-1	07/08/04	3.5	1	0	NM	0	
			2	0	NM	0	
			3	0	NM	0	
			4	0	NM	0	
SB-2	07/08/04	3.5	1	0	NM	0	
			2	80	10	70	
			3	700	60	640	Sample Collected, Install TMW-1
			4	800	10	790	
SB-3	07/08/04	3.5	1	0	NM	0	
			2	0	NM	0	
			3	0	NM	0	
			4	0	NM	0	
SB-4	07/08/04	3.5	1	0	NM	0	
			2	0	NM	0	
			3	0	NM	0	
			4	0	NM	0	
SB-5	07/08/04	3.5	1	0	NM	0	
			2	0	NM	0	
			3	0	NM	0	
			4	0	NM	0	

NM = Not Measured

TABLE 2: SOIL ANALYTICAL RESULTS

Facility Name: Mayport Naval Station Bldg. 413

Sample												
Location	Date	Collection Interval	OVA Response	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTEE	TRPH	Naphthalene	2- Methyl Naphthalene	1-Methyl Naphthalene
SB-2	7/8/2004	3	640	**0.181**	**3.78**	**3.61**	**33.1**	0.00789	**23600**	**12.10**	**26.90**	**16.1**
Direct Expcsure, Residential				1.1	380	1100	5900	3200	340	40	30	68
Leachability (based on GW)				0.007	0.5	0.6	0.2	0.2	340	1.7	6.1	2.2

< = below laboratory detection limit

Analytical Results = mg/kg

TRPH = Total Recoverable Petroleum Hydrocarbons

Exposure values based upon 62-777 F.A.C. criteria (August 5, 1999)

ft BLS = feet below land surface

TABLE 3: GROUNDWATER ANALYTICAL RESULTS

Facility Name: Mayport Naval Station Bldg. 413

Sample Location	Sample Date	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	MTBE	Naphthalene	1-Methyl Naphthalene	2-Methyl Naphthalene	Total Naphthalenes	TRPH mg/L
TMW-1	07/08/04	**28 8**	15	**45.6**	**233**	**118.20**	1.70	**32**	**22.3**	**24.9**	**79.20**	1.72
FDEP Target Levels		1	40	30	20		50	20	20	20		5
NA Default Concentrations		100	400	300	200		500	200	200	200		50

< = below laboratory detection limit
Analytical Results = ug/l unless noted otherwise
NCD = no compounds detected
MTBE = Methyl tert-Butyl Ether
Concentrations in bold are above FDEP Target Levels
NS = not sampled

Comprehensive **L**ong-term **E**nvironmental **A**ction **N**avy

CONTRACT NUMBER N62467-94-D-0888

Contamination Assessment Plan
for
Site Assessment
at Site 413

Naval Station Mayport
Mayport, Florida

Contract Task Order 0386

July 2005

NAVFAC Naval Facilities Engineering Command
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

TETRA TECH NUS, Inc.

CONTAMINATION ASSESSMENT PLAN
FOR SITE ASSESSMENT
AT SITE 413

NAVAL STATION MAYPORT
MAYPORT, FLORIDA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

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

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

CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0386

JULY 2005

PREPARED UNDER THE SUPERVISION OF:

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Debra M Humbert

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ACRONYMS

AST	Aboveground Storage Tank
bls	Below Land Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Total Xylenes
CAP	Contamination Assessment Plan
CLEAN	Comprehensive Long-term Environmental Action Navy
CTO	Contract Task Order
DPT	Direct Push Technology
EDB	1,2-dibromoethane
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FL-PRO	Florida Petroleum Range Organics
MTBE	Methyl Tertiary Butyl Ether
NAVSTA	Naval Station
Navy	United States Navy
OVA	Organic Vapor Analyzer
PAHs	Polynuclear Aromatic Hydrocarbons
SAR	Site Assessment Report
TRPH	Total Recoverable Petroleum Hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds
VOHs	Volatile Organic Halocarbons

1.0 INTRODUCTION

Tetra Tech NUS, Inc. (TtNUS) has prepared this Contamination Assessment Plan (CAP) for Site 413 at Naval Station (NAVSTA) Mayport, Mayport, Florida. This CAP was prepared for the United States Navy (Navy) Southern Division, Naval Facilities Engineering Command under Contract Task Order (CTO) 0386, for the Comprehensive Long-term Environmental Action Navy (CLEAN) III Contract Number N62467-94-D-0888.

The CAP provides the rationale and methodology for performing field activities to characterize soil and groundwater conditions at the referenced site. The objective of the proposed field investigations is to determine the extent of soil and/or groundwater impacts by previous operations at the sites. The data collected during the Site 413 investigation will be used to prepare a Site Assessment Report (SAR) and subsequent corrective action documents, if required, in accordance with Chapter 62-770.600, Florida Administrative Code (FAC). The investigation will characterize site conditions from which to base future courses of action.

NAVSTA Mayport is located within the corporate limits of the City of Jacksonville, Duval County, Florida, and is approximately 12 miles to the east northeast of downtown Jacksonville and adjacent to the town of Mayport. The Station complex is located on the northern end of a peninsula bounded by the Atlantic Ocean to the east and the St. Johns River to the north and west. NAVSTA 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.

In April 2001, closure activities for the underground piping and sumps associated with aboveground storage tank (AST) N413 (which previously contained fuel oil) were completed. The piping was closed in place, and the sumps were removed. In July 2004, Earth Systems, Inc. completed a Closure Assessment for those activities. Five soil borings were advanced, and one of the borings was converted in to a temporary monitoring well. Results of soil and groundwater sampling indicate that petroleum impacted soil and groundwater are present in the vicinity of the sump removed from the northern side of the AST as shown on Figure 1-1.

Insert Figure 1-1 here.

Page 1-2

2.0 OBJECTIVE AND SCOPE OF PROPOSED ASSESSMENT

The objectives of the proposed assessment described in this plan are as follows:

- Determine the horizontal and vertical extent of soil and groundwater impacts.
- Determine groundwater flow direction at Site 413 and report on tidal influences.
- Provide data for a SAR to be completed in accordance with Chapter 62-770, FAC.

The investigations will meet the requirements of Chapter 62-770.600, FAC, for completion of a SAR. This shall include gathering information to support a "No Further Action" proposal, Natural Attenuation Monitoring Plan, or Remedial Action Plan as required.

The work in the following sections will be completed in accordance with the Florida Department of Environmental Protection's (FDEP) Standard Operating Procedures.

2.1 GROUNDWATER AND SOIL ASSESSMENT

The assessment will be conducted in the following three separate events at the site:

- Marking of intrusive locations for utility clearance, including presumed soil excavation areas.
- Utilizing direct push technology (DPT) for the installation of piezometers and the advancement of soil borings for the collection of soil and groundwater samples.
- Utilizing DPT for the installation of permanent monitoring wells based on the results of the initial DPT assessment.

2.1.1 Initial DPT Sampling

Following completion of the utility clearance by Base personnel, DPT will be used to advance soil borings and collect soil and groundwater samples. It is estimated that eight soil borings will be advanced initially; additional borings will be advanced as necessary to complete horizontal and vertical delineation. The initial locations are based on the results of the previous closure assessment and are shown on Figure 1-1. If necessary because of surface features at the site, some of the borings may be advanced via hand auger.

Groundwater samples will be collected from each of the borings utilizing low flow sampling techniques, typically from the upper 5 feet of the surficial aquifer. The samples will be analyzed by an on-site mobile

laboratory for benzene, toluene, ethylbenzene, and xylene (BTEX) and naphthalene to provide initial groundwater screening data.

Soil samples will be collected from each boring beginning at approximately 6 inches below land surface (bls) and continuously in 2 foot intervals to the saturated zone. During the closure assessment, groundwater was encountered at approximately 3.5 feet bls. Each sample will be visually inspected for evidence of petroleum staining or free product. Soil samples collected during this effort will be field screened using an organic vapor analyzer (OVA). A soil boring log will be maintained for each location and will include the OVA data. Three soil samples from the event will be sent to a fixed-base laboratory for analysis of volatile organic compounds (VOCs), BTEX including methyl tertiary butyl ether (MTBE), polynuclear aromatic hydrocarbons (PAHs) (includes 1-methylnaphthalene, 2-methylnaphthalene, and the 16 method-listed PAHs included in Table A of Chapter 62,770, FAC), and total recoverable petroleum hydrocarbons (TRPH). These samples will represent areas with high, medium, and low OVA screening values per Chapter 62-770.600(4)(f)(1), FAC.

Table 2-1 shows the anticipated on-site mobile and fixed-base laboratory analyses associated with this phase of the assessment.

2.1.2 Monitoring Well Installation

Based on the results of the initial DPT sampling, permanent monitoring wells will be installed. These wells will be installed to confirm the horizontal and vertical delineation of groundwater impact at the site. An estimated total of four shallow monitoring wells will be installed at the site. These monitoring wells will be installed in areas in which groundwater impact was observed as well as areas that will provide delineation in the presumed upgradient and downgradient locations. These 2-inch diameter wells will be installed using DPT and will be screened from approximately 2 feet bls to 12 feet bls. Based on the well locations, it may be necessary to install the points via hand auger or air knife technology. If this is the case, the total depth of the well(s) may be reduced. One deep well will be installed based on DPT mobile laboratory results. The well will contain 5 feet of screen, will be utilized for vertical delineation.

Following installation, the wells will be developed per Navy specifications, and top-of-casing elevations and locations will be surveyed by a Professional Land Surveyor. The depth to groundwater in each well will then be measured from the top-of-casing using an electronic water level indicator to provide data for the determination of the groundwater flow direction at the site. Aquifer testing and a tidal survey will not be necessary to determine aquifer characteristics since extensive aquifer data for NAVSTA Mayport has been obtained. This data will be referenced and used if appropriate. TtNUS will utilize existing information on potable wells to complete the potable well survey.

Table 2-1
DPT Assessment Sample Summary

Contamination Assessment Plan, Site 413
Naval Station Mayport
Mayport, Florida

Analyte	Proposed Method[1]	Environmental Samples	Disposal Samples[2]	Equipment Blanks (Aqueous)	Trip Blanks (Aqueous)	Total Samples
GROUNDWATER – VIA ON-SITE MOBILE LABORATORY						
BTEX/ Naphthalene		Minimum of 8	0	2	1	Minimum of 11
SOIL						
BTEX/MTBE	SW-846 USEPA 8260B	3	1	1	0	5
PAHs[3]	SW-846 USEPA 8310	3	1	1	0	5
TRPH	FL-PRO	3	1	1	0	5
Metals (Disposal)[4]	SW846 USEPA 6010B	0	1	1	0	2

Notes:
[1] Method referenced reflects FDEP requirements.
[2] Disposal sample numbers are based upon disposing of 55-gallon drums of soil (one composite sample per site). Soil analytical for volatile organics, PAHs, and TRPH (collected from environmental samples) will be used to characterize soil for proper disposal. In accordance with Chapter 62-713, FAC, additional discrete and composite samples will be collected for VOHs and metals, respectively, from the soil investigation derived waste generated in order to complete the soil characterization for proper disposal.
[3] Includes 1-methylnaphthalene, 2-methylnaphthalene, and 16 method-listed PAHs included in Table A of Chapter 62-770, FAC.
[4] Total analyses for arsenic, cadmium, chromium, and lead.
USEPA = United States Environmental Protection Agency
FL-PRO = Florida Petroleum Range Organics
VOHs = Volatile Organic Halocarbons

Groundwater samples will then be collected from new wells utilizing low flow sampling techniques and sent to a fixed-base laboratory for analysis of VOCs, BTEX including MTBE; PAHs (includes 1-methylnaphthalene, 2-methylnaphthalene, and the 16 method-listed PAHs included in Table A of Chapter 62,770, FAC); VOHs; 1,2-dibromoethane (EDB); total lead; and TRPH.

Table 2-2 shows the anticipated fixed-base laboratory analyses associated with this phase of the assessment.

Bottle ware, preservation, and holding time requirements for the analytical methods associated with this project are summarized in Table 2-3.

Table 2-2
Monitoring Well Sample Summary

Contamination Assessment Plan, Site 413
Naval Station Mayport
Mayport, Florida

Analyte	Proposed Method[1]	Environmental Samples	Disposal Samples[2]	Equipment Blanks (Aqueous)	Trip Blanks (Aqueous)	Total Samples
GROUNDWATER						
BTEX/MTBE/ VOHs	SW-846 USEPA 8260B	5	1	1	1	8
PAHs[3]	SW-846 USEPA 8310	5	1	1	0	7
Lead, total	SW-846 USEPA 6010B	5	1	1	0	7
EDB	USEPA 504.1	5	1	1	0	7
TRPH	FL-PRO	5	1	1	0	7

Notes:
[1] Method referenced reflects FDEP requirements.
[2] Groundwater analyticals will be used to determine the appropriate disposal method of the development and purge water.
[3] Includes 1-methylnaphthalene, 2-methylnaphthalene, and 16 method-listed PAHs included in Table A of Chapter 62-770, FAC.

Table 2-3
Bottle Ware, Preservation, and Holding Time Summary

Contamination Assessment Plan, Site 413
Naval Station Mayport
Mayport, Florida

Analyte	Analytical Method	Bottle Ware	Preservation	Holding Time
GROUNDWATER				
BTEX/MTBE/ VOHs	SW-846 USEPA 8260B	2 x 40 milliliter glass volatile vial	Add HCl to pH<2; 4 degrees Celsius	14 days
PAHs	SW-846 USEPA 8310	1 liter amber glass	Add NaOH; 4 degrees Celsius	Extr. – 7 days Analysis – 40 days
Lead, total	SW-846 USEPA 6010B	500 milliliter HDPE	4 degrees Celsius	180 days
EDB	USEPA 504.1	40 milliliter glass volatile vial	Add HCl to pH<2; 4 degrees Celsius	28 days
TRPH	FL-PRO	1 liter glass	Add H_2SO_4 to pH<2; 4 degrees Celsius	28 days
SOIL				
BTEX/MTBE	SW-846 USEPA 8260B	3 x 5 grams EnCore Sampler	4 degrees Celsius	Lab pres. – 48 hours Analysis – 14 days
PAHs	SW-846 USEPA 8310	8 ounce Clear wide mouth glass	4 degrees Celsius	Extr. – 7 days Analysis – 40 days
TRPH	FL-PRO	4 ounce Clear wide mouth glass	4 degrees Celsius	28 days
Metals	SW846 USEPA 6010B	4 ounce Clear wide mouth glass	4 degrees Celsius	180 days

Notes:
HCl = Hydrogen Chloride
NaOH – Sodium Hydroxide
HDPE = High Density Polyethylene
H_2SO_4 = Sulfuric Acid
Extr. = Extraction
Pres. = Preservation

Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62467-94-D-0888

Rev. 1
03/19/07

Site Assessment Report
for
Site 413

Naval Station Mayport
Mayport, Florida

Contract Task Order 0386

March 2007

NAVFAC
Naval Facilities Engineering Command
Southeast
2155 Eagle Drive
North Charleston, South Carolina 29406

TETRA TECH NUS, Inc.

SITE ASSESSMENT REPORT
FOR
SITE 413

NAVAL STATION MAYPORT
MAYPORT, FLORIDA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

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

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

CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0386

MARCH 2007

PREPARED UNDER THE SUPERVISION OF:

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APPROVED FOR SUBMITTAL BY:

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

PROFESSIONAL CERTIFICATION

Site Assessment Report
for
Site 413
Naval Station Mayport, Florida

This Site Assessment Report was prepared under the direct supervision of the undersigned geologist using geologic and hydrogeologic principles standard to the profession at the time the report was prepared in general conformance with the Requirements of Chapter 62-770, Florida Administrative Code. 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.

March 19, 2007
Mark A. Peterson, P.G.
Florida License Number PG-0001852

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APPENDICES

TABLES

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FIGURES

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ACRONYMS

AST	Aboveground Storage Tank
BTEX	Benzene, Toluene, Ethylbenzene, and Total Xylenes
bls	Below Land Surface
°C	Degrees Celsius
CAR	Contamination Assessment Report
CLEAN	Comprehensive Long-term Environmental Action Navy
COCs	Constituents of Concern
CTO	Contract Task Order
DPT	Direct-Push Technology
ENCO	Environmental Conservation Laboratories, Inc.
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	Flame-Ionization Detector
FL-PRO	Florida Petroleum Range Organics
ft	Feet (or Foot)
ft/day	Feet (or Foot) per Day
ft/ft	Feet (or Foot) per Foot
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/d	Million Gallons per Day
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
msl	Mean Sea Level
MTBE	Methyl Tertiary-Butyl Ether
NAVSTA	Naval Station
OVA	Organic Vapor Analyzer
PAHs	Polynuclear Aromatic Hydrocarbons
PVC	Polyvinyl Chloride
SA	Site Assessment
SAR	Site Assessment Report
SCH	Schedule
SCTLs	Soil Cleanup Target Levels

ACRONYMS (Continued)

SOPs	Standard Operating Procedures
TOC	Top-of-Casing
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
VOCs	Volatile Organic Compounds

EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) has completed a Site Assessment (SA) at Site 413, Naval Station (NAVSTA) 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. A Contamination Assessment Report (CAR) summary sheet is included as Appendix A.

To complete this SA, TtNUS:

- 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.
- Advanced 12 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.
- Performed a soil vapor survey in the unsaturated zone to delineate areas of excessively contaminated soil, if present.
- Referenced and obtained appropriate aquifer data from the United States Geological Survey (USGS) to calculate aquifer characteristics at NAVSTA Mayport.

The investigation was centered on an aboveground storage tank (AST) and associated piping and former sump area located near the northwestern corner of Building 413.

"Excessively contaminated soil," as defined by Chapter 62-770.200(12), FAC, was not identified at the site.

Mobile laboratory groundwater analytical results identified benzene, total xylenes, and the naphthalene compounds (naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene) at concentrations slightly exceeding regulatory criteria in shallow groundwater grab samples collected by DPT near the former sump location extending to the northeast approximately 15 feet (ft). Fixed-base groundwater and soil

samples in this same area recorded petroleum impacts, but not greater than the groundwater cleanup target levels (GCTLs) and soil cleanup target levels (SCTLs).

Based on current soil and groundwater analysis and the action levels set in Chapter 62-770, FAC, it is recommended that no further action is warranted.

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

TtNUS performed a SA at Site 413, NAVSTA Mayport, for the Naval Facilities Engineering Command Southeast under Contract Task Order (CTO) 0386 of the Comprehensive Long-term Environmental Action Navy (CLEAN) III, Contract Number N62467-94-D-0888. The data collected during the investigation were used to prepare a 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. A CAR Summary Sheet is included as Appendix A.

The purpose of the SA recently completed was to evaluate the presence or absence of petroleum hydrocarbons in subsurface soils and groundwater at Site 413 that may have resulted from releases from the 560-gallon heating oil AST or associated AST piping system. A former sump associated with this current system is part of the assessment. A summary of site investigative history is provided below in Section 1.8.

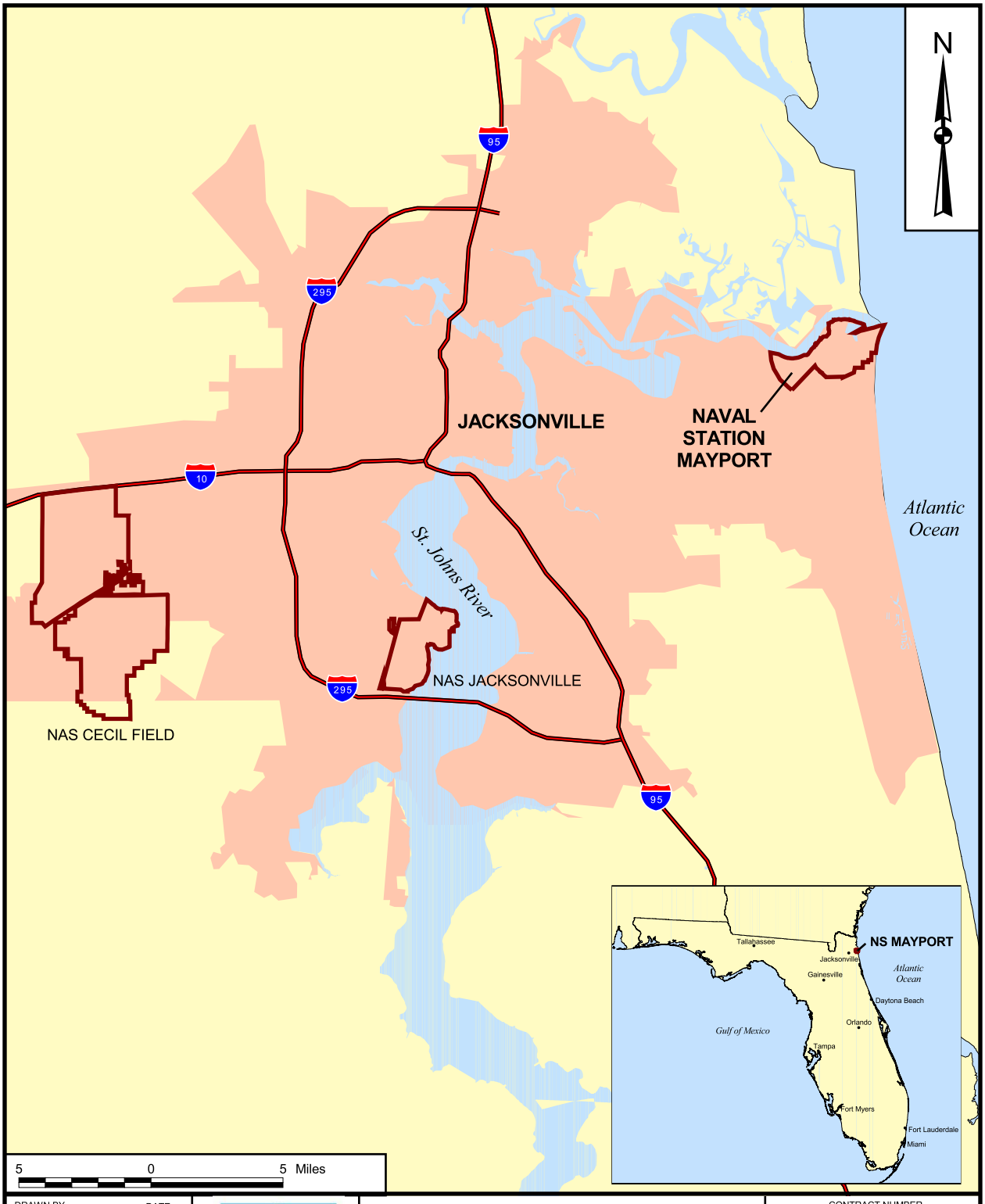
1.2 FACILITY AND SITE LOCATION

NAVSTA Mayport is located within the corporate limits of the City of Jacksonville, Duval County, Florida, approximately 12 miles northeast of downtown Jacksonville and adjacent to the town of Mayport. A Site Vicinity Map showing NAVSTA Mayport's location in northeastern Florida is provided as Figure 1-1. The station complex is located on the northern end of a peninsula bounded by the Atlantic Ocean to the east and the St. Johns River to the north and west. NAVSTA 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.

Site 413 is located near the northeastern tip of the peninsula as shown on the Site Location Map provided as Figure 1-2.

1.3 REGIONAL GEOLOGY AND HYDROGEOLOGY

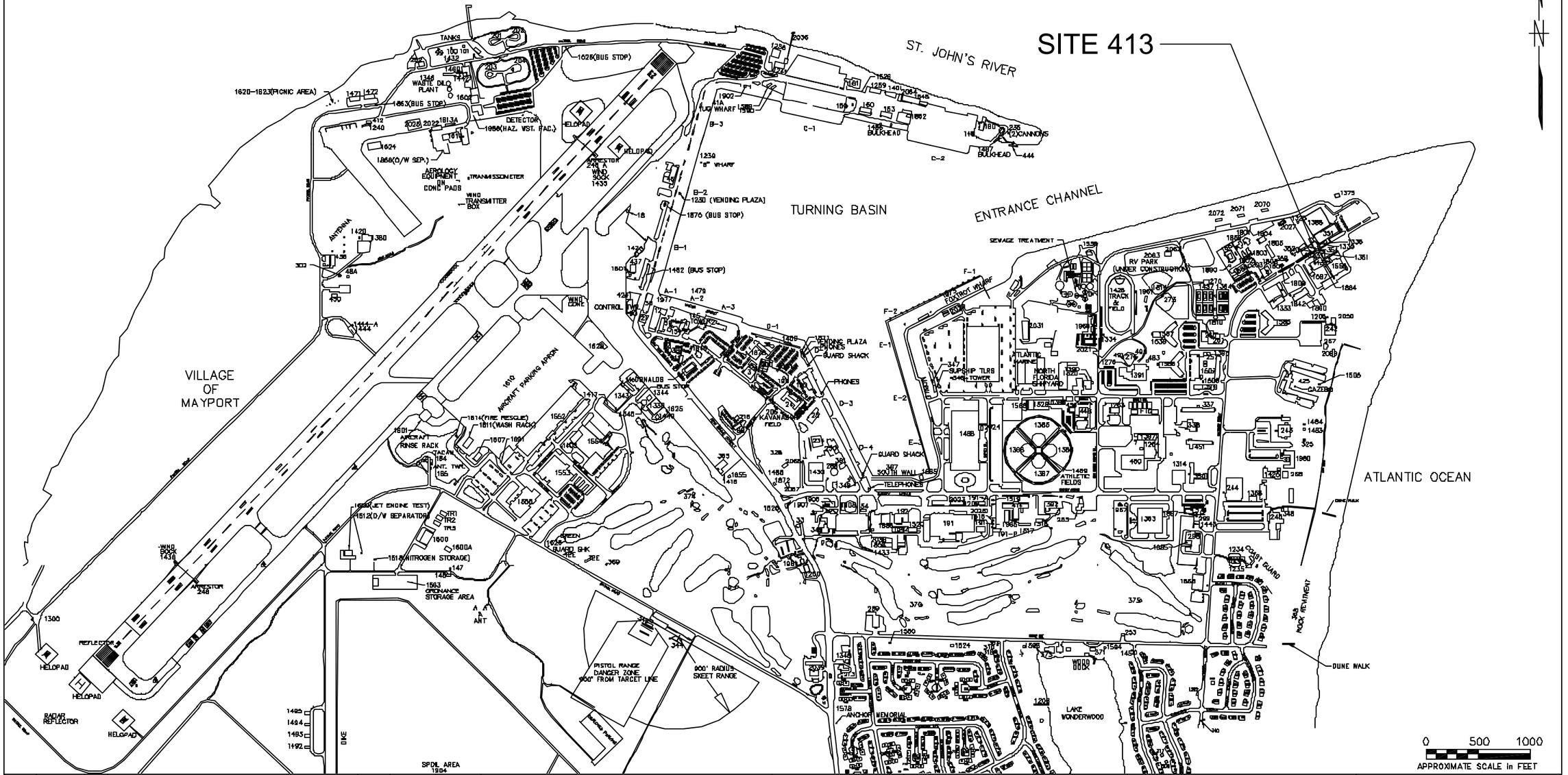
Northeastern Florida is underlain by two main aquifer systems: the surficial aquifer system and the Floridan aquifer system. The surficial aquifer system in the vicinity of NAVSTA Mayport includes sediments of the Upper Hawthorn Group, upper Miocene and Pliocene deposits, and Pleistocene and Holocene 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 ft below land surface (bls) (USGS, 1992).



DRAWN BY: K. PEILA	DATE: 4/17/06	REGIONAL AREA MAP NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER: CTO 00103
CHECKED BY: D. SIEFKEN	DATE: 5/18/06		APPROVED BY: — DATE: —
COST/SCHEDULE-AREA			APPROVED BY: — DATE: —
SCALE: AS NOTED			DRAWING NO.: FIGURE 1-1 REV: 0

P:\GIS\MAYPORT_NS\MAPDOCS\APR\STATEMENT_BASIS.APR SITE 413 REGIONAL AREA 5/187/06 MKB (KOP)

MAYPORT NS\CTO386\CAD\Site413\D0103SLM413



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY DATE	LLK 9/1/05
CHECKED BY DATE	
COST/SCHED-AREA	
SCALE	AS NOTED

NAVFAC

SITE LOCATION MAP
SITE 413
SITE ASSESSMENT REPORT
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO.	00103
APPROVED BY DATE	
APPROVED BY DATE	
DRAWING NO.	FIGURE 1-2
REV.	0

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 its contact with the underlying 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 northeastern 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 aquifer (USDA, 1978).

1.4 POTABLE WATER WELL SURVEY

The potable water supply information presented in this report was obtained from a Contamination Assessment Report prepared by the United States Army Corps of Engineers (USACE) for a nearby site (Site 1330) in 1992 (USACE, 1992). Personnel at the water treatment plant confirmed the accuracy of the water well information. Potable well information is summarized on Table 1-1. The locations of the potable wells are depicted on Figure 1-3.

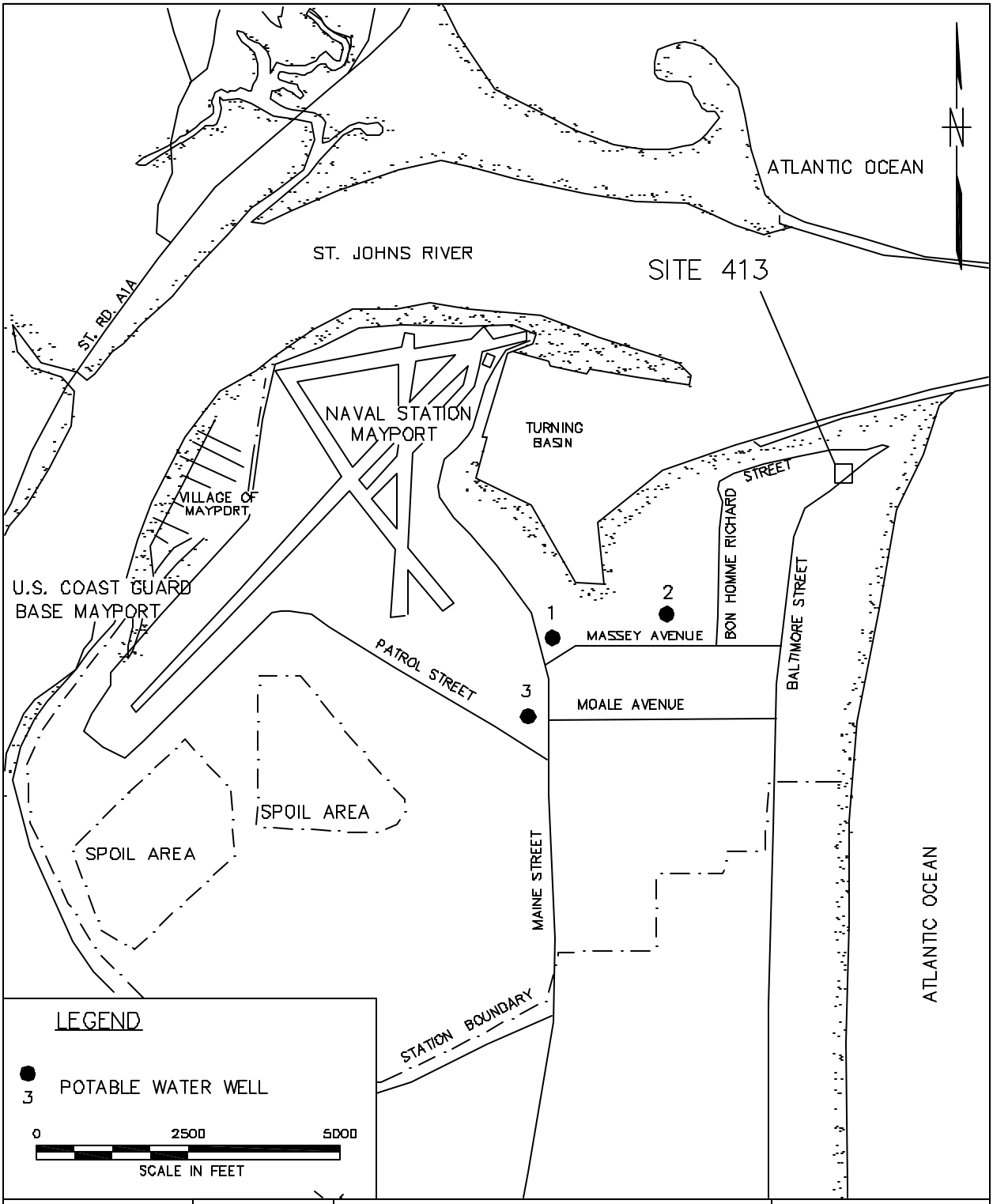
Table 1-1
Potable Water Well Survey Results

Site Assessment Report, Site 413
Naval Station Mayport
Mayport, Florida

Well ID	Approximate Distance from Site (miles)	Diameter (inches)	Depth of Well (ft bls)	Use
1	1.05	12	1,000	In use
2	0.72	16	1,000	In use
3	1.35	16	1,000	In use

Potable water is supplied to NAVSTA Mayport by three on-base supply wells. The closest supply well to the site is nearly three-fourths a mile from the site (Well Number 2) as shown on Figure 1-3. One of the three wells is 12 inches in diameter, and the other two are 16-inch diameter wells. All three wells draw water from the Floridan aquifer from depths of approximately 1,000 ft bls. Well capacities range between 2.1 and 2.9 million gallons per day (mg/d) with a combined total pumping capacity of 10.0 mg/d. The water is treated by the base water treatment plant prior to distribution.

MayportNS\CTO386\CAD\0010333WS



DRAWN BY LLK DATE 8/31/05	NAVFAC	POTABLE WATER WELL LOCATIONS SITE 413 SITE ASSESSMENT REPORT NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NO. 00103
CHECKED BY DATE			APPROVED BY DATE
COST/SCHED–AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1-3 REV. 1

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

1.5 TOPOGRAPHY AND DRAINAGE

NAVSTA 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. NAVSTA Mayport is located within the Silver Bluff Terrace. The average land surface elevation at NAVSTA Mayport is between 8 and 10 ft above mean sea level (msl) (USGS, 1992).

Site 413 is virtually flat with the exception of a storm water drainage ditch that is located at along the south side of Baltimore Road and abuts the area of investigation. The site is located at the northeastern tip of NAVSTA Mayport on a parcel of land separating the St. Johns River from the Atlantic Ocean as shown on Figure 1-2. A portion of the USGS Mayport, Florida 7.5-minute quadrangle has been reproduced as Figure 1-4 to show the site location relative to its topographic surroundings. More site specifically, a large drainage ditch parallels Baltimore Road to the north separating the road from the site. The ditch collects stormwater runoff from the site, Baltimore Road, and various parking lots. From the site the stormwater flow is west until a culvert “Ts” into the ditch from the north, redirecting the flow to the north to the river.

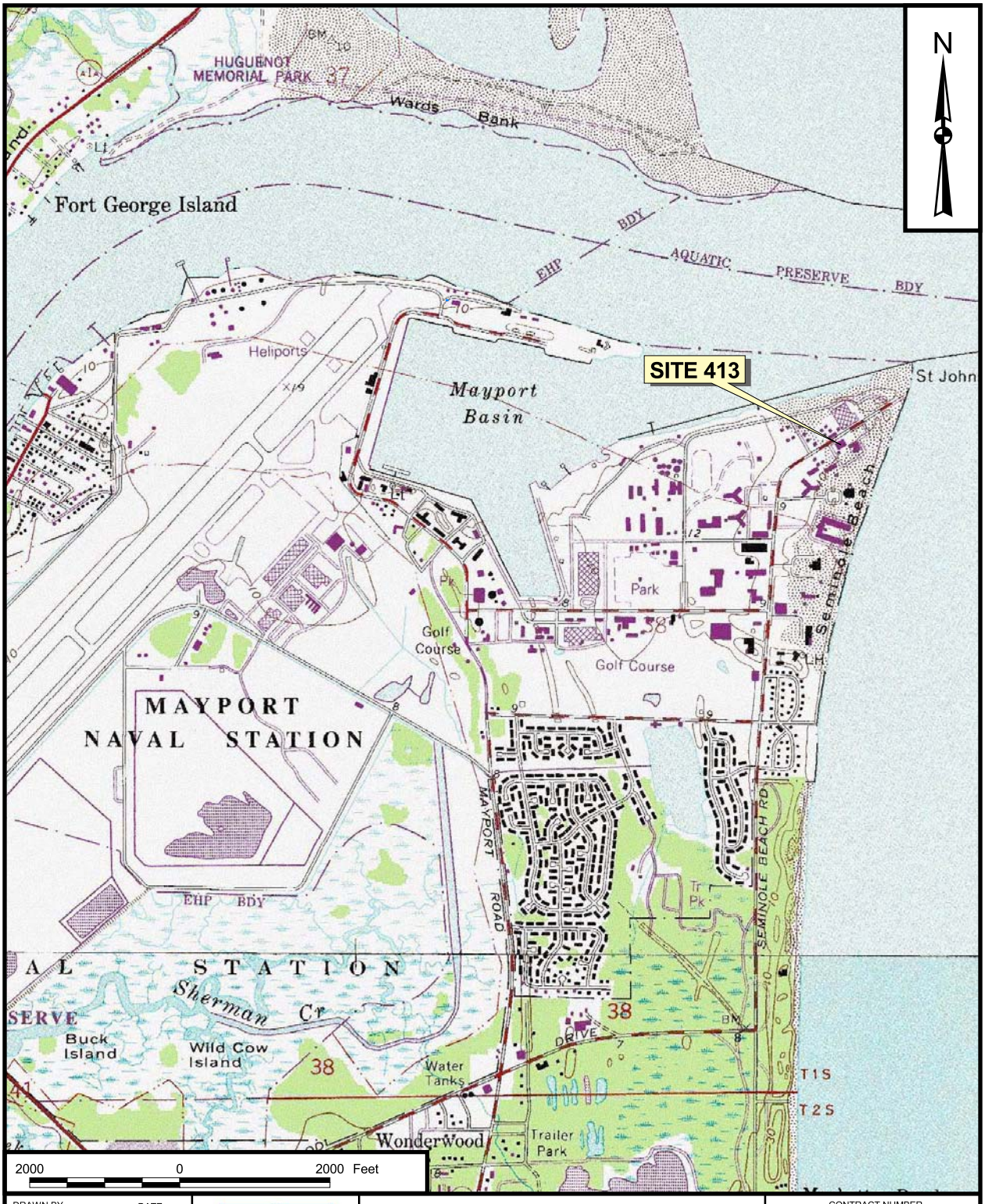
1.6 LAND USE IN SITE VICINITY

Land uses in the vicinity are classrooms and structurally undeveloped properties. The site is bound to the north by Baltimore Road, to the south a parking lot, to the east Building 1556 (classrooms) and its parking lot, and to the west Building 1809 (classrooms).

1.7 SITE DESCRIPTION

A site plan depicting Site 413 and its nearby surroundings is provided as Figure 1-5. Building 413 is a cement block building used as a classroom training facility which comprises slightly less than 10,000 square ft and is constructed with its long dimension oriented northeast to southwest. Figure 1-5 is a site plan for the facility. The 560-gallon heating oil AST is located near the northwestern corner of the building inside a wood fence enclosure. A former sump, which was used to transfer fuel oil, is buried near land surface. The sump is centrally in the grassy area along the northern end of the cement slab. The tank appears to be in good condition and rests on a cement slab.

Utilities, such as water, electricity, and a communication line parallel a large ditch, are located on the northern side of the building. The communication line enters the eastern side of the building passing nearby to the AST, while the water and electrical lines maintain a close proximity to the road. No other utilities were identified within the area of investigation.



DRAWN BY K. PEILA	DATE 4/14/06	USGS TOPOGRAPHIC MAP SITE 413 SITE ASSESSMENT REPORT NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER CTO 00103
CHECKED BY D. SIEFKEN	DATE 5/18/06		APPROVED BY — DATE —
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SCALE AS NOTED			DRAWING NO. FIGURE 1-4 / REV 0

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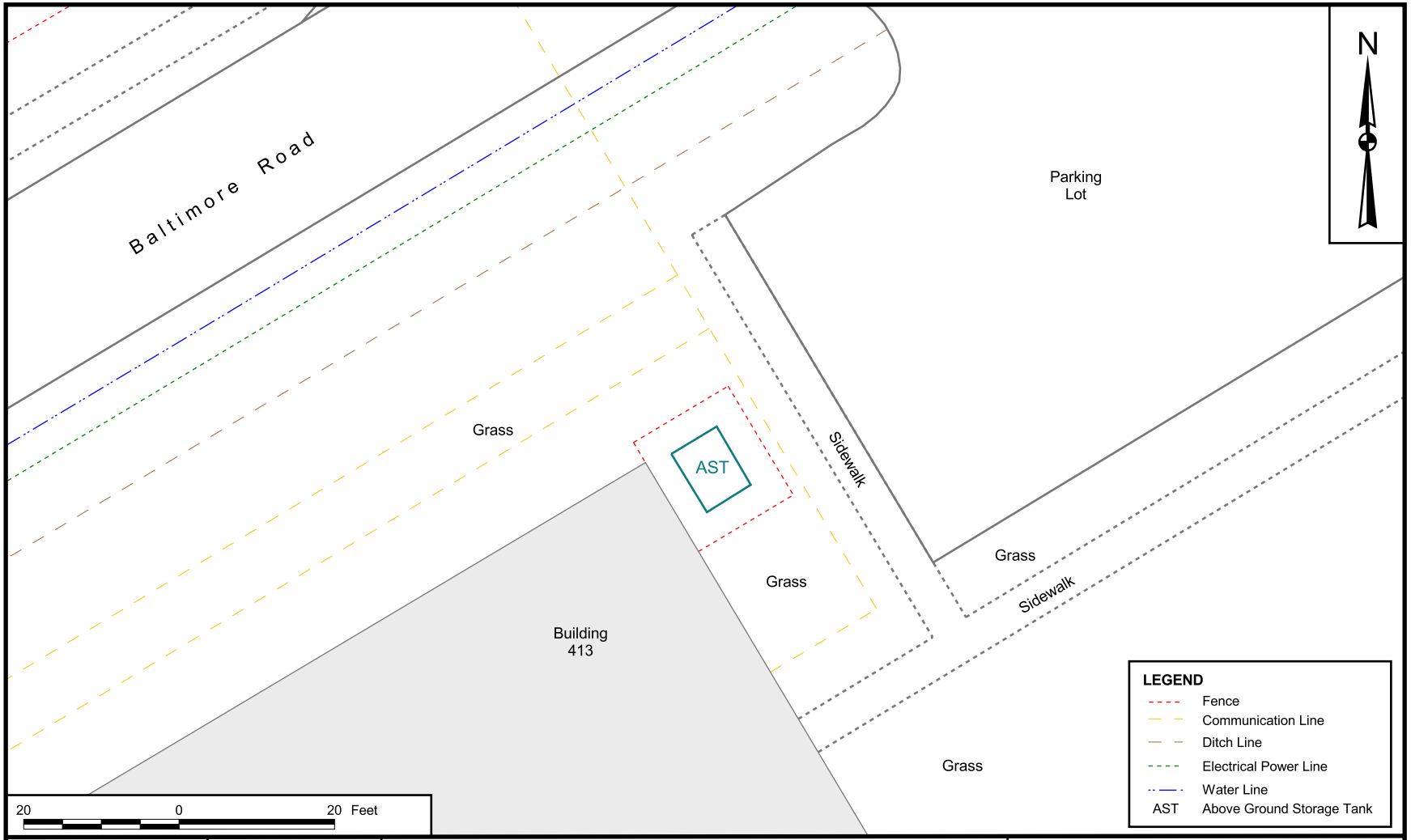

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SITE PLAN
BUILDING 413
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

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1.8 SITE OPERATIONS AND INVESTIGATIVE HISTORY

In April 2001, closure activities for the underground piping and sumps associated with the AST (Tank Number N413) were completed. No documented leaks of spills or overflows have been reported with this AST system other than what was observed during a Closure Report prepared by Earth systems, of Jacksonville Beach, FL (see Appendix B).

According to the closure report, the piping was removed and the sump was closed in place during April 2001. In July 2004, Earth Systems performed a closure assessment for the underground piping and sump associated with the AST. A copy of the Tank Closure Report is provided as. "Excessively contaminated" soil (corrected organic vapor response of 640 parts per million) was identified in a soil sample collected 3 ft bls at the location of the closed sump on the northern side of the AST. A duplicate of this sample (SB-2) was analyzed by a fixed-base laboratory and total recoverable petroleum hydrocarbons (TRPH) were identified at a concentration of 23,600 milligrams per kilogram (mg/kg), exceeding FDEP's industrial SCTL of 2700 mg/kg. Other petroleum constituents, including benzene, toluene, ethylbenzene, and total xylenes (BTEX) and the three naphthalene compounds (naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene) were reported at concentrations exceeding leachability SCTLs based on groundwater criteria. The assessment completed by Earth Systems did not identify soil contamination outside of the sump area.

Benzene, ethylbenzene, total xylenes, and naphthalene were identified at concentrations exceeding FDEP GCTLs in a groundwater sample collected from a temporary monitoring installed near the sump.

Earth Systems documents the depth to groundwater during their investigation to be 3.5 ft bls.

1.9 PURPOSE OF CURRENT INVESTIGATION

The objective of the SA was to assess the extent and magnitude of soil and/or groundwater contamination at Site 413 resulting from past and/or current fuel usage 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 CAR summary sheet is provided as Appendix A.

2.0 SUBSURFACE INVESTIGATION METHODS

2.1 QUALITY ASSURANCE

The site investigation was conducted in general accordance with the FDEP-approved Standard Operating Procedures (SOPs) (DEP-001/92).

2.2 ASSESSMENT STRATEGY

Soil and groundwater quality was assessed at the site in two phases: a screening phase (Phase I) in which soil and groundwater grab samples were collected by DPT methods and analyzed by an on-site mobile laboratory and a second phase (Phase II) in which permanent monitoring wells were installed at optimum locations based upon Phase I analytical results. Soil samples were also collected based on the screening results and groundwater samples were collected from the wells of which both sample mediums were analyzed by a fixed-base laboratory for gasoline analytical group (GAG) and kerosene analytical group (KAG) constituents of concern (COCs) per Chapter 62-777, FAC.

2.3 DETERMINATION OF GROUNDWATER GRADIENT

Prior to the inception of the soil and groundwater assessment, four piezometers were installed such that when surveyed and groundwater elevation measurements taken, groundwater contours for the site could be calculated. The piezometers were completed approximately 3 ft into groundwater table on August 8, 2005 using a DPT rig. Based on the surveyed piezometers groundwater flow pattern, permanent wells were installed on January 11, 2006. The well locations were influenced by this preliminary piezometer flow data which determined the groundwater flow was to the northeast at 0.0026 feet per foot (ft/ft) gradient.

Permanent monitoring wells 1, 2, 3, 4, and 5, were surveyed by ARC Surveying of Jacksonville, FL, a Florida registered surveyor on March 31, 2006. The elevation of the northern side of the riser, top-of-casing, (TOC) was surveyed to the nearest 0.01 ft. Elevations above msl were established using the North American Datum 1983.

A TtNUS representative recorded depth to groundwater on January 20, 2006, and February 13, 2006. Groundwater elevation measurements were determined by subtracting the measured depth to groundwater for each well from its respective surveyed TOC elevation. Depth to groundwater measurements taken in January ranged from 3.68 to 4.39 ft bls, and February measurements ranged from 3.73 to 4.48 ft bls. Section 3.1.3 discusses the depths to groundwater measurements.

2.4 SOIL QUALITY ASSESSMENT

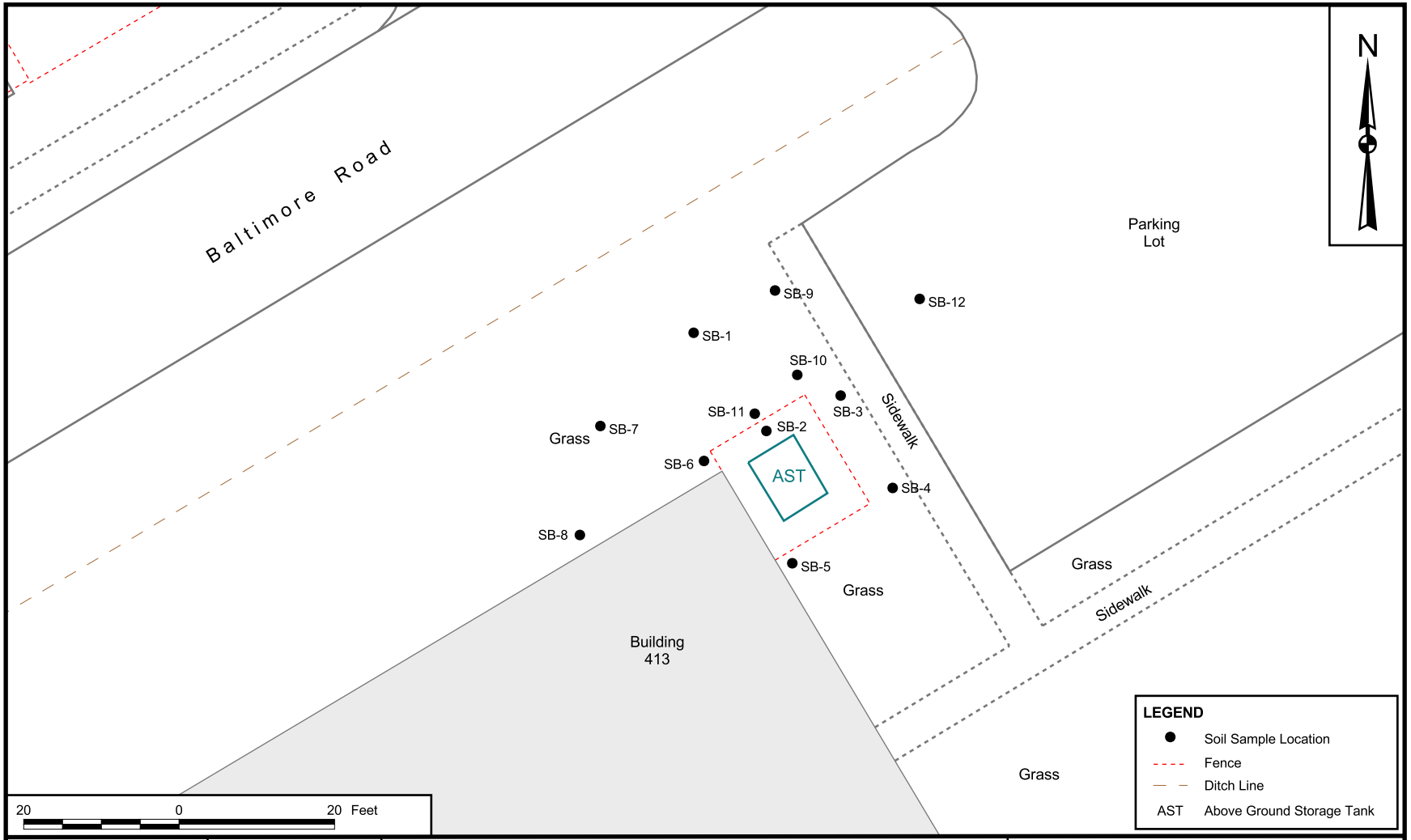
2.4.1 Soil Borings

Locations of 12 soil borings completed during the Phase I of the assessment are shown on Figure 2-1. Soil boring were advanced to a depth of 4 ft bls using an stainless steel, 3-inch inside diameter (ID) hand-auger assembly for the purpose of locating utilities and collecting soil screening samples. Soil boring SB-11 was subsequently advanced from 4 ft bls to 17 ft bls using a DPT (Geoprobe®) to establish a site lithologic profile. A 5-ft long, stainless steel macocore sampler lined with plastic sleeves was attached to the end of the DPT push rod. Continuous samples were collected with the macrocore tool from 4 to 17 ft bls where a homogeneous fine sand was observed. The DPT rig met refusal at 17 ft bls due to very fine tightly packed sands.

2.4.2 Field Screening Procedures

Twelve soil borings (SB-01 through SB-12) were completed at Site 413 during the Phase I assessment for the purpose of the soil quality assessment. Boring locations are shown on Figure 2-1. Soil samples were collected from each location at depths of 1 ft and 2 ft bls and screened for organic vapors using an Organic Vapor Analyzer (OVA) equipped with a Flame Ionization Detector (FID). 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 413 are discussed in Section 3.2.

The focus of the Phase I soil screening event was centered on the sump area located at the north central end of the AST where closure sampling indicated excessively contaminated soil. A slender unpaved area of soil was present between the cement slab, which the AST was built upon, and the security fence. Numerous attempts were made at collecting soil samples in this unpaved area of which only one was able to be completed to the desired depth of 2 ft bls due to underground obstructions causing boring advancement refusal. Soil collected from SB-02 at depths of 1 ft and 2 ft bls were screened using the OVA. It was observed from SB-02 that soils removed at depths of 3 ft and 4 ft bls were moist and contained petroleum odors. Due to the numerous attempts to collect a sample to depth, the soil in the sump area became mixed allowing for only one representative sample to depth (SB-02). Because of the churned soil, the second closest sample was collected at the closest location from just outside the fence (SB-11). SB-11 is approximately 3 ft from the sump area. Soil samples were collected for screening no deeper than 2 ft bls because the capillary region of the water table extended to 3 ft bls.



DRAWN BY C. SPEHAR	DATE 8/15/05	SOIL BORING LOCATIONS BUILDING 413 NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER CTO 00103
CHECKED BY D. SIEFKEN	DATE 5/18/06		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 2-1 / REV 0

P:\GIS\MAYPORT_NS\MAPDOCS\APR\BLDG413_1585.APR BLDG 413 SOIL SAMPLE 5/18/06 MKB (KOP)

Additional soil assessment of the site during Phase I operations, included collecting soil samples from 8 of the 12 borings (soil borings 1-8). These samples were analyzed at a mobile laboratory for BTEX, methyl tertiary-butyl ether (MTBE), naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. All collected samples were above the capillary region and therefore obtained from 1 ft and 2 ft bls.

2.4.3 Soil Sampling Strategy for Fixed-Base Laboratory Analysis

2.4.3.1 Fixed-Base Laboratory

Based on the initial assessment (Phase I), two soil samples were submitted to Environmental Conservation Laboratories, Inc. (ENCO) of Jacksonville, Florida, a fixed-base laboratory, for analysis of GAG/KAG constituents, which include volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and TRPH. Soil samples submitted for fixed-base laboratory analysis are typically based on field screening results, although for this site the screening results were all equal to background levels. The basis for the sample collection was then determined on possible location of a surface release and the information provided in the Closure Report. Soil in the area of SB-2, was collected from the sump at a similar location as the sample collected by Earth Systems. Soils in the area of the sump were mixed due to repeated refusal attempts to get to depth and, therefore, a duplicate sample collected for the purpose of fixed-base laboratory analysis of SB-2 was unattainable. The second closest sample location to the sump became SB-11, which is located approximately 3 ft north of the sump area. The second sample SB-03 was collected from the area where mobile laboratory groundwater impacts were present. Since there was no high, medium, and low screened sample reading using the OVA and no visible evidence of a release, only two soil samples were collected.

2.5 GROUNDWATER ASSESSMENT METHODS

2.5.1 DPT Grab Samples (Phase I)

The primary purpose of the DPT investigation (August 8, 2005) was to collect groundwater grab samples from the upper 4 ft of the saturated zone and, in conjunction with quick turnaround of mobile laboratory analyses, estimate the lateral and vertical extent of contamination in the shallow surficial aquifer, if present. Grab samples were collected by DPT (GeoProbe®) from the approximate depth interval 4 ft to 8 ft bls at 11 of the 12 boring locations. For soil boring SB-02, a hand auger completed the boring approximately 2 ft into the groundwater. The hand auger was used in place of the probe due to the limited area between the AST and fence. All groundwater samples were collected using a detachable drive tip attached to a 48-inch, retractable stainless steel well screen encased in the lead drive casing. After the water sampler was advanced into the designated zone, the casing was withdrawn 48 inches to allow influx of groundwater to the retractable screen. For groundwater recovery, 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 and immediately submitted to the on-site mobile laboratory for analysis of BTEX, MTBE, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.

2.5.2 Permanent Monitoring Wells (Phase II)

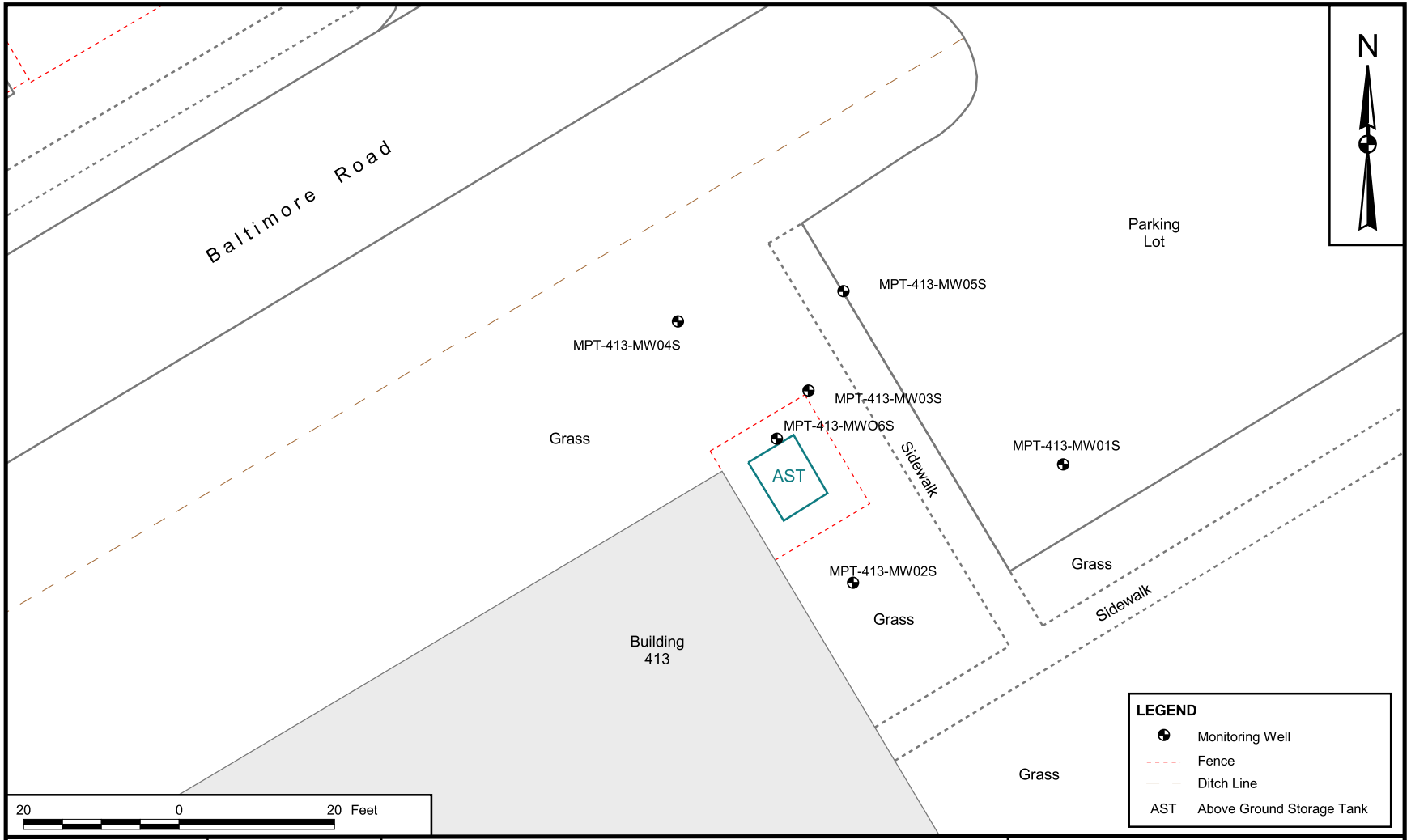
Six permanent monitoring wells [MPT-413-MW-01S (MW-01S), MW-02S, MW-03S, MW-04S, MW-05S and MW-06S] were installed at the site on January 11, 2006 and August 4, 2006 by Partridge Well Drilling, Inc. of Jacksonville, Florida under TtNUS supervision. All wells are shallow monitoring wells with 10-ft screened sections intersecting the water table. Monitoring well locations are shown on Figure 2-2. Well locations were selected based upon analytical results and groundwater flow data generated from piezometers installed during Phase I. The general positions of the new wells relative to the potential source area(s) of contamination are as follows: MW-06S source area well; MW-01S and MW-02S up gradient; and MW-03S, MW-04S, and MW-05S down gradient.

2.5.2.1 Drilling Method

The six monitoring wells were installed by Partridge Well Drilling of Jacksonville, Florida under the supervision of a TtNUS representative. At six of the monitoring well locations, a posthole digger was used to excavate boreholes from ground surface to a depth of 5 ft bls to verify absence of subsurface utilities. For five of the six wells, boreholes were advanced using 4¼-inch ID hollow stem augers (HSAs) attached to a truck-mounted drill rig. The sixth well was installed using a DPT drill rig. Soil boring logs for wells MW-01S through MW-05S, descriptions of cuttings generated during drilling are provided in Appendix C. No drill cuttings were generated using the DPT drill rig.

2.5.2.2 Construction and Development

Boreholes for shallow wells MW-01S through MW-05S were advanced to total depths ranging from 12.50 to 13.50 ft bls. Monitoring wells constructed of 2-inch diameter, 0.010-inch mill slotted schedule (SCH) 40 polyvinyl chloride (PVC) screen attached to a suitable length of solid riser (flush threaded) were inserted through the drilling rods after attaining total depth. All shallow wells were constructed with 10-ft screens. Graded 20/30 silica sand was poured from the surface between the PVC well and HSAs as the augers were being removed from the borehole to create a filter pack in the annular space between borehole and screened section of the monitoring well. During construction of the shallow wells, the filter pack was poured into the annular space to a depth approximately 1 ft above the top of the screen and was capped by approximately 0.5 ft 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.



DRAWN BY C. SPEHAR	DATE 8/15/05	MONITORING WELL LOCATIONS BUILDING 413 NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER CTO 00103
CHECKED BY D. SIEFKEN	DATE 9/28/06		APPROVED BY / DATE
COST/SCHEDULE-AREA			APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 2-2 / REV 0

P:\GIS\MAYPORT_NS\MAPDOCS\APR\BLDG413_1585.APR BLDG 413 MONITORING WELL 9/28/06 SS

Monitoring well MW-06S was installed using 10 ft of 1-inch diameter, 0.010-inch mill slotted SCH 40 PVC screen attached to a suitable length of solid riser (flush threaded) were inserted through the rods after attaining a total depth of 13 ft. A pre-packed filter was fitted on the well using 20/30 sands and 0.5 ft of 30/65 sands sealed the well with Type I Portland cement filling the annular space to almost land surface.

Each well was completed at the surface with an 8-inch diameter steel manhole equipped with a boltdown cover. Manholes were secured in place with concrete pads 2 ft square and 6 inches thick. A locking, expansible gasket cap was inserted at the top of the PVC casing after well installation. A schematic diagram showing details of well construction (shallow and deep) is provided as Figure 2-3. Construction diagrams for the individual wells are provided in Appendix D.

Piezometers were installed to an approximate depth of 6 ft bls. Each piezometer was constructed with 1.25-inch diameter, 0.010-inch mill slotted SCH 40 PVC screen that was attached to a suitable length of riser. The piezometers were installed using direct push technology. The annular space was filled with 20/30 filter sand to land surface.

Wells were developed a by Partridge Well Drilling, Inc. representative using a submersible Whale pump. Wells were developed until water became virtually clear. All development water was containerized for disposal in 55-gallon steel drums.

2.5.2.3 Groundwater Sampling

Groundwater samples were collected from the five newly-installed shallow monitoring wells on January 17, 2006 and August 9, 2006. Groundwater sampling was conducted in general accordance with SOPs adopted by FDEP in 2002. A minimum one well volume was pumped from each shallow well (partially submerged screen) using a peristaltic pump and the low flow quiescent purging method. After purging of these initial quantities, purging was continued and field parameters pH, specific conductance, dissolved oxygen, temperature, and oxidation/reduction potential were measured periodically (minimum 3-minute intervals) using a YSI 556 instrument. Turbidity was measured using LaMotte 2020 turbidimeter. Purging was considered complete when three consecutive measurements were within the following limits:

- Temperature $\pm$ 0.2 degrees Celsius (^{o}C)
- pH $\pm$ 0.2 Standard Units
- Specific conductivity $\pm$ 5 percent of previous reading(s)
- Dissolved oxygen not greater than 20 percent of saturation at field measured temperature
- Turbidity less than or equal to 20 Nephelometric Units.

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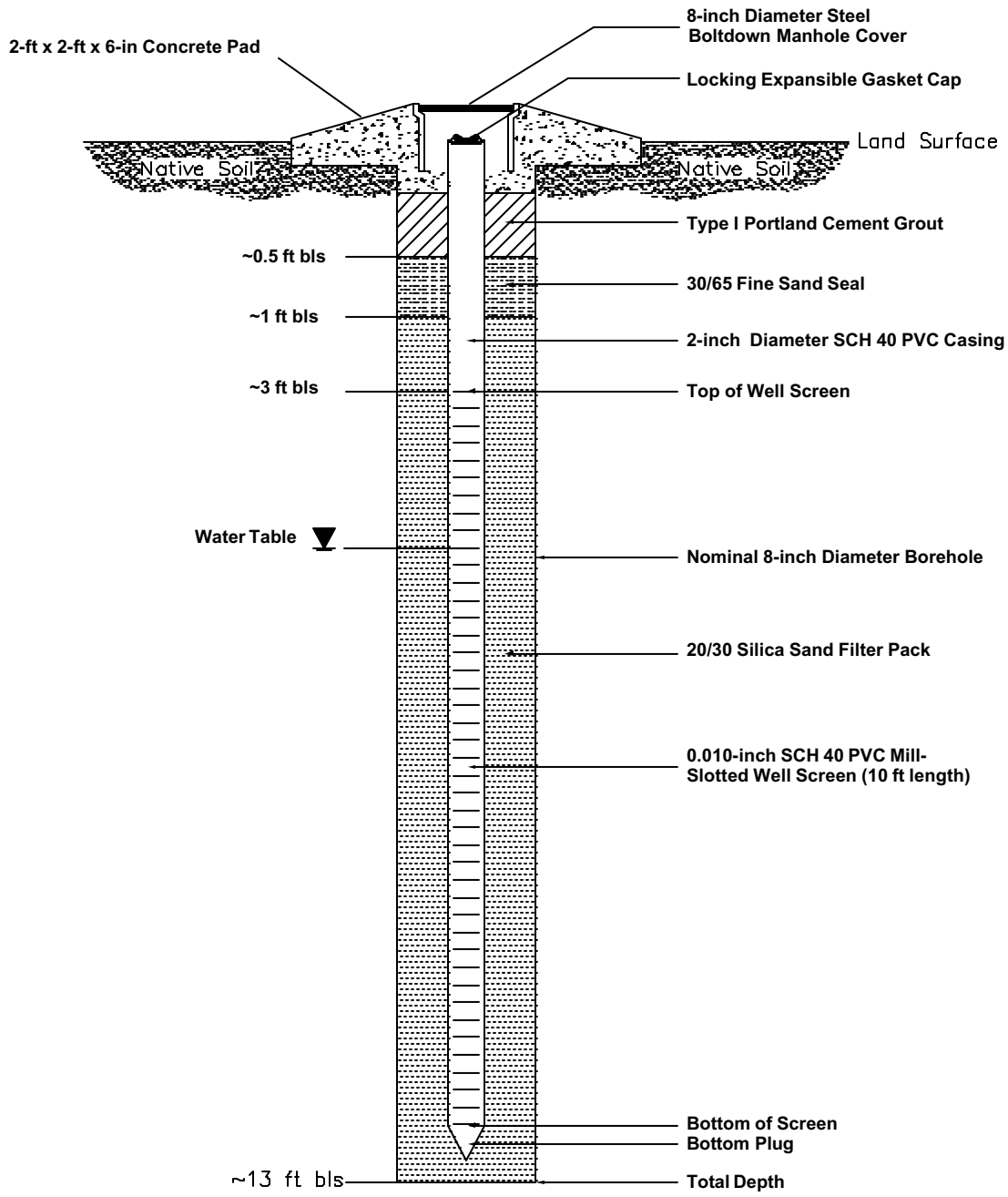

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Groundwater sampling logs and low flow purge sheets compiled during purging and sampling of the six wells are provided in Appendix E.

After collection, samples were immediately placed on ice and delivered to ENCO Laboratory in Jacksonville, Florida the following morning under proper chain-of-custody and preservation (4 ^{o}C) protocol. Samples were analyzed for VOCs using United States Environmental Protection Agency (USEPA) Method 8260, PAHs using USEPA Method 8270, ethylene dibromide using USEPA Method 504.1, lead using USEPA Method 200.7, and TRPH using Florida Petroleum Range Organics (FL-PRO).

3.0 RESULTS OF INVESTIGATION

3.1 SITE GEOLOGY AND HYDROGEOLOGY

3.1.1 Lithology

The most resolute description of material underlying Site 413 was obtained during retrieval of soil during well installation on August 15, 2003. Soil cuttings generated during excavation of monitoring well boreholes by HSAs were also described by TtNUS' on-site scientist. Soil borings logs containing these lithologic descriptions are provided in Appendix C.

3.1.2 Groundwater Flow Direction

As discussed in Section 2.3, the direction of groundwater flow in the surficial aquifer underlying the site was estimated to be northeasterly. This preliminary indication of groundwater flow direction using data from temporary piezometers was one of the criteria used in selecting permanent monitoring well locations. After installation of the permanent monitoring wells, direction of groundwater flow was determined using the wells as control points in the same fashion that the piezometers were used in the preliminary determination.

Surveyed TOC elevations of the permanent monitoring wells were subtracted from depth-to-water measurements obtained on January 20, 2006, and February 13, 2006. The depth to water table elevation values for these two sets of measurements are presented in Table 3-1 and equipotent contour lines have been added to depict groundwater flow direction in Figures 3-1 and Figure 3-2, respectively. The groundwater flow during the January measurements is north, while the February measurements depicted northwestern flow direction, while the piezometers data established a northeastern flow pattern. This effect is caused by the tidal influences associated with the nearby Atlantic Ocean. Historical regional groundwater flow patters for a nearby site Building 351 (across the street to the north) is towards the St. Johns River (TtNUS, 2004).

3.1.3 Aquifer Classification and Characteristics

The State of Florida classifies the surficial aquifer underlying the site as G-II. Previous USGS aquifer test data indicate that the average hydraulic conductivity of the surficial aquifer is approximately 4.34 ft per day (ft/day) (TtNUS, 2001).

Table 3-1
Water Table Elevation Data

Site Assessment Report, Site 413
Naval Station Mayport
Mayport, Florida

Well ID Number MPT-413-	Total Well Depth (ft)	TOC Elevation (ft msl)	January 20, 2006		February 13, 2006	
			Depth to Water Below TOC (ft)	Water Table Elevation (ft msl)	Depth to Water Below TOC (ft)	Water Table Elevation (ft msl)
MW-1	12.0	6.68	3.79	2.89	3.90	2.78
MW-2	13.0	7.20	4.30	2.90	4.40	2.80
MW-3	13.0	7.26	4.39	2.87	4.48	2.78
MW-4	13.0	6.64	3.82	2.82	3.91	2.73
MW-5	12.0	6.50	3.69	2.81	3.73	3.77
MW-6	13.0	NM	NM	NM	NM	NM

NM = not measured

The horizontal groundwater (hydraulic) gradient across the site was evaluated from water level data listed in Table 3-1 and shown on Figures 3-1 and 3-2. As these data and figures indicate, the hydraulic gradient at the site is subject to hydraulic gradient reversal due to the site's position on a narrow peninsula roughly equidistant between two water bodies (St. Johns River and Atlantic Ocean). The average horizontal hydraulic gradient beneath the site, calculated from potentiometric contours depicted on Figures 3-1 and 3-2, was determined to be 0.0026 ft/ft.

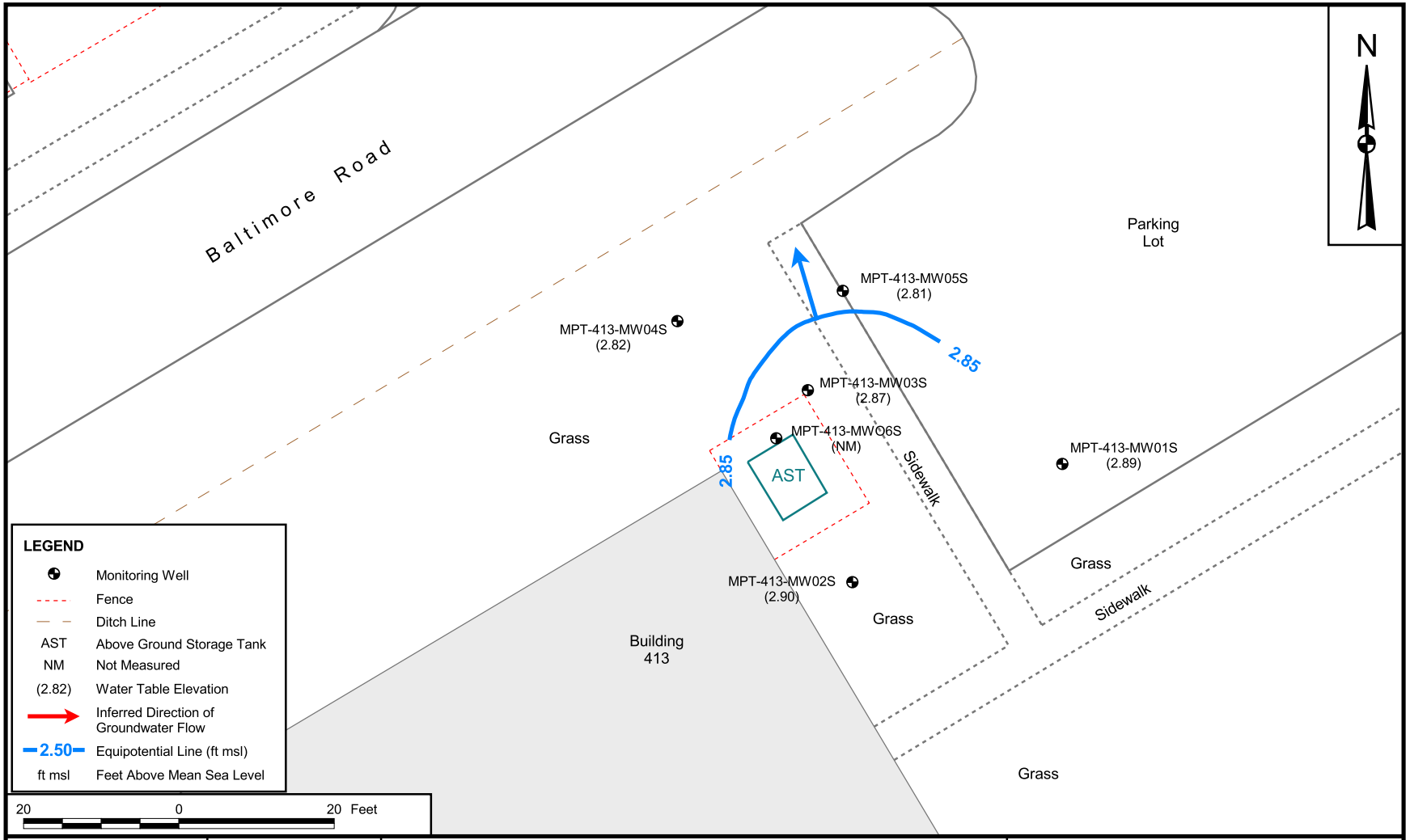
Based on information provided by Driscoll (Driscoll, 1986) and on lithologic descriptions of material encountered during the current investigation, the effective porosity of surficial aquifer sediments was estimated to be 0.30.

Using Darcy's Law, the groundwater velocity at the site was calculated.

Darcy's Law may be expressed as follows:

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

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



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CHECKED BY: D. SIEFKEN	DATE: 9/28/06		APPROVED BY: — DATE: —
COST/SCHEDULE-AREA			APPROVED BY: — DATE: —
SCALE: AS NOTED			DRAWING NO.: FIGURE 3-1 REV: 0

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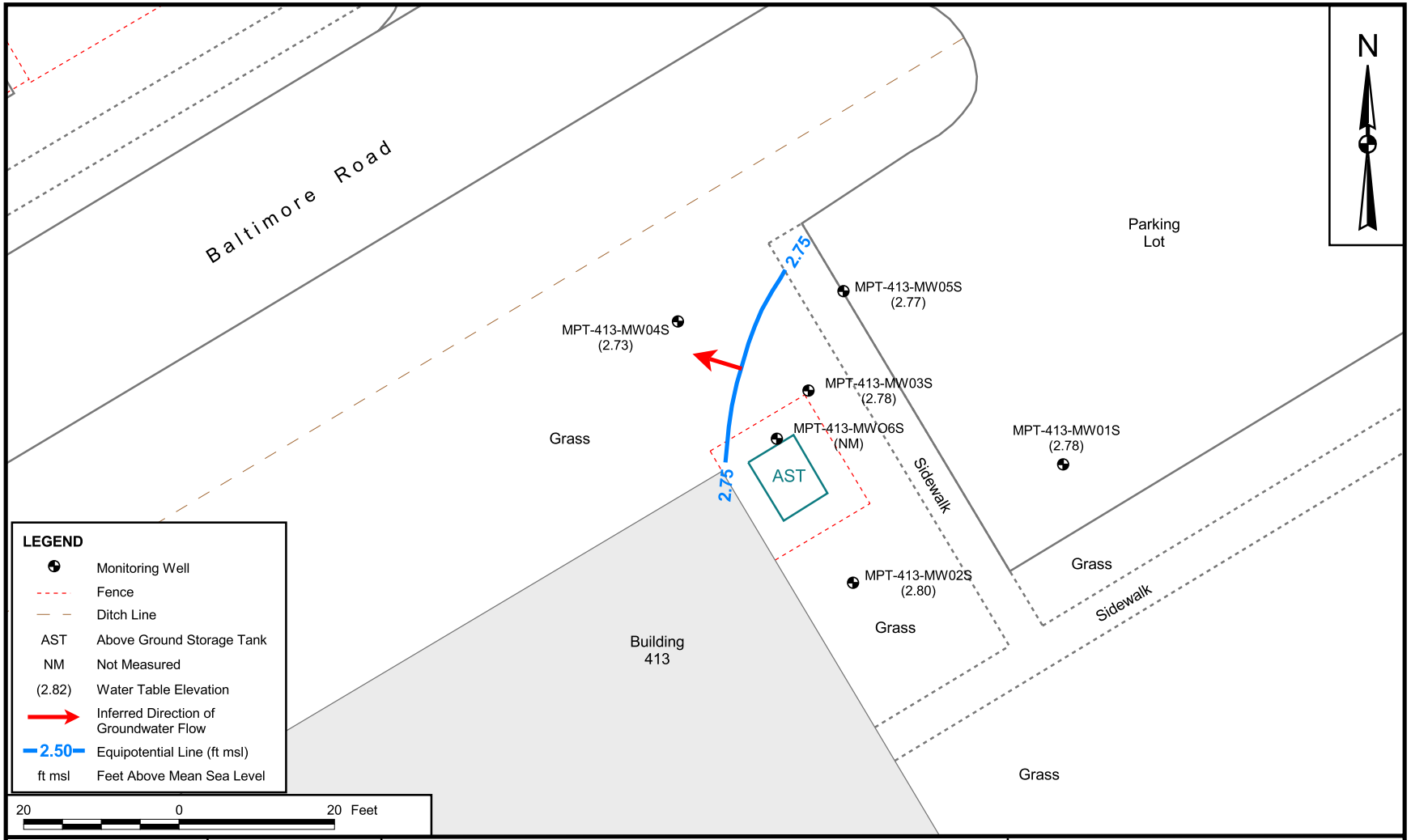

DRAWN BY: K. PEILA	DATE: 4/12/06	GROUNDWATER ELEVATION CONTOUR FEBRUARY 13, 2006 BUILDING 413 NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER: CTO 00103
CHECKED BY: D. SIEFKEN	DATE: 9/28/06		APPROVED BY: — DATE: —
COST/SCHEDULE-AREA			APPROVED BY: — DATE: —
SCALE: AS NOTED			DRAWING NO.: FIGURE 3-2 REV: 0

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Using a hydraulic conductivity of 4.34 ft/day, a hydraulic gradient of 0.0026 ft/ft, an inferred effective porosity value of 0.30, and Darcy's law, the groundwater seepage velocity across the site was calculated at 0.0376 ft/day or 13.724 ft per year. However, the reversal in flow direction with tidal influences likely results in a lower velocity.

3.2 SOIL SCREENING RESULTS

Soil vapor screening methods and sampling locations for headspace analyses are discussed in Section 2.4.1. Twenty-four samples were screened for organic vapors, 2 from each of the 12 borings. None of the samples produced an instrument response greater than background concentrations. The screening locations can be viewed on the Soil Boring Locations figure (see Figure 2-1).

3.3 SOIL SAMPLE ANALYTICAL RESULTS

3.3.1 Mobile Laboratory

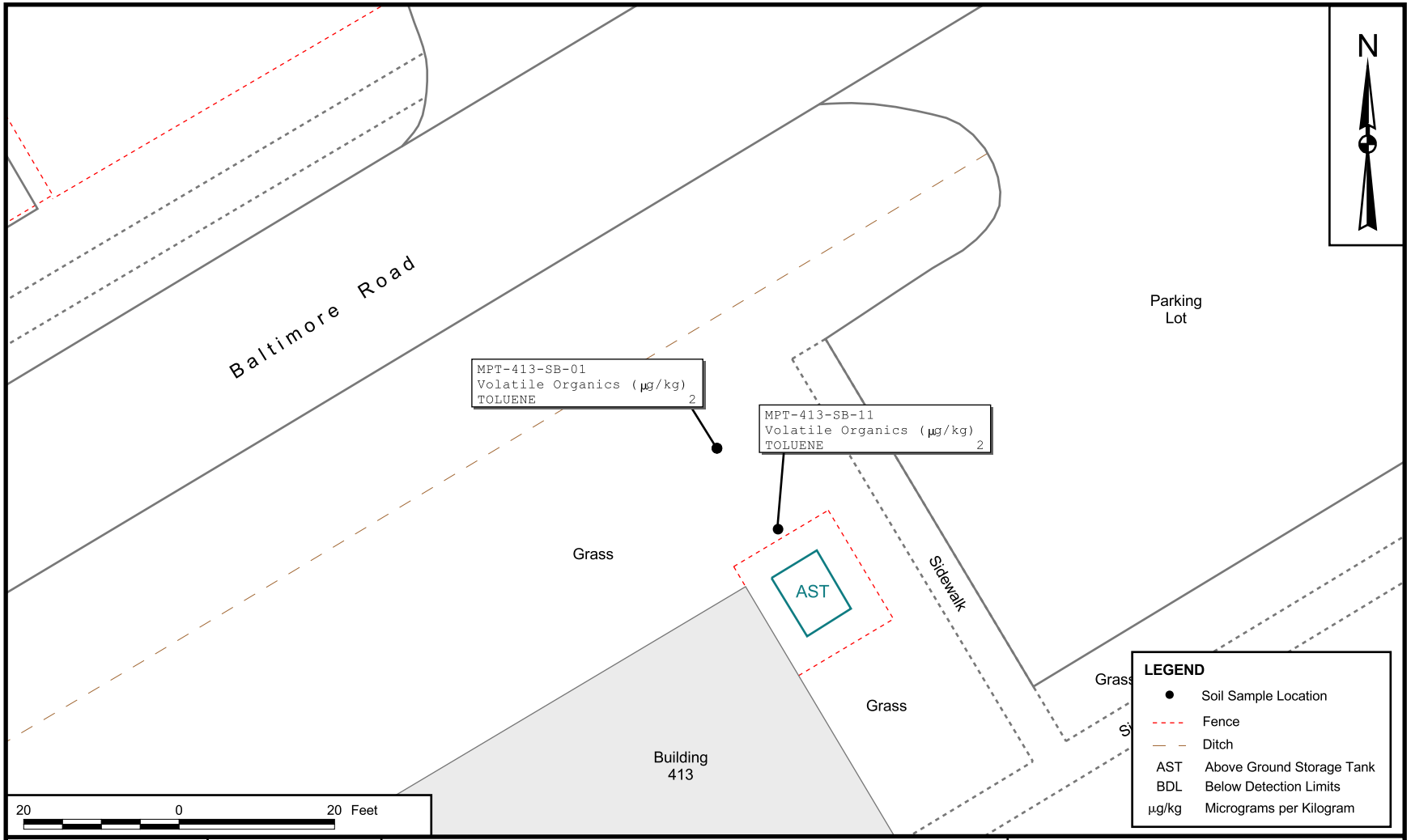
No targeted constituent was detected in the eight soil samples analyzed by the mobile laboratory. Detection limits were 0.01 mg/kg for BTEX and 0.05 mg/kg for MTBE and the three naphthalene compounds. A copy of KB Laboratories' analytical report is provided in Appendix F, and Figure 2-1 depicts the corresponding soil sample locations of the collected soil samples numbers 1-8.

3.3.2 Fixed-Base Laboratory

Soil samples submitted to ENCO for GAG/KAG analysis were SB-011 (2 ft) and SB-01 (2 ft). Detected concentrations reported by the laboratory are listed in Table 3-2. Toluene was reported at 2 parts per billion in both soil samples which is just above the lab detection limits as shown on Figure 3-3. The laboratory report submitted by ENCO is provided as Appendix G. No other detections were recorded.

Table 3-2
Compounds Detected in Soil Samples by Fixed-Base Laboratory
Site Assessment Report, Site 413
Naval Station Mayport
Mayport, Florida

Compound	FDEP SCTL (mg/kg)			Sample ID and Sample Interval	
				SB-03	SB-11
	Residential	Industrial	Leachability	2 ft	2 ft
VOCs (USEPA Method 8260B) (mg/kg)					
Toluene	380	2600	0.5	0.002	0.002



DRAWN BY K. PEILA	DATE 3/28/06	FIXED-BASE LABORATORY SOIL ANALYTICAL RESULTS BUILDING 413 NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER CTO 00103
CHECKED BY D. SIEFKEN	DATE 5/18/06		APPROVED BY — DATE —
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3.4 GROUNDWATER ANALYTICAL RESULTS

3.4.1 Mobile Laboratory

Detected concentrations of COCs reported by the mobile laboratory are listed on Table 3-3 and illustrated on Figure 3-4. The largest number of detections and GCTL exceedances were reported in the sample collected from SB-02 on the northern side of the AST near the former sump location where Earth Systems had reported contamination in their closure report (Earth Systems, 2004). In this sample, concentrations exceeding GCTLs were reported for benzene [4.5 micrograms per liter (µg/L)], total xylenes (39.4 µg/L), naphthalene (34.2 µg/L), and 2-methylnaphthalene (31.9 µg/L). Values slightly exceeding GCTLs were reported for the three naphthalene compounds in samples collected from SB-03, located approximately 15 ft east of SB-02. As shown on Figure 3-4, detections were reported in five other samples analyzed; however, exceedances were only reported in samples from SB-02 and -03. During Phase I of the field operations, an attempt was made to reach depths near 40 ft bls, but refusal was met at 17 ft bls. One sample collected from SB-11 was collected from 17ft bls to assess vertical extent. Analytical results for the vertical extent sample (SB-11) were equal to laboratory detection limits for VOCs for both the mobile laboratory and fixed-base laboratory. The analytical report submitted by KB Laboratories is included in Appendix F.

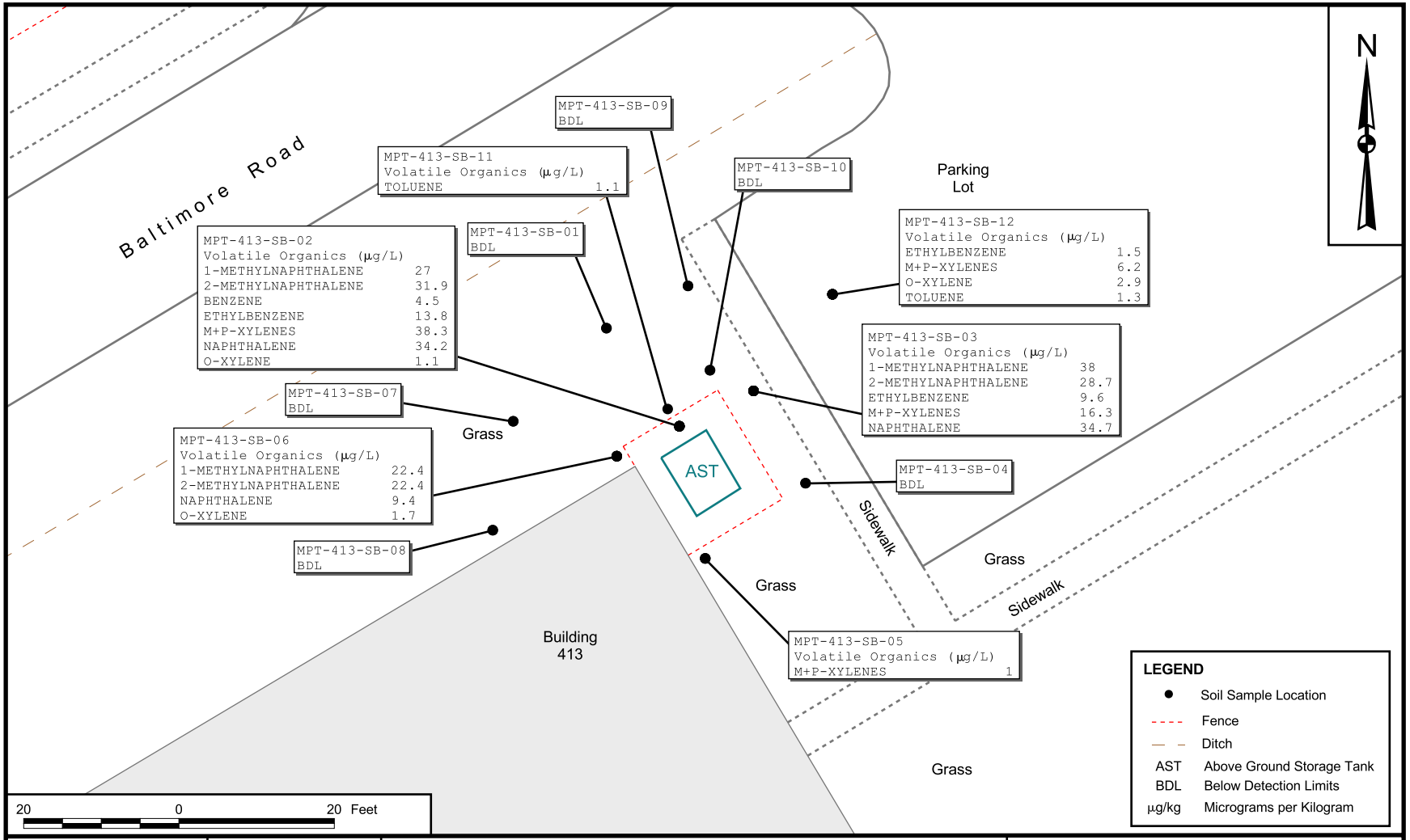
Table 3-3
Compounds Detected in Groundwater Samples by Mobile Laboratory

Site Assessment Report, Site 413
Naval Station Mayport
Mayport, Florida

Compound	GCTL (µg/L)	Sample ID and Sample Date					
		SB-01	SB-02	SB-03	SB-04	SB-05	SB-06
		8/08/05	8/08/05	8/08/05	8/08/05	8/08/05	8/08/05
VOCs, USEPA Method 8260B (µg/L)							
Benzene	1	<1.0	**4.5**	<1.0	<1.0	<1.0	<1.0
Toluene	40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	30	<1.0	13.8	9.6	<1.0	<1.0	<1.0
Total Xylenes	20	<1.0	**39.4**	16.3	<1.0	1.0	1.7
Naphthalene	14	<5.0	**34.2**	**34.7**	<50	<50	9.4
1-Methylnaphthalene	28	<5.0	27.0	**38.0**	<5.0	<5.0	22.4
2-Methylnaphthalene	28	<5.0	**31.9**	**28.7**	<5.0	<5.0	22.4

Compound	GCTL (µg/L)	Sample ID and Sample Date					
		SB-07	SB-08	SB-09	SB-10	SB-11	SB-12
		8/08/05	8/08/05	8/08/05	8/08/05	8/08/05	8/09/05
VOCs, USEPA Method 8260B (µg/L)							
Benzene	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	40	<1.0	<1.0	<1.0	<1.0	1.1	1.3
Ethylbenzene	30	<1.0	<1.0	<1.0	<1.0	<1.0	1.5
Total Xylenes	20	<1.0	<1.0	<1.0	<1.0	<1.0	9.1
Naphthalene	14	<5.0	<5.0	<5.0	<5.0	<50	<5.0
1-Methylnaphthalene	28	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Methylnaphthalene	28	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Note: Bold exceeds Chapter 62-770, FAC, GCTLs.



DRAWN BY K. PEILA	DATE 3/28/06	MOBILE LABORATORY GROUNDWATER ANALYTICAL RESULTS BUILDING 413 NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER CTO 00103
CHECKED BY D. SIEFKEN	DATE 3/28/06		APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 3-4 REV 0

P:\GIS\MAYPORT_NS\MAPDOCS\APR\BLDG413_1585.APR BLDG 413 GWMOB_TAGS 5/18/06 MKB (KOP)

3.4.2 Fixed-Base Laboratory

TtNUS personnel collected groundwater samples from the permanent monitoring wells at Site 413 on January 17, 2006 and August 9, 2006. The six newly-installed wells (MW-01S, MW-02S, MW-03S, MW-04S, MW-05S, and MW-06S) were sampled and submitted to ENCO for analysis of GAG/KAG constituents. The fixed-base sample results did demonstrate the presence of petroleum impacts in monitoring well MW-03S, MW-05S, and MW06S but at trace levels well below the GCTL, unlike the numbers from the mobile laboratory. The well with the most constituents identified was MW-06S located next to the sump.

The ENCO results for groundwater samples collected from MW-06S and MW-03S did not coincide with the mobile laboratory data that reported exceedances of the GCTLs for VOCs and PAHs in samples collected from SB-02, and SB-03 (see Table 3-3). Soil boring SB-02 and MW-06S were completed within 2 ft of the other while soil boring SB-03 is in the same location as MW-03S

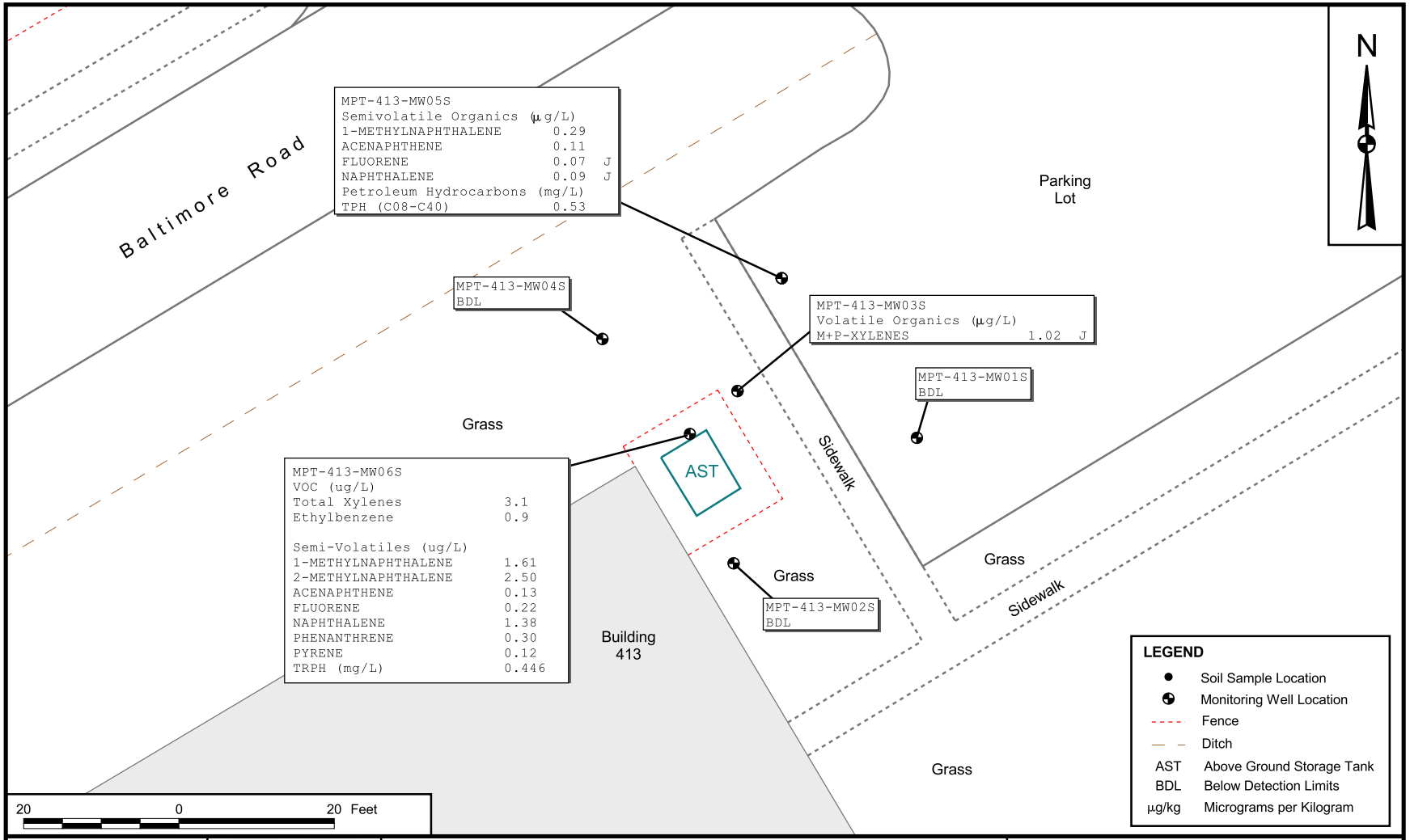
A summary of detected compounds in samples collected from the permanent monitoring wells is presented in Table 3-4 and illustrated on Figure 3-5. Validated laboratory reports are provided in Appendix G.

Table 3-4
Compounds Detected in Groundwater Samples by Fixed-Base Laboratory

Site Assessment Report, Site 413
Naval Station Mayport
Mayport, Florida

Compound	GCTL (µg/L)	Sample ID (MPT-413-) and Sample Date						
		MW01S	MW02S	MW03S	MW04S	MW05S	MW-06S	SB-11
		01/17/06	01/17/06	01/17/06	01/17/06	01/17/06	8/9/06	8/8/2005
VOCs, USEPA Method 8260B (µg/L								
Ethylbenzene		0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.9	1U
m+p-Xylenes	20	0.3 U	0.3 U	1.02 J	0.3 U	0.3 U	3.1	2 U
PAHs, USEPA Method 8270 (µg/L)								
1-Methylnaphthalene	28	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	1.16	NM
2-Methylnaphthalene	28	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	2.50	NM
Acenaphthene	20	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.13	NM
Fluorene	280	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.22	NM
Naphthalene	14	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	1.38	NM
Phenanthrene	210	0.02U	0.02 U	0.02 U	0.02 U	0.02 U	0.30	NM
Pyrene	210	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.12	NM
FL-PRO (mg/L)								
TRPH (C08-C40)	5	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.446	NM

Notes:
NM = not measured mg/L = milligrams per liter
Groundwater collected from SB-11 (17 ft bls) was a split sample with the mobile laboratory.



DRAWN BY: K. PEILA	DATE: 3/28/06	FIXED-BASE LABORATORY GROUNDWATER ANALYTICAL RESULTS BUILDING 413 NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER: CTO 00103
CHECKED BY: D. SIEFKEN	DATE: 9/28/06		APPROVED BY: — DATE: —
COST/SCHEDULE-AREA			APPROVED BY: — DATE: —
SCALE: AS NOTED			DRAWING NO.: FIGURE 3-5 REV: 0

P:\GIS\MAYPORT_NS\MAPDOCS\APR\BLDG413_1585.APR BLDG 413 GWFIXED_TAGS 9/28/06 SS

4.0 DISCUSSION

In April 2001, closure activities for the underground piping and sump associated with AST N413 were completed. The sump was closed in place, and the piping was removed. New piping to service the AST is attached to the building wall. In July 2004, Earth Systems performed a closure assessment for the underground piping and sump associated with the AST. "Excessively contaminated" soil was identified in a soil sample collected 3 ft bls at the location of the closed sump on the northern side of the AST. A duplicate of this sample was analyzed by a fixed-base laboratory. TRPH, BTEX, and the three naphthalene compounds (naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene) were reported at concentrations exceeding SCTLs based on soil leachability criteria. No soil contamination outside of the sump area was recorded. Earth Systems documents the depth to groundwater during their investigation being 3.5 ft bls.

Based on the Earth Systems limited assessment, groundwater impacts were also only detected near the sump area. Constituents of benzene, ethylbenzene, total xylenes, and naphthalene were identified at concentrations exceeding FDEP GCTLs in a groundwater sample collected from a temporary monitoring installed near the sump.

Approximately 2 years later, TtNUS was tasked with completing an assessment of the same area. The assessment of the soil and groundwater surrounding the AST was the focus by both TtNUS and Earth Systems. Although similar sample locations were selected, there was limited similarity in the findings. The disjunction of the soil sample results between the Earth Systems and TtNUS assessments rests in the determination of groundwater hydrology. For soil vapor measurements, TtNUS did not screen below 2 ft bls, while Earth Systems recorded "excessively contaminated" soils only at 3 ft bls. TtNUS field personnel did identify an area approximately 3 ft bls near the sump (SB-02) which did contain petroleum odors in the soil. This soil appeared damp and, therefore, was not collected for field screening. The soil samples were not collected for screening below 2 ft bls because the samples were to be collected from above the capillary region. Heavy rain events can easily temporarily raise the capillary region of the water table a foot or more creating a broader smear zone. TtNUS personnel screened soils down to 2 ft bls, which did not elicit an instrument response.

Groundwater sample results were collected in the region of the former sump from the following three sources: a temporary well (Earth Systems), a DPT groundwater sampler, and monitoring well MW-06S (TtNUS). During Phase 1 of the TtNUS assessment groundwater samples collected from the DPT groundwater sampler were sent to an on-site mobile laboratory for analysis. In both cases, similarities were present with exceedances in VOCs and PAHs. Exceedances during the TtNUS assessment were recorded in boring numbers SB-02 and SB-03 which are approximately 15 ft apart. Soil boring SB-02 is

located within a few feet of the sump while SB-03 is located approximately 15 ft to the east. Both groundwater analytical results collected from SB-02 and SB-03 and analyzed by a mobile lab were similar in concentration and most constituents. To assess this potential release, Phase II of the assessment began with the installation of monitoring wells. Six monitoring wells were installed with monitoring wells MW-01S, MW-02S, MW-04S, MW-05S, and MW-06S located in positions surrounding the AST, and monitoring well MW-06S was installed in the source area near the sump. Groundwater samples were collected for analyses of GAG/KAG constituents at a fixed-base laboratory. Based on these groundwater analytical results, minimal petroleum impacts (VOC, PAH, and TRPH) are present, but below GCTL values.

Based on findings no vadose soil impacts are present. The presence of petroleum was found in the groundwater at levels below GCTLs.

5.0 SUMMARY

A SA was performed at Site 413, NAVSTA Mayport, in which soil samples were screened with an OVA-FID for organic vapor content, and soil and groundwater samples were analyzed by mobile and fixed-base laboratories for GAG and KAG constituents. The investigation was centered on a former sump area which was located on the northern side of AST N413.

Prior to soil and groundwater assessment activities, four piezometers were installed. Based on the groundwater flow determination from these piezometers, five permanent monitoring wells were installed. Based on the wells and historical documentation, groundwater flow is to the north towards the St. Johns River, but is heavily influenced by tidal fluctuations.

Twelve soil borings were advanced by DPT in and around the sump area during the preliminary phase of the assessment evaluation of soil and groundwater quality, and five permanent monitoring wells were installed and sampled during a follow-up phase. The water table was encountered at approximately 4 ft bls, and soil samples were collected a the 1ft and 2 ft intervals above the water table. Collected soil samples were screened with an OVA-FID and had no “excessively contaminated soil” per Chapter 62-770, FAC, since no sample was recorded above background levels.

Eight of the 12 soil samples were analyzed by the mobile laboratory. None of the petroleum constituents targeted were reported a concentrations equal to or exceeding regulatory criteria.

Concentrations exceeding GCTLs were reported in 2 of 12 groundwater grab samples (SB-02 and SB-03) analyzed by the mobile laboratory during DPT assessment. Groundwater sample collected from soil borings SB-02 concentrations exceeding GCTLs were reported for benzene (4.5 µg/L), total xylenes (39.4 µg/L), naphthalene (34.2 µg/L), and 2-methylnaphthalene (31.9 µg/L). Similar values slightly exceeding GCTLs were reported for the three naphthalene compounds in samples collected from TMW-03, located approximately 15 ft east of TMW-02. Both of these samples were collected in the area of the former sump with TWM-02 being located at the former sump.

No exceedances were reported by the fixed-base laboratory in groundwater samples collected from 5 permanent monitoring wells. Monitoring well MW-03S is located between soil boring SB-02 (source area) and SB-03 where both mobile laboratory groundwater samples recorded exceedances to the GCTLs.

Based on the findings of the assessment, petroleum impacts are not present in the soil but are present in the groundwater at concentrations below GCTLs.

6.0 RECOMMENDATIONS

Due to the lack of impact to soils and groundwater above FDEP criteria, TtNUS recommends No Further Action for Site 413.

REFERENCES

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

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EEG, 1997. Tank Closure Report. August.

FDEP (Florida Department of Environmental Protection), Standard Operating Procedure DEP-001/92.

FDEP, 1999. Chapter 62-770, FAC, Petroleum Contamination Cleanup Criteria

FDEP, 1999. Chapter 62-777, FAC, Contaminant Cleanup Target Levels.

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.

TtNUS (Tetra Tech NUS, Inc.), 2001 *Site Assessment Report for Building 351*. Prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina. January.

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USEPA (United States Environmental Protection Agency), 1997. *Standard Operating Procedures*.

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APPENDIX A

CONTAMINATION ASSESSMENT REPORT (CAR) SUMMARY SHEET

CONTAMINATION ASSESSMENT REPORT SUMMARY SHEET

Facility Name: Site 413 Reimbursement Site: ☐

Location: NS Mayport , Mayport, FL State Contract Site: ☐

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

Date Reviewed: _____ Local Government: _____

(1) Source of Spill: Break in piping system of AST Date of Spill: Unknown

(2) Type of Product:

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

(3) Description of IRA: none
Line break.

☐ Free product Removal: _____ (gals)
☐ Soil Removal: _____ (cubic yds)
☐ Soil Incineration: _____ (cubic yds)

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

(5) Maximum Groundwater contamination levels (ppb): Total VOA: 0.40 µg.L benzene: BDL EDB: BDL lead: BDL MTBE: BDL other: _____

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

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

Highest current soil concentration (OVA: 0 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: 1/17/06 Date of last soil sampling: 8/12/05

(10) QAPP approved? (yes/no) Date: NA

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

(12) Average depth to groundwater: 4.0 (ft)

(13) Observed range of seasonal groundwater fluctuations: 0.1 ft (ft) (Based on water level data collected during the CAR investigation)

(14) Estimated rate of groundwater flow: 0.0376 (ft/day)

(15) Hydraulic gradient across site: 0.0026 (ft/ft)

(16) Aquifer characteristics:

	Values	Units	Method
Hydraulic conductivity	4.34	ft/day	Kasenow & Pare, 1995
Storage coefficient	-	ft/ft	-
Aquifer thickness		ft	Literature
Effective soil porosity	0.30	%	Literature
Transmissivity		gal/day/ft	Specific Capacity Tests

(17) Other remarks: None

APPENDIX B

TANK CLOSURE REPORT

CLOSURE ASSESSMENT REPORT
Naval Station Building 413
Naval Station Mayport, Florida

August 2004

Prepared For:

Jim Bryant
Johnson Controls-Hill, LLC
P.O. Box 77
Naval Station Mayport, Florida 32212

Prepared By:

EARTH SYSTEMS, INC.
223 12th Avenue North
Jacksonville Beach, Florida 32250

EARTH SYSTEMS

August 5, 2004

Mr. Jim Bryant
Johnson Controls-Hill, LLC
P.O. Box 77
Naval Station Mayport, Florida, 32212

Re: Closure Assessment Results
Naval Station Building 413
Naval Station Mayport, Florida, 32212

Dear Mr. Bryant:

Earth Systems, Inc. (Earth Systems) completed a Closure Assessment for the underground piping and sumps associated with aboveground storage tank (AST) N413. The underground piping was closed in place and the sumps were removed in April 2001. Under this scope of work, Earth Systems installed five soil borings, converted one of the borings into a temporary monitoring well, and collected soil and groundwater samples for laboratory analysis. Sampling was performed in accordance with Earth Systems' comprehensive quality assurance plan. As detailed below, closure results indicate that petroleum impacted soil and groundwater were encountered in the vicinity of the removed sump on the northern side of the AST. A site plan showing the location of the soil borings and temporary well is provided as **Figure 1.**

Soil Assessment

On July 8, 2004, Earth Systems installed five soil borings (SB-1 and SB-5) in the vicinity of the removed product lines and closed sumps. The soil borings were completed to a depth of one foot below the water table. The soil samples were screened with an organic vapor analyzer (OVA) in accordance with the methodology prescribed in 62-770 Florida Administrative Code (FAC). The depth to water was approximately 3.5 feet below land surface (BLS). Vadose zone methane corrected OVA responses ranged from 0 to greater than 640 parts per million (ppm).

A duplicate soil sample was retained for laboratory analysis from soil boring SB-2 at 3 feet BLS. The sample produced a methane corrected OVA response of 640 ppm. The soil sample was collected in accordance with Florida Department of Environmental Protection (FDEP) Standard Operating Procedure PCS-004. The soil sample was delivered to IntraLabs, Inc. and analyzed for Volatile Organic Aromatics (VOAs), Polynuclear Aromatic Hydrocarbons (PAHs), and Total Recoverable Petroleum Hydrocarbons (TRPH).

Soil sample SB-2 contained Benzene (0.181 mg/kg), Toluene (3.78 mg/kg), Ethylbenzene (3.61 mg/kg), Total Xylenes (33.1 mg/kg) TRPH (23600 mg/kg), Naphthalene (12.1 mg/kg), 1-Methyl Naphthalene (16.1 mg/kg), and 2-Methyl Naphthalene (26.90 mg/kg) in concentrations that exceed Soil Cleanup Target Levels (SCTLs).

A summary of the headspace data is provided on **Table 1**. The soil analytical results are summarized on **Table 2**. The soil boring locations, their highest methane corrected OVA vadose zone results, and the soil analytical results are illustrated on **Figure 2**. Soil boring logs are provided in **Appendix A.** A copy of the soil analytical report is included in **Appendix B.**

Groundwater Assessment

On July 8, 2004, soil boring SB-2 was converted into temporary well TMW-1. The temporary monitoring well was installed using a stainless steel hand auger to a depth of six feet BLS. After its installation, the well was purged and sampled in accordance with FDEP's Standard Operating Procedures. The groundwater sample was then delivered to IntraLabs and analyzed for VOAs, PAHs, and TRPH.

The groundwater sample from well TMW-1 contained Benzene [28.8 micrograms per liter (ug/L)], Ethylbenzene (45.6 ug/L), Total Xylenes (233 ug/L), Naphthalene (32 ug/L), 1-Methyl Naphthalene (22.3 ug/L), and 2-Methyl Naphthalene (24.9 ug/L) in concentrations that exceed Florida's Groundwater Cleanup Target Levels (GCTLs). The horizontal and vertical extent of the groundwater impacts has not been delineated.

Groundwater analytical data is summarized on **Table 3**. Groundwater analytical results are illustrated on **Figure 3**. Copies of the groundwater analytical report and the groundwater sampling log are included in **Appendix B**.

Summary and Recommendation

Earth Systems has completed a closure assessment at the subject property for the underground piping and sumps associated with the AST N413. The underground piping was closed in place and the sumps were removed in April 2001.

On July 8, 2004, Earth Systems installed five soil borings, converted one of the borings into a temporary monitoring well, and collected soil and groundwater samples for laboratory analysis. Analytical testing confirmed the presence of petroleum impacted soil and groundwater in the vicinity of the sump on the northern side of AST N413. Soil and groundwater contaminant levels exceed cleanup levels and will require further assessment.

Based upon the results of this investigation, Earth Systems recommends the following:

- A Discharge Reporting Form (DRF) should be submitted to the Jacksonville Environmental Resources Management Department (ERMD). The DRF will document the presence of petroleum impacts on the property.
- A source removal excavation should be performed to remove petroleum-impacted soils from the site.
- Following completion of the closure assessment and within nine months of submittal of the DRF, a Site Assessment Report should be submitted to ERMD. The report will describe the vertical and horizontal extent of soil and groundwater contamination and make recommendations for further environmental activities, as conditions warrant.

If you have any questions concerning this Closure Assessment Report, please call me at (904) 247-0740.

Sincerely,

EARTH SYSTEMS

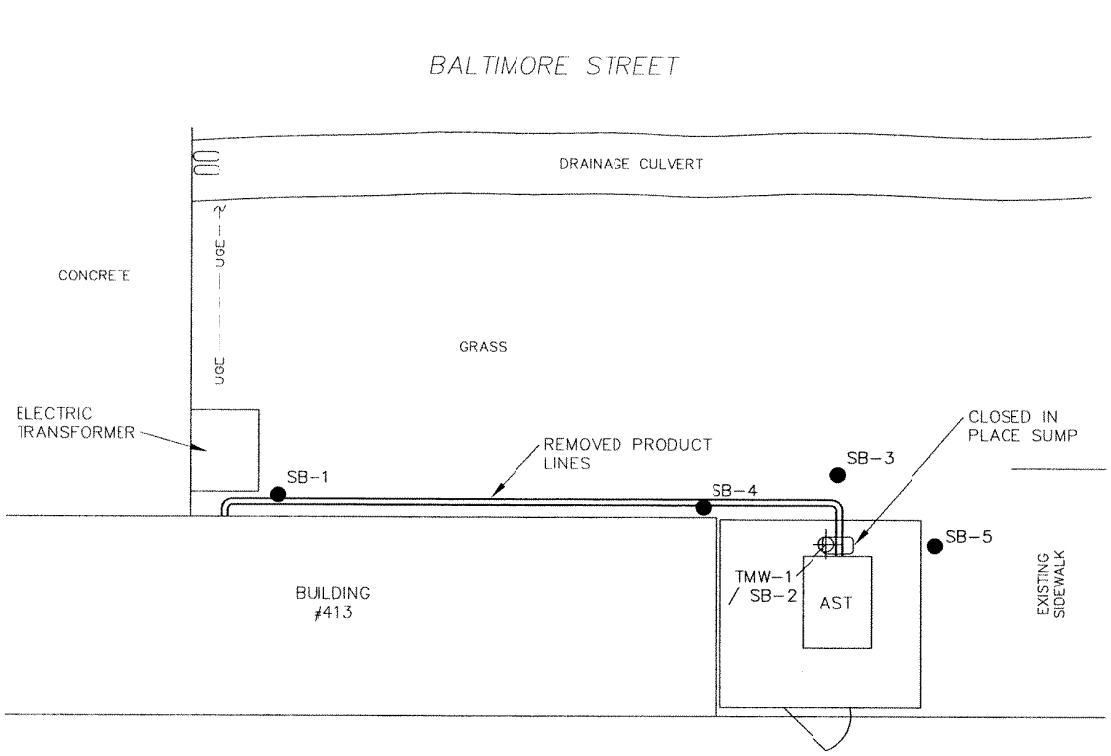
James Paxton
Project Manager

Certification:
I hereby certify that I have supervised the field work and preparation of this report, in accordance with Florida Rules and Regulations. As a registered professional geologist and/or professional engineer, as authorized by Chapters 471 or 492, Florida Statutes, I certify that I am a qualified groundwater professional, as defined by the Florida State Board of Professional Geologists.

Consultant Name: Samuel P. Pratt, PG No. 01824

Signature: _____

Date: 8/5/04



LEGEND

TEMPORARY WELL LOCATION

SOIL BORING LOCATION

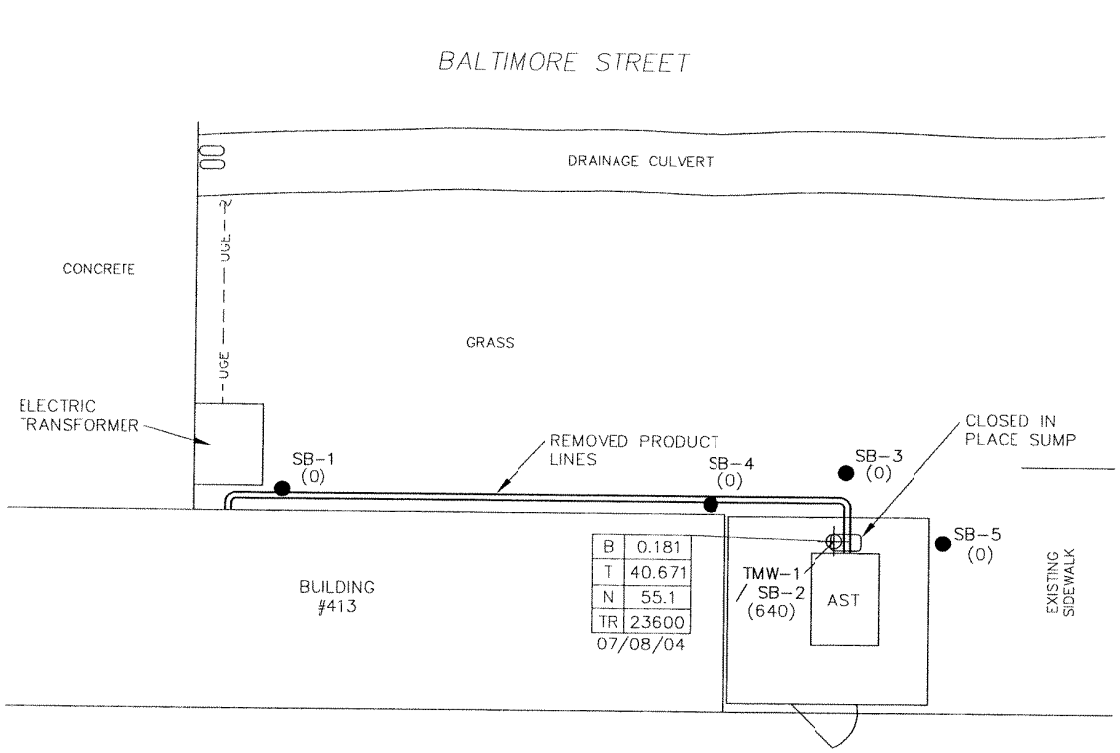
0 FT. 5 FT. 10 FT.

DATE:	08/04
DRAWN BY:	KMM
SCALE:	1" = 10'
FILENAME:	FIG1

FIGURE 1
SITE PLAN WITH SOIL BORING & TEMPORARY WELL LOCATION

EARTH SYSTEMS
223 12TH AVENUE NORTH
JACKSONVILLE BEACH, FL 32250
OFFICE (904) 247-0740 FAX (904) 247-7650

MAYPORT NAVAL STATION
BUILDING #413
MAYPORT, FLORIDA



LEGEND

⊕	TEMPORARY WELL LOCATION
●	SOL BORING LOCATION
B	BENZENE (ug/L)
T	TOTAL BTEX (ug/L)
N	TOTAL NAPHTHALENES (ug/L)
TR	TRPH (ug/L)

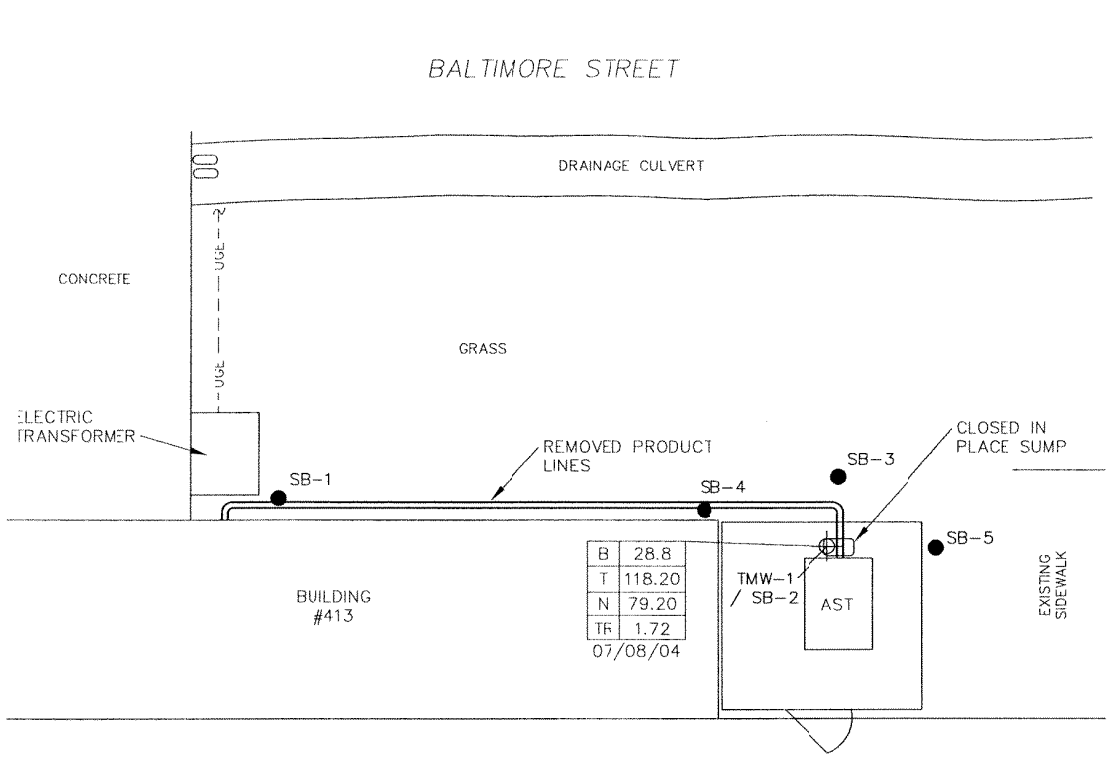
0 FT. 5 FT. 10 FT.

DATE:	08/04
DRAWN BY:	KMM
SCALE:	1" = 10'
FILENAME:	FIG2

FIGURE 2
VADOSE ZONE OVA & SOIL ANALYTICAL RESULTS MAP

EARTH SYSTEMS
223 12TH AVENUE NORTH
JACKSONVILLE BEACH, FL 32250
OFFICE (904) 247-0740 FAX (904) 247-7650

MAYPORT NAVAL STATION
BUILDING #413
MAYPORT, FLORIDA



LEGEND

⊕	TEMPORARY WELL LOCATION
●	SOIL BORING LOCATION
B	BENZENE (ug/L)
T	TOTAL BTEX (ug/L)
N	TOTAL NAPHTHALENES (ug/L)
TR	TRPH (ug/L)

0 FT. 5 FT. 10 FT.

DATE	08/04
DRAWN BY:	KMM
SCALE:	1" = 10'
FILENAME:	FIG3

FIGURE 3
GROUNDWATER ANALYTICAL RESULTS

EARTH SYSTEMS
223 12TH AVENUE NORTH
JACKSONVILLE BEACH, FL 32250
OFFICE (904) 247-0740 FAX (904) 247-7650

MAYPORT NAVAL STATION
BUILDING #413
MAYPORT, FLORIDA

TABLE 1: SOIL SCREENING SUMMARY

Facility Name: Mayport Naval Station Bldg. 413

SAMPLE				OVA SCREENING RESULTS			
BORING NO.	DATE COLLECTED	DEPTH TO WATER	SAMPLE INTERVAL (FBLS)	TOTAL READING (ppm)	CARBON FILTERED (ppm)	NET READING (ppm)	COMMENTS
SB-1	07/08/04	3.5	1	0	NM	0	
			2	0	NM	0	
			3	0	NM	0	
			4	0	NM	0	
SB-2	07/08/04	3.5	1	0	NM	0	
			2	80	10	70	
			3	700	60	640	Sample Collected, Install TMW-1
			4	800	10	790	
SB-3	07/08/04	3.5	1	0	NM	0	
			2	0	NM	0	
			3	0	NM	0	
			4	0	NM	0	
SB-4	07/08/04	3.5	1	0	NM	0	
			2	0	NM	0	
			3	0	NM	0	
			4	0	NM	0	
SB-5	07/08/04	3.5	1	0	NM	0	
			2	0	NM	0	
			3	0	NM	0	
			4	0	NM	0	

NM = Not Measured

TABLE 2: SOIL ANALYTICAL RESULTS

Facility Name: Mayport Naval Station Bldg. 413

Sample												
Location	Date	Collection Interval	OVA Response	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTEE	TRPH	Naphthalene	2- Methyl Naphthalene	1-Methyl Naphthalene
SB-2	7/8/2004	3	640	**0.181**	**3.78**	**3.61**	**33.1**	0.00789	**23600**	**12.10**	**26.90**	**16.1**
Direct Expcsure, Residential				1.1	380	1100	5900	3200	340	40	30	68
Leachability (based on GW)				0.007	0.5	0.6	0.2	0.2	340	1.7	6.1	2.2

< = below laboratory detection limit

Analytical Results = mg/kg

TRPH = Total Recoverable Petroleum Hydrocarbons

Exposure values based upon 62-777 F.A.C. criteria (August 5, 1999)

ft BLS = feet below land surface

TABLE 3: GROUNDWATER ANALYTICAL RESULTS

Facility Name: Mayport Naval Station Bldg. 413

Sample Location	Sample Date	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	MTBE	Naphthalene	1-Methyl Naphthalene	2-Methyl Naphthalene	Total Naphthalenes	TRPH mg/L
TMW-1	07/08/04	**28 8**	15	**45.6**	**233**	**118.20**	1.70	**32**	**22.3**	**24.9**	**79.20**	1.72
FDEP Target Levels		1	40	30	20		50	20	20	20		5
NA Default Concentrations		100	400	300	200		500	200	200	200		50

< = below laboratory detection limit
Analytical Results = ug/l unless noted otherwise
NCD = no compounds detected
MTBE = Methyl tert-Butyl Ether
Concentrations in bold are above FDEP Target Levels
NS = not sampled

APPENDIX A –

SOIL BORING LOGS

Sheet _____ of _____

PROJECT: Mayport Bldg 413	
FDEP FAC. ID#:	BORING NO.: SB-1
JOB NO.:	LOGGED BY: JP
PROJ. MGR: JP	EDITED BY:
DRILLING CONTRACTOR: Earth Systems	
DRILL RIG TYPE: Hand Auger	
DRILLER'S NAME: JP	
SAMPLING METHODS: Headspace OVA	
DRILLING TECHNIQUE:	
HAMMER WT.:	DROP:
STARTED TIME: 940	DATE: 7/8/04
COMPLETED TIME: 1000	DATE: 7/8/04
BORING DEPTH (ft.) 4'	BOREHOLE DIA: 4"
CASING DEPTH (ft.)	
WATER DEPTH (ft.) 3.5	
TIME:	
DATE:	
BACKFILLED TIME:	DATE: 7/8/04 BY: JP
TOP OF CASING ELEV.:	DATUM:
LITHOLOGIC DESCRIPTION:	

SAMPLE DEPTH	SAMPLER TYPE	BLOWS/6INC	INCHES DRIVEN	MOISTURE (dry,mois:,wet,sat.)	ODOR	UNFILTERED OVA (PPM)	FILTERED OVA (PPM)	CORRECTED OVA (PPM)	DEPTH IN FEET	USCS OR ASTM CODE
1				d	No	0	-	0	1	SW
2				d	No	0	-	0	2	SW
3				M	No	0	-	0	3	SW
4				W	No	0	-	0	4	SW
									5	
									6	
									7	
									8	
									9	
									10	

Sheet _____ of _____

PROJECT:	Mayport Bldg 413
FDEP FAC. ID#:	BORING NO.: SB-2
JOB NO.:	LOGGED BY: JP
PROJ. MGR: Sam Pitt	EDITED BY:
DRILLING CONTRACTOR:	Earth Systems
DRILL RIG TYPE:	Hand Auger
DRILLER'S NAME:	JP
SAMPLING METHODS:	Headspace
DRILLING TECHNIQUE:	" "
HAMMER WT.:	DROP:
STARTED TIME: 1020	DATE: 7/8/04
COMPLETED TIME: 1030	DATE: 7/8/04
BORING DEPTH (ft.) 4	BOREHOLE DIA: 4"
CASING DEPTH (ft.)	
WATER DEPTH (ft.) 3.5	
TIME:	
DATE:	
BACKFILLED TIME:	DATE: 7/8/04 BY: JP
TOP OF CASING ELEV.:	DATUM:
LITHOLOGIC DESCRIPTION:	

SAMPLE DEPTH	SAMPLER TYPE	BLOWS/6INC	INCHES DRIVEN	MOISTURE (dry,moist,wet,sat.)	ODOR	UNFILTERED OVA (PPM)	FILTERED OVA (PPM)	CORRECTED OVA (PPM)		DEPTH IN FEET	USCS OR ASTM CODE	
1				d	no	0	-	0		1	SW	
2				d	yes	50	40	70		2	SW	
3				M	yes	100	60	660		3	SW	Collect Soil Sample
4				W	yes	500	10	790		4	SW	in Stain Trans 1 6'
										5		Collect water Sample
										6		
										7		
										8		
										9		
										10		

Sheet _____ of _____

PROJECT:	Mayport Bldg 413
FDEP FAC. ID#:	BORING NO.: 3
JOB NO.:	LOGGED BY: JP
PROJ. MGR: JP	EDITED BY:
DRILLING CONTRACTOR:	Earth Systems
DRILL RIG TYPE:	Hand Auger
DRILLER'S NAME:	JP
SAMPLING METHODS:	OVA Headspace
DRILLING TECHNIQUE:	Hand Auger
HAMMER WT.:	DROP:
STARTED TIME: 1200	DATE: 7/8/04
COMPLETED TIME: 1315	DATE: 7/8/04
BORING DEPTH (ft.) 4	BOREHOLE DIA: 4"
CASING DEPTH (ft.) 5	
WATER DEPTH (ft.) 3.5	
TIME:	
DATE:	
BACKFILLED TIME:	DATE: 7/8/04 BY: JP
TOP OF CASING ELEV.:	DATUM:
LITHOLOGIC DESCRIPTION:	

SAMPLE DEPTH	SAMPLER TYPE	BLOWS/6INC	INCHES DRIVEN	MOISTURE (dry,moist,wet,sat.)	ODOR	UNFILTERED OVA (PPM)	FILTERED OVA (PPM)	CORRECTED OVA (PPM)	DEPTH IN FEET	USCS OR ASTM CODE
1				d	no	0	-	0	1	SW
2				d	no	0	-	0	2	
3				m	no	0	-	0	3	
4				w	no	0	-	0	4	
									5	
									6	
									7	
									8	
									9	
									10	

Sheet _____ of _____

PROJECT:	Mayport Rdg 413
FDEP FAC. ID#:	0
BORING NO.:	SB-4
JOB NO.:	
LOGGED BY:	JP
PROJ. MGR:	SP
EDITED BY:	
DRILLING CONTRACTOR:	Earth Systems
DRILL RIG TYPE:	Hand Auger
DRILLER'S NAME:	JP
SAMPLING METHODS:	OVA Headspace
DRILLING TECHNIQUE:	Hand Auger
HAMMER WT.:	DROP:
STARTED TIME: 1330	DATE: 7/8/04
COMPLETED TIME: 1340	DATE: 7/8/04
BORING DEPTH (ft.) 4	BOREHOLE DIA: 4"
CASING DEPTH (ft.)	
WATER DEPTH (ft.) 3.5	
TIME:	
DATE:	
BACKFILLED TIME:	DATE: 7/8/04 BY: JP
TOP OF CASING ELEV.:	DATUM:
LITHOLOGIC DESCRIPTION:	

SAMPLE DEPTH	SAMPLER TYPE	BLOWS/6INC	INCHES DRIVEN	MOISTURE (dry,moist,wet,sat.)	ODOR	UNFILTERED OVA (PPM)	FILTERED OVA (PPM)	CORRECTED OVA (PPM)	DEPTH IN FEET	USCS OR ASTM CODE
1				d	no	0	-	0	1	SW
2				d	no	0	-	0	2	SW
3				M	no	0	-	0	3	SW
4				W	no	0	-	0	4	SW
									5	
									6	
									7	
									8	
									9	
									10	

Sheet _____ of _____

PROJECT:	Mugford Bldg 413
FDEP FAC. ID#:	BORING NO.: SB-5
JOB NO.:	LOGGED BY: JF
PROJ. MGR: SP	EDITED BY:
DRILLING CONTRACTOR:	Envir. Systems
DRILL RIG TYPE:	Hand Auger
DRILLER'S NAME:	JF
SAMPLING METHODS:	DPM Hand Spoon
DRILLING TECHNIQUE:	Hand auger
HAMMER WT.:	DROP:
STARTED TIME: 1345	DATE: 7/8/04
COMPLETED TIME: 1355	DATE: 7/8/04
BORING DEPTH (ft.) 4	BOREHOLE DIA: 4"
CASING DEPTH (ft.)	
WATER DEPTH (ft.) 3.5	
TIME:	
DATE:	
BACKFILLED TIME:	DATE: 7/8/04 BY: JF
TOP OF CASING ELEV.:	DATUM:
LITHOLOGIC DESCRIPTION:	

SAMPLE DEPTH	SAMPLER TYPE	BLOWS/6INC	INCHES DRIVEN	MOISTURE (dry,moist,wet,sat.)	ODOR	UNFILTERED OVA (PPM)	FILTERED OVA (PPM)	CORRECTED OVA (PPM)	DEPTH IN FEET	USCS OR ASTM CODE
1				D	N	0	-	0	1	SW
2				D	N	0	-	0	2	SW
3				M	N	0	-	0	3	SW
4				W	N	0	-	0	4	SW
									5	
									6	
									7	
									8	
									9	
									10	

APPENDIX B –

LABORATORY ANALYTICAL REPORT AND GROUNDWATER SAMPLING LOGS

IntraLabs

S. Pratt
Earth Systems, Inc.
223 12th. Ave. North

Jacksonville Beach, FL 32250

July 16, 2004
Report # 407000379
Order # 55793
FDEP CompQAP# 990102

Site Location/Project
.
Mayport Bldg 413

S.C.
Sample I.D.: SB-2 2' 3'
Collected: 07/08/04 10:30
Received: 07/09/04 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Percent Solids	86.5	%	160.3	0.10	07/14/2004	07/15/2004	E86349
8260B-LL VOA Compounds in Soils {Low Level}			MEDF	2			
Methyl-tert-butyl-ether	7.89	ug/Kg	5035/8260B	2.000	07/15/2004	07/15/2004	E86349
Benzene	181	ug/Kg	5035/8260B	2.000	07/15/2004	07/15/2004	E86349
Toluene	3780	ug/Kg	5035/8260B	2.000	07/15/2004	07/15/2004	E86349
Chlorobenzene	BDL	ug/Kg	5035/8260B	2.000	07/15/2004	07/15/2004	E86349
Ethylbenzene	3610	ug/Kg	5035/8260B	2.000	07/15/2004	07/15/2004	E86349
m & p Xylene	20100	ug/Kg	5035/8260B	2.000	07/15/2004	07/15/2004	E86349
o- Xylene	13000	ug/Kg	5035/8260B	2.000	07/15/2004	07/15/2004	E86349
Total Xylene	33100	ug/Kg	5035/8260B	2.000	07/15/2004	07/15/2004	E86349
1,3-Dichlorobenzene	BDL	ug/Kg	5035/8260B	2.000	07/15/2004	07/15/2004	E86349
1,4-Dichlorobenzene	BDL	ug/Kg	5035/8260B	2.000	07/15/2004	07/15/2004	E86349
1,2-Dichlorobenzene	BDL	ug/Kg	5035/8260B	2.000	07/15/2004	07/15/2004	E86349
8270C PAHs (610) in SOILS and Wastes by GC-MS			MEDF	1			
Naphthalene	12.1	mg/Kg	3550/8270C	0.330	07/12/2004	07/13/2004	E86349
2-Methylnaphthalene	26.9	mg/Kg	3550/8270C	0.330	07/12/2004	07/13/2004	E86349
1-Methylnaphthalene	16.1	mg/Kg	3550/8270C	0.330	07/12/2004	07/13/2004	E86349
Acenaphthene	BDL	mg/Kg	3550/8270C	0.330	07/12/2004	07/13/2004	E86349
Phenanthrene	11.2	mg/Kg	3550/8270C	0.330	07/12/2004	07/13/2004	E86349
Fluoranthene	BDL	mg/Kg	3550/8270C	0.330	07/12/2004	07/13/2004	E86349
Benzo(a)anthracene	BDL	mg/Kg	3550/8270C	0.330	07/12/2004	07/13/2004	E86349
Benzo(b)fluoranthene	BDL	mg/Kg	3550/8270C	0.330	07/12/2004	07/13/2004	E86349

S. Pratt
Earth Systems,Inc.
223 12th. Ave. North

Jacksonville Beach, FL 32250

July 16, 2004
Report # 407000379
Order # 55793
FDEP CompQAP# 990102

Site Location/Project

Mayport Bldg 413

Sample I.D.: SB-2 3' SC
Collected: 07/08/04 10:30
Received: 07/09/04 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Benzo(a)pyrene	BDL	mg/Kg	3550/8270C	0.100	07/12/2004	07/13/2004	E86349
Benzo(ghi)perylene	BDL	mg/Kg	3550/8270C	0.330	07/12/2004	07/13/2004	E86349
Acenaphthylene	BDL	mg/Kg	3550/8270C	0.330	07/12/2004	07/13/2004	E86349
Fluorene	BDL	mg/Kg	3550/8270C	0.330	07/12/2004	07/13/2004	E86349
Anthracene	BDL	mg/Kg	3550/8270C	0.330	07/12/2004	07/13/2004	E86349
Pyrene	6.16	mg/Kg	3550/8270C	0.330	07/12/2004	07/13/2004	E86349
Chrysene	BDL	mg/Kg	3550/8270C	0.330	07/12/2004	07/13/2004	E86349
Benzo(k)fluoranthene	BDL	mg/Kg	3550/8270C	0.330	07/12/2004	07/13/2004	E86349
Indeno(1,2,3-cd)pyrene	BDL	mg/Kg	3550/8270C	0.330	07/12/2004	07/13/2004	E86349
Dibenzo(a,h)anthracene	BDL	mg/Kg	3550/8270C	0.100	07/12/2004	07/13/2004	E86349
FL-PRO (Petroleum Residual Organic w/ranges)-SOIL			MEDF	1			
GRO (C8-C10) Range	1570	mg/Kg	FL-PRO	2.000	07/12/2004	07/13/2004	E86349
DRO (C10-C28) Range	22000	mg/Kg	FL-PRO	2.000	07/12/2004	07/13/2004	E86349
TRO (C28-C40) Range	46.7	mg/Kg	FL-PRO	2.000	07/12/2004	07/13/2004	E86349

S. Pratt
Earth Systems,Inc.
223 12th. Ave. North

Jacksonville Beach, FL 32250

July 16, 2004
Report # 407000379
Order # 55793
FDEP CompQAP# 990102

Site Location/Project
.
Mayport Bldg 413

Sample I.D.: SB-2 3' s.e.
Collected: 07/08/04 10:30
Received: 07/09/04 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
TOTAL PRO (C8-C40)	23600	mg/Kg	FL-PRO	2.000	07/12/2004	07/13/2004	E86349

REPORT COMMENTS:
BDL: Indicates Analyte is Below Detection Limit MEDF: Matrix Effected Dilution Factor
Qualifier following result conforms to FAC 62-160 Table 7 Unless otherwise noted, mg/Kg denotes wet weight
62-770: If the MDL using the most sensitive and currently available technology is higher than a specific criterion, the PQL shall be used.

Unless otherwise noted in the analyst section, all work was performed by STL MIAMI.
10200 USA Today Way, Miramar Florida 33025. (954) 431-4550
* MATRIX INTERFERENCE WITH SURROGATE AND DILUTION.

Thomas A. Carr, Principal

S. Pratt
Earth Systems,Inc.
223 12th. Ave. North

Jacksonville Beach, FL 32250

July 16, 2004
Report # 407000379
Order # 55795
FDEP CompQAP# 990102

Site Location/Project
.
Mayport Bldg 413

Sample I.D.: TMW-1
Collected: 07/08/04 13:50
Received: 07/09/04 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
8260.B VOA {602} Compounds in Water by GC/MS			MEDF	1			
Methyl-tert-butyl-ether	1.70	ug/L	5030/8260B	1.000	07/15/2004	07/15/2004	E86349
Benzene	28.8	ug/L	5030/8260B	1.000	07/15/2004	07/15/2004	E86349
Toluene	15.0	ug/L	5030/8260B	1.000	07/15/2004	07/15/2004	E86349
Chlorobenzene	BDL	ug/L	5030/8260B	1.000	07/15/2004	07/15/2004	E86349
Ethylbenzene	45.6	ug/L	5030/8260B	1.000	07/15/2004	07/15/2004	E86349
m & p Xylene	162	ug/L	5030/8260B	1.000	07/15/2004	07/15/2004	E86349
o- Xylene	70.5	ug/L	5030/8260B	1.000	07/15/2004	07/15/2004	E86349
Total Xylene	233	ug/L	5030/8260B	1.000	07/15/2004	07/15/2004	E86349
1,3-Dichlorobenzene	BDL	ug/L	5030/8260B	1.000	07/15/2004	07/15/2004	E86349
1,4-Dichlorobenzene	BDL	ug/L	5030/8260B	1.000	07/15/2004	07/15/2004	E86349
1,2-Dichlorobenzene	BDL	ug/L	5030/8260B	1.000	07/15/2004	07/15/2004	E86349
8270C PAHs (610) in WATER by GC/MS (Ion Trap)			MEDF	1			
Naphthalene	32.0	ug/L	3510/8270C	5.000	07/12/2004	07/13/2004	E86349
2-Methylnaphthalene	24.9	ug/L	3510/8270C	5.000	07/12/2004	07/13/2004	E86349
1-Methylnaphthalene	22.3	ug/L	3510/8270C	5.000	07/12/2004	07/13/2004	E86349
Acenaphthene	BDL	ug/L	3510/8270C	3.000	07/12/2004	07/13/2004	E86349
Phenanthrene	BDL	ug/L	3510/8270C	5.000	07/12/2004	07/13/2004	E86349
Fluoranthene	BDL	ug/L	3510/8270C	0.300	07/12/2004	07/13/2004	E86349
Benzo(a)anthracene	BDL	ug/L	3510/8270C	0.200	07/12/2004	07/13/2004	E86349
Benzo(b)fluoranthene	BDL	ug/L	3510/8270C	0.200	07/12/2004	07/13/2004	E86349
Benzo(a)pyrene	BDL	ug/L	3510/8270C	0.200	07/12/2004	07/13/2004	E86349

S. Pratt
Earth Systems,Inc.
223 12th. Ave. North

Jacksonville Beach, FL 32250

July 16, 2004
Report # 407000379
Order # 55795
FDEP CompQAP# 990102

Site Location/Project
.
Mayport Bldg 413

Sample I.D.: TMW-1
Collected: 07/08/04 13:50
Received: 07/09/04 10:00
Collected by: Client

PARAMETER	RESULT	UNITS	METHOD	DETECTION LIMIT	DATE EXT.	DATE ANALY.	ANALYST
Benzo(ghi)perylene	BDL	ug/L	3510/8270C	0.200	07/12/2004	07/13/2004	E86349
Acenaphthylene	BDL	ug/L	3510/8270C	3.000	07/12/2004	07/13/2004	E86349
Fluorene	BDL	ug/L	3510/8270C	5.000	07/12/2004	07/13/2004	E86349
Anthracene	BDL	ug/L	3510/8270C	0.300	07/12/2004	07/13/2004	E86349
Pyrene	BDL	ug/L	3510/8270C	0.300	07/12/2004	07/13/2004	E86349
Chrysene	BDL	ug/L	3510/8270C	1.000	07/12/2004	07/13/2004	E86349
Benzo(k)fluoranthene	BDL	ug/L	3510/8270C	0.500	07/12/2004	07/13/2004	E86349
Indeno(1,2,3-cd)pyrene	BDL	ug/L	3510/8270C	0.200	07/12/2004	07/13/2004	E86349
Dibenzo(a,h)anthracene	BDL	ug/L	3510/8270C	0.200	07/12/2004	07/13/2004	E86349
FL-PRO (Petroleum Residual Organic w/ranges)-WATER			MEDF	1			
GRO (C8-C10) Range	BDL	mg/L	FL-PRO	0.500	07/12/2004	07/13/2004	E86349
DRO (C10-C28) Range	1.72	mg/L	FL-PRO	0.500	07/12/2004	07/13/2004	E86349
TRO (C28-C40) Range	BDL	mg/L	FL-PRO	0.500	07/12/2004	07/13/2004	E86349
TOTAL PRO (C8-C40)	1.72	mg/L	FL-PRO	0.500	07/12/2004	07/13/2004	E86349

REPORT COMMENTS:
BDL: Indicates Analyte is Below Detection Limit MEDF: Matrix Effected Dilution Factor
Qualifier following result conforms to FAC 62-160 Table 7 Unless otherwise noted, mg/Kg denotes wet weight
62-770: If the MDL using the most sensitive and currently available technology is higher than a specific criterion, the PQL shall be used.

Unless otherwise noted in the analyst section, all work was performed by STL MIAMI.
10200 USA Today Way, Miramar Florida 33025. (954) 431-4550

Thomas A. Carr, Principal

4/7-379

Chain of Custody Record @ 55793/55795

Company: Earth Systems	**IntraLabs, Inc.**
Address: 223 12th Ave North, JaxBeach, Fl 32250	**Address: 1909 Southampton Road, Jacksonville, FL 32207**
Phone: 904-247-0740 Fax: 847-7650	**Phone: (904) 396-6868 • Fax: (904) 396-3933**
Sampled by (Print Name(s)] / Affiliation: Jim Parton / Earth Systems	Project Manager: Jim Pratt
Sampler(s) Signature(s): J. Pratt	

Page 1 of 1

DEP Form #: 62-770-900(2)
Form Title: Chain of Custody Record
Effective Date: September 23, 1997
FDEP Facility No.:
Project Name: Mayport Bldg 48
Sampling CompQAP No.:
Approval Date:
REQUESTED DUE DATE: Std / /

Item No.	Field ID No.	Sampled Date	Sampled Time	Grab or Composit	Matrix (see codes)	Number of Containers	Analyses Requested: VOMs 8021B	PAHs 8310	Fl. Pro TRPH	Remarks	Lab. No.
1	SB-2 2'	7/8/04	1070	Grab	Soil	4	✓	✓	✓		55793
1	TMW-1	7/8/04	1350	Grab	GW	5	✓	✓	✓		55795

Shipment Method: | Total Number of Containers → 9 | ← Preservatives (see codes)

Out: / / Via:
Returned: / / Via:

Additional Comments:

Item No.	Relinquished by / Affiliation	Date	Time	Accepted by / Affiliation	Date	Time
	J. Parton	7/8/04	1420	[illegible]	7/8/04	1420
	[illegible] / Fedex	7/8/04	1700	Fedex	7/8/04	1700
				[illegible]	7/9/04	1000

Cooler No. (s) / Temperature(s) (°C): 3-1 C | Sampling Kit No. | Equipment ID No.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify)

PRESERVATIVE CODES: H = Hydrochloric acid + ice I = Ice only N = Nitric acid + ice S = Sulfuric acid + ice O = (specify)

Florida Department of Environmental Protection
GROUNDWATER SAMPLING LOG

SITE NAME: Mayport	SITE LOCATION: Mayport	
WELL NO: TW-1	SAMPLE ID: TW-1	DATE: 7-8-04

PURGING DATA

WELL DIAMETER (in): 2	TOTAL WELL DEPTH (ft): 6'	STATIC DEPTH TO WATER (ft): 3'	WELL CAPACITY (gal/ft): .16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH – DEPTH TO WATER) X WELL CAPACITY =

= (6.0 - 3.0) X .16 = .48

PURGE METHOD: Submersibles	PURGE INITIATED AT: 1330	PURGE ENDED AT: 1345	TOTAL VOL. PURGED (gal): 1.50

TIME	VOLUME PURGED (gal)	CUMUL. VOLUME PURGED (gal)	PURGE RATE (gpm)	DEPTH TO WATER (ft)	pH	TEMP. (°C)	COND. (µmhos)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	COLOR	ODOR
1330				3.0							
1335	.50	.50	.10	5.50	6.69	28.6	761	5.43	8.10	CLEAR	slight
1340	.50	1.0	.10	5.50	6.68	28.6	759	5.40	8.04	CLEAR	slight
1345	.50	1.50	.10	5.50	6.68	28.6	754	5.38	8.01	CLEAR	slight

WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: T. Byrnes	SAMPLER(S) SIGNATURE(S): T. B	
SAMPLING METHOD(S): Submersibles	SAMPLING INITIATED AT:	SAMPLING ENDED AT: 1350
FIELD DECONTAMINATION: (Y) N	FIELD-FILTERED: Y (N)	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (mL)	FINAL pH	
3	CG	40mL	HCL			8021 VOA
1	AG	1L	—			EAH
1	AG	1L	H_2SO_4			FL-PRO

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; PE = POLYETHYLENE; O = OTHER (SPECIFY)

NOTE: The above do not constitute all of the information required by Chapter 62-160, F.A.C.

APPENDIX C

SOIL BORING LOGS AND LITHOLOGIC DESCRIPTIONS

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: SITE 413
PROJECT NUMBER: 112G00103
DRILLING COMPANY: PARTRIDGE DRILLING
DRILLING RIG: HSA
BORING NUMBER: MPT-413-MW01S
DATE: 1/11/06
GEOLOGIST: P. LEVERETTE
DRILLER: M. NICHOLSON

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-2'					LT. BRN	SAND					0	0
	2-4					BRN	FINE SAND		H20 AT ~4' bls			0	0
	4-6					BRN	FINE SAND					0	0
	6-8					GRY	FINE SAND					0	0
	8-10					GRY	FINE SAND					0	0
	10-12					GRY	FINE SAND					0	0

* When rock coring, enter rock brokeness

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes X No

Well I.D. #: MPT-413-MW01S

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: SITE 413
PROJECT NUMBER: 112G00103
DRILLING COMPANY: PARTRIDGE
DRILLING RIG: HSA
BORING NUMBER: MPT-413-MW02S'
DATE: 1/11/06
GEOLOGIST: P. LEVERETTE
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-2'					BLK	FINE SAND W/ SILT					0	0
	2-4					DK. BRN	FINE SAND					0	0
	4-6					BRN	FINE SAND		H_2O ~ 5.8'			0	0
	6-8					BRN	FINE SAND					0	0
	8-10					GRY	FINE SAND					0	0
	10-12					GRY	FINE SAND					0	0
	12-13'					GRY	FINE SAND					0	0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No

Well I.D. #: MPT-413-MW02S

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: SITE 413
PROJECT NUMBER: 112G00103
DRILLING COMPANY: PARTRIDGE
DRILLING RIG: HSA
BORING NUMBER: MPT-413-MW03S
DATE: 1/11/06
GEOLOGIST: P. LEVERETTE
DRILLER: M. NICHOLSON

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-2'					BRN	FINE SAND W/ SILT					0	0
	2-4					BRN	FINE SAND					0	0
	4-5					LT. BRN	FINE SAND		H_2O ~5' BLS			0	0
	5-7'					GRY	FINE SAND					0	0
	7-9'					GRY	FINE SAND					0	0
	9-11'					GRY	FINE SAND					0	0
	11-13'					GRY	FINE SAND					0	0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No

Well I.D. #: MPT-413-MW03S

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: SITE 413
PROJECT NUMBER: 112G00103
DRILLING COMPANY: PARTRIDGE
DRILLING RIG: HSA

BORING NUMBER: MPT-413-MW045
DATE: 1/11/06
GEOLOGIST: P. LAVERETTE
DRILLER: M. NICHOLSON

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-2					BLK	FINE SAND W/SILT					0	0
	2-4'					BRN	FINE SAND					0	0
	4-5					LT. BRN	FINE SAND		H_2O ~ 5' bls			0	0
	5-7					GRY	FINE SAND					0	0
	7-9					GRY	FINE SAND					0	0
	9-11					GRY	FINE SAND					0	0
	11-13					GRY	FINE SAND					0	0

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No _____ Well I.D. #: MPT-413-MW045

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: SITE 413
PROJECT NUMBER: 112G00103
DRILLING COMPANY: PARTRIDGE
DRILLING RIG: HSA
BORING NUMBER: MPT-413-MW05S
DATE: 1/11/06
GEOLOGIST: P. LEVERETTE
DRILLER: M. NICHOLSON

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-1'					LT. BRN	SAND					0	0
	1-3'					BRN	FINE SAND					0	0
	3-5'					LT BRN	FINE SAND		H_2O ~ 4'			0	0
	5-6'					LT. BRN	FINE SAND					0	0
	6-8'					GRY	FINE SAND					0	0
	8-10'					GRY	FINE SAND					0	0
	10-12'					GRY	FINE SAND					0	0

* When rock coring, enter rock brokeness

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No

Well I.D. #: MPT-413-MW05B

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: Building 413
PROJECT NUMBER: 112G00103
DRILLING COMPANY: Preferred
DRILLING RIG: DPT
BORING NUMBER: SB-11
DATE: 8/8/2005
GEOLOGIST: DS
DRILLER: Dan

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-0.5						Brown, organic, fine to medium sand						
	0.5 to 3.0						lt brown, fine to medium sand, trace of silts						
	3.0 to17.0						lt gray, fine to medium sand, trace of silts						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: _____

Converted to Well: Yes _____ No _____ Well I.D. #: _____

APPENDIX D

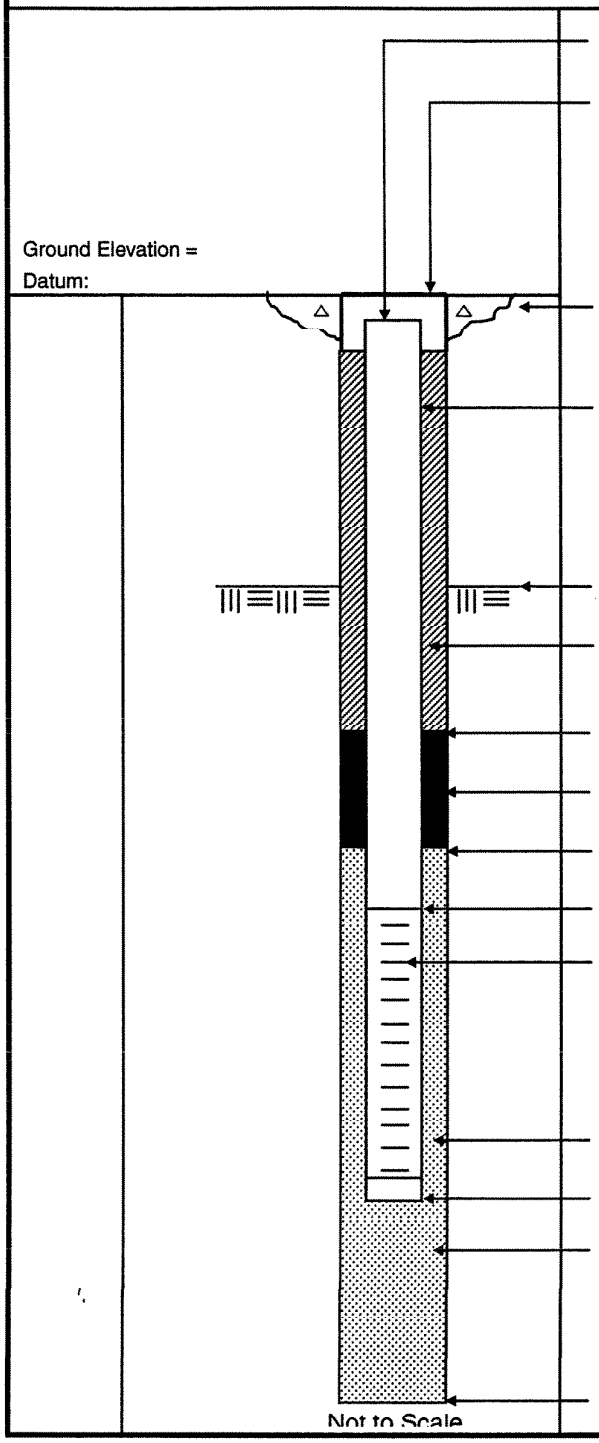
CONSTRUCTION DIAGRAMS

Tetra Tech NUS, Inc.

WELL No.: MPT-413-MW015'

MONITORING WELL SHEET

PROJECT:	SITE 413	DRILLING Co.:	PARTRIDGE	BORING No.:	MW015'
PROJECT No.:	112G00103	DRILLER:	M. NICHOLSON	DATE COMPLETED:	1/11/06
SITE:	413	DRILLING METHOD:	HSA	NORTHING:	
GEOLOGIST:	P. LEVASSEUR	DEV. METHOD:	PUMP	EASTING:	



Elevation / Depth of Top of Riser: 1 3"

Elevation / Height of Top of Surface Casing: 1 GRND SURFACE

I.D. of Surface Casing: 8"

Type of Surface Casing: STEEL BOLTDOWN MANHOLE

Type of Surface Seal: GROUT / PORTLAND CEMENT

I.D. of Riser: 2"

Type of Riser: SCH 40 PVC

Borehole Diameter: 4 1/4"

Elevation / Depth Top of Rock: 1 NA

Type of Backfill: NA

Elevation / Depth of Seal: 1 1.0

Type of Seal: 30/65 SAND + GROUT

Elevation / Depth of Top of Filter Pack: 1 1.5'

Elevation / Depth of Top of Screen: 1 2'

Type of Screen: PVC SHC. 40

Slot Size x Length: 0.010" x 10'

I.D. of Screen: 2"

Type of Filter Pack: 20/30 SAND

Elevation / Depth of Bottom of Screen: 1 12.0'

Elevation / Depth of Bottom of Filter Pack: 1 12.0'

Type of Backfill Below Well: NATURAL SAND

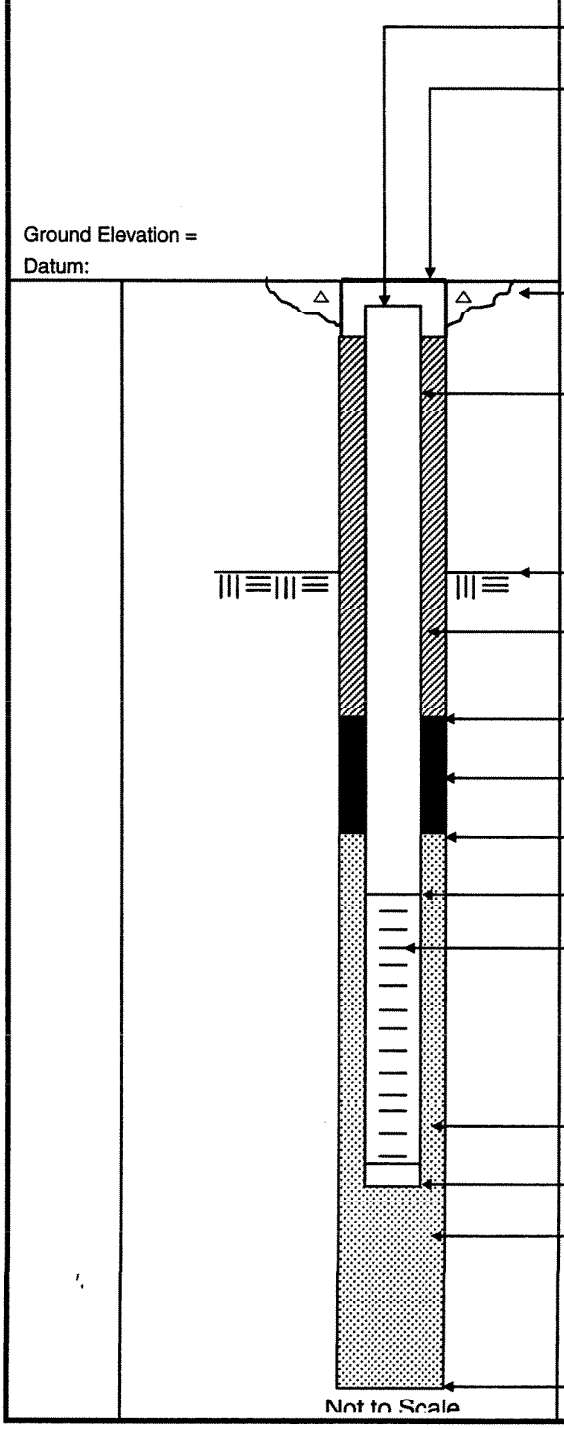
Elevation / Total Depth of Borehole: 1 12.5'

Tetra Tech NUS, Inc.

WELL No.: NAPT-413-MW025

MONITORING WELL SHEET

PROJECT:	Site 413	DRILLING Co.:	Partridge	BORING No.:	MW025
PROJECT No.:	112600103	DRILLER:	M. Nicholson	DATE COMPLETED:	1/11/06
SITE:	413	DRILLING METHOD:	HSA	NORTHING:	
GEOLOGIST:	P. Leverette	DEV. METHOD:	Pump	EASTING:	



Elevation / Depth of Top of Riser: 1 3"

Elevation / Height of Top of Surface Casing: 1 Land Surface

I.D. of Surface Casing: 8" Steel Boltdown

Type of Surface Casing: Steel Boltdown

Type of Surface Seal: Grout / Portland Cement

I.D. of Riser: 2"

Type of Riser: Sch 40 PVC

Borehole Diameter: 4 1/4"

Elevation / Depth Top of Rock: 1 NA

Type of Backfill: NA

Elevation / Depth of Seal: 1 1.0

Type of Seal: 30/65 Sand & Grout

Elevation / Depth of Top of Filter Pack: 1 2.5'

Elevation / Depth of Top of Screen: 1 3.0'

Type of Screen: Sch 40 PVC

Slot Size x Length: 0.010" x 10'

I.D. of Screen: 2"

Type of Filter Pack: 20/30 Sand

Elevation / Depth of Bottom of Screen: 1 13.0'

Elevation / Depth of Bottom of Filter Pack: 1 13.0'

Type of Backfill Below Well: Natural Sand

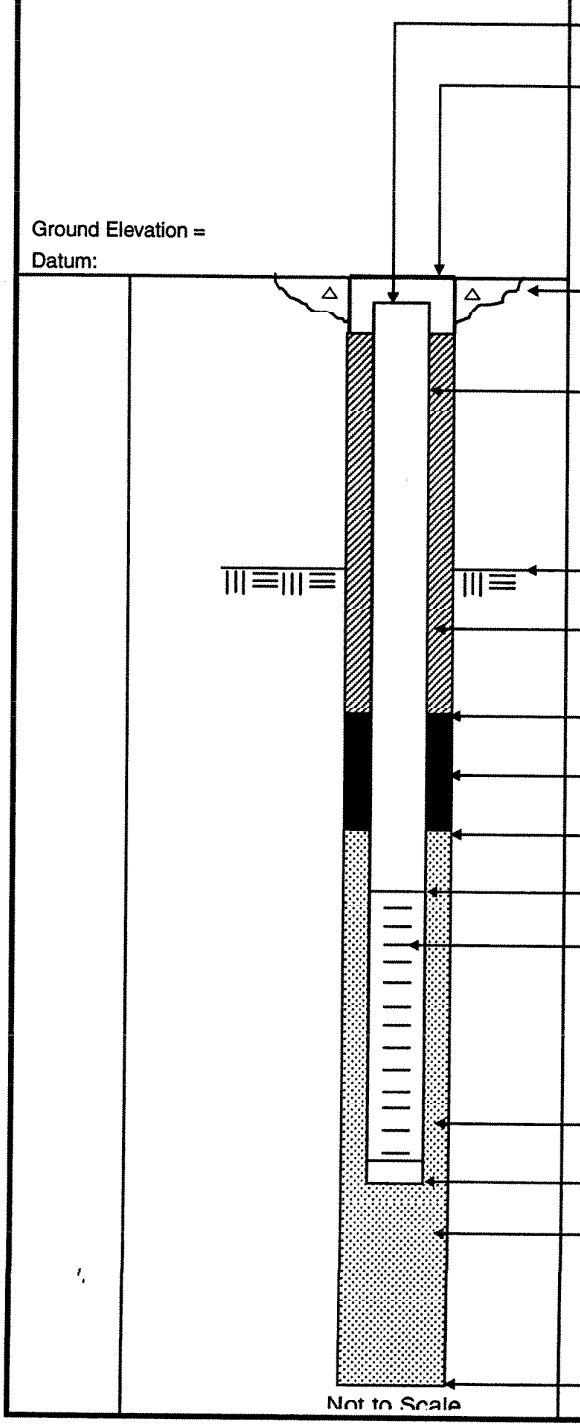
Elevation / Total Depth of Borehole: 1 13.5

Tetra Tech NUS, Inc.

WELL No.: MPT-413-MW03S

MONITORING WELL SHEET

PROJECT:	SITE 413	DRILLING Co.:	PARTRIDGE	BORING No.:	MW03S
PROJECT No.:	112G00103	DRILLER:	M. NICHOLSON	DATE COMPLETED:	1/11/06
SITE:	413	DRILLING METHOD:	HSA	NORTHING:	
GEOLOGIST:	P. LEVERETTE	DEV. METHOD:	PUMP	EASTING:	



Elevation / Depth of Top of Riser: 1 3"

Elevation / Height of Top of Surface Casing: 1 LAND SURFACE

I.D. of Surface Casing: 8"

Type of Surface Casing: STEEL BOLTDOWN

Type of Surface Seal: GROUT/ PORTLAND CEMENT

I.D. of Riser: 2"

Type of Riser: SCH 40 PVC

Borehole Diameter: 4 1/4"

Elevation / Depth Top of Rock: 1 NA

Type of Backfill: NA

Elevation / Depth of Seal: 1 1.0'

Type of Seal: 30/65 SAND/GROUT

Elevation / Depth of Top of Filter Pack: 1 2.5'

Elevation / Depth of Top of Screen: 1 3.0'

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010" X 10'

I.D. of Screen: 2"

Type of Filter Pack: 20/30 SAND

Elevation / Depth of Bottom of Screen: 1 13.0'

Elevation / Depth of Bottom of Filter Pack: 1 13.0'

Type of Backfill Below Well: NATURAL SAND

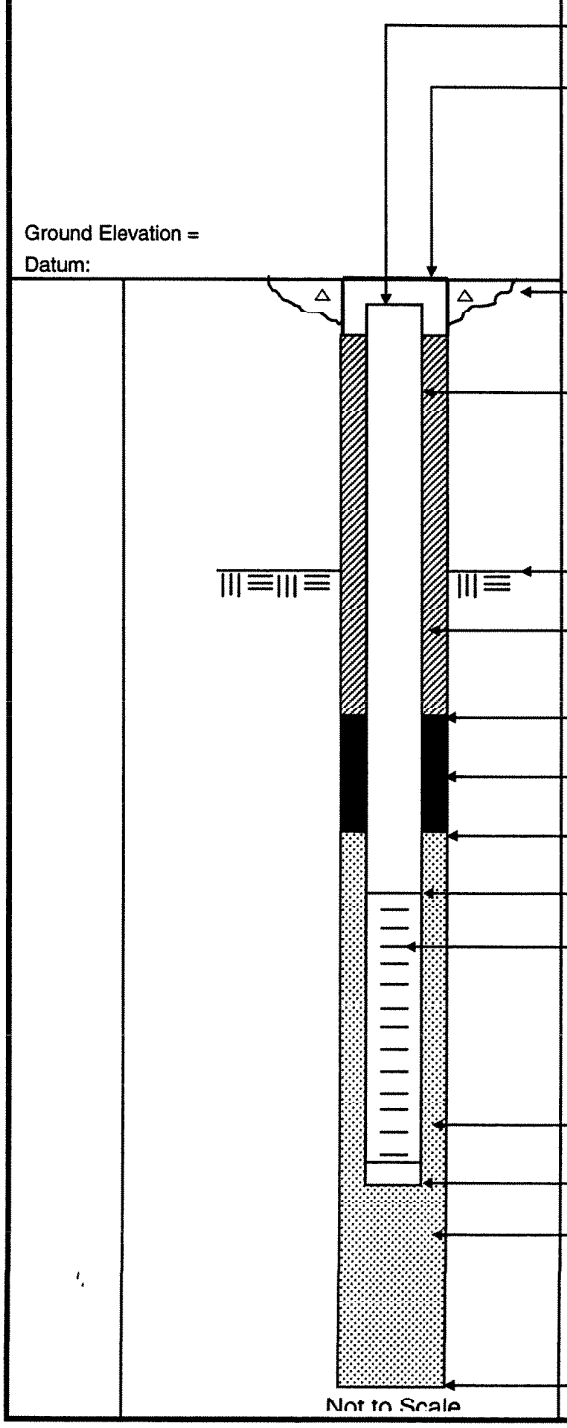
Elevation / Total Depth of Borehole: 1 13.5'

Tetra Tech NUS, Inc.

WELL No.: MPT-413-MW04S'

MONITORING WELL SHEET

PROJECT:	Site 413	DRILLING Co.:	Partridge	BORING No.:	MW04S
PROJECT No.:	112600103	DRILLER:	M. Nicholson	DATE COMPLETED:	1/1/06
SITE:	413	DRILLING METHOD:	HSA	NORTHING:	
GEOLOGIST:	P. Loverette	DEV. METHOD:	Pump	EASTING:	



Elevation / Depth of Top of Riser: 1 3'

Elevation / Height of Top of Surface Casing: 1 Land Surface

I.D. of Surface Casing: 8"

Type of Surface Casing: Steel Boltdown

Type of Surface Seal: Grout & Portland Cement

I.D. of Riser: 2"

Type of Riser: Sch 40 PVC

Borehole Diameter: 4¼"

Elevation / Depth Top of Rock: 1 NA

Type of Backfill: NA

Elevation / Depth of Seal: 1 1.0'

Type of Seal: 30/65 Sand & Grout

Elevation / Depth of Top of Filter Pack: 1 2.5'

Elevation / Depth of Top of Screen: 1 3.0

Type of Screen: Sch 40

Slot Size x Length: 0.010" x 10'

I.D. of Screen: 2"

Type of Filter Pack: 20/30 Sand

Elevation / Depth of Bottom of Screen: 1 13.0'

Elevation / Depth of Bottom of Filter Pack: 1 13.0'

Type of Backfill Below Well: Natural Sand

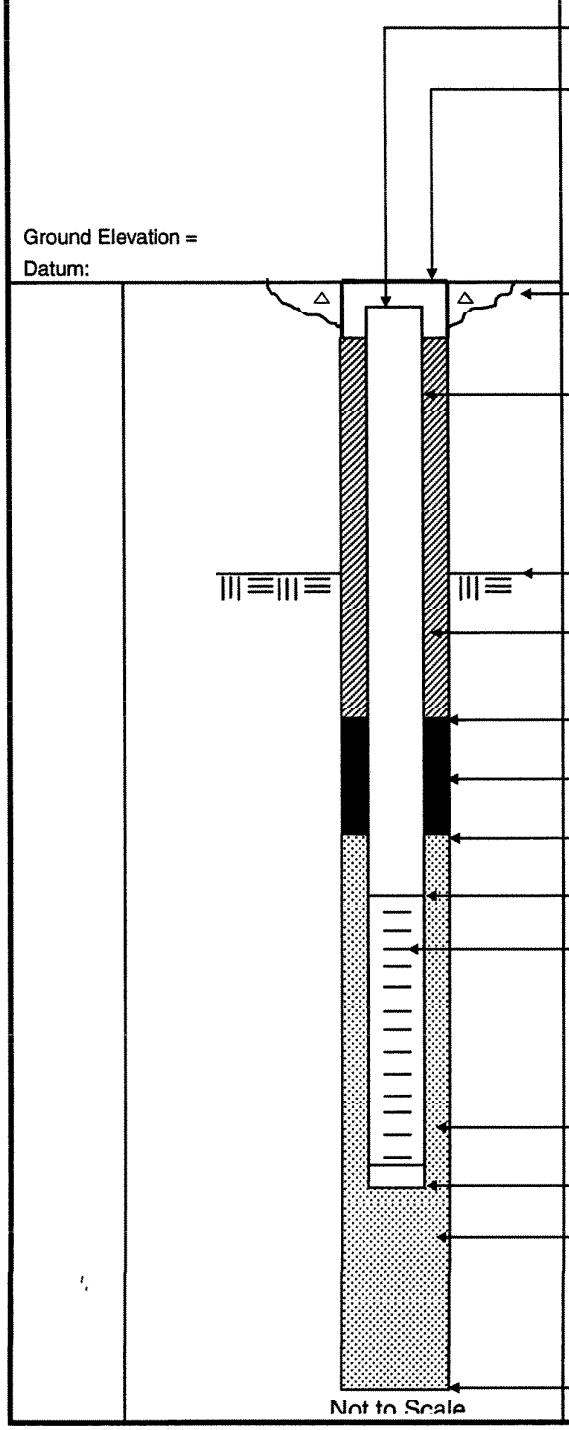
Elevation / Total Depth of Borehole: 1 13.5'

Tetra Tech NUS, Inc.

WELL No.: MPT-413-MW05S

MONITORING WELL SHEET

PROJECT:	SITE 413	DRILLING Co.:	PARTRIDGE	BORING No.:	MW05S
PROJECT No.:	112G00103	DRILLER:	M. NICHOLSON	DATE COMPLETED:	1/11/06
SITE:	413	DRILLING METHOD:	HSA	NORTHING:	
GEOLOGIST:	P. LEVERONE	DEV. METHOD:	PUMP	EASTING:	



Elevation / Depth of Top of Riser: 1 3'

Elevation / Height of Top of Surface Casing: 1 LAND SURFACE

I.D. of Surface Casing: 8"

Type of Surface Casing: STEEL BOLTDOWN

Type of Surface Seal: GROUT & PORTAND CEMENT

I.D. of Riser: 2"

Type of Riser: SCH 40 PVC

Borehole Diameter: 4 1/4"

Elevation / Depth Top of Rock: 1 NA

Type of Backfill: NA

Elevation / Depth of Seal: 1 1.0

Type of Seal: 30/65 SAND & GROUT

Elevation / Depth of Top of Filter Pack: 1 1.5

Elevation / Depth of Top of Screen: 1 2.0

Type of Screen: SCH 40 PVC

Slot Size x Length: 0.010" X 10'

I.D. of Screen: 2"

Type of Filter Pack: 20/30 SAND

Elevation / Depth of Bottom of Screen: 1 12.0'

Elevation / Depth of Bottom of Filter Pack: 1 12.0'

Type of Backfill Below Well: NATURAL SAND

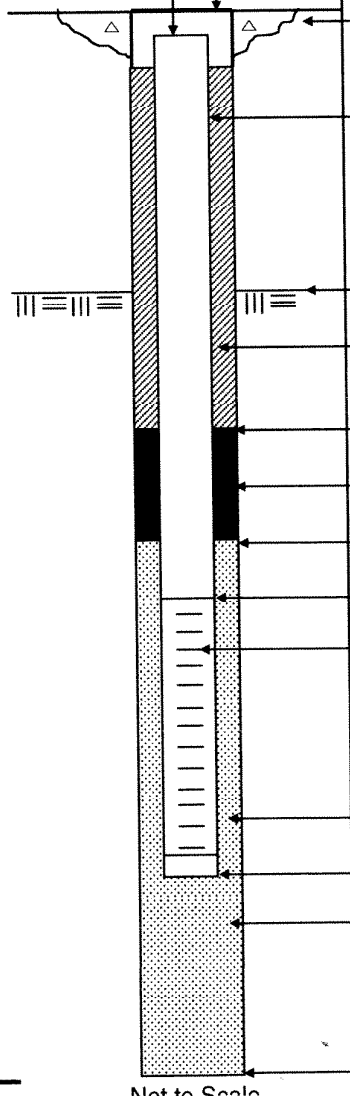
Elevation / Total Depth of Borehole: 1 12.5'

Tetra Tech NUS, Inc.

WELL No.: MW-6

MONITORING WELL SHEET

PROJECT:	CTO 386	DRILLING Co.:	Partridge	BORING No.:	MW-6
PROJECT No.:	2G000103	DRILLER:	GREG OAKES	DATE COMPLETED:	8/4/06
SITE:	413	DRILLING METHOD:	DPT	NORTHING:	
GEOLOGIST:	TC	DEV. METHOD:		EASTING:	



Elevation / Depth of Top of Riser: 1 NA

Elevation / Height of Top of Surface Casing: 1 NA

I.D. of Surface Casing: 8-inch

Type of Surface Casing: STEEL MANHOLE

Type of Surface Seal: QUIKRETE

I.D. of Riser: 1 inch

Type of Riser: Sch 40 PVC Casing

Borehole Diameter: 3-inch

Elevation / Depth Top of Rock: 1 NA

Type of Backfill: Type 1 PORTLAND CEMENT GROUT

Elevation / Depth of Seal: 1 1.5 ft.

Type of Seal: 30/65

Elevation / Depth of Top of Filter Pack: 1 2 ft

Elevation / Depth of Top of Screen: 1 3 ft

Type of Screen: Sch 40 PVC Milli-Slotted Well Screen

Slot Size x Length: 0.010-inch x 10 ft

I.D. of Screen: 1-inch

Type of Filter Pack: 20/30 Silica Sand

Elevation / Depth of Bottom of Screen: 1 13 ft

Elevation / Depth of Bottom of Filter Pack: 1 13

Type of Backfill Below Well: NATURAL FILL

Elevation / Total Depth of Borehole: 1 13

APPENDIX E

GROUNDWATER FIELD SAMPLING DATA SHEETS

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: NAVSTA MAYPORT	SITE LOCATION: BUILDING 413	
WELL NO: MW-01S	SAMPLE ID: MPT-413-MW01S-0106	DATE: 01/17/2006

PURGING DATA

WELL DIAMETER (in): 2"	TOTAL WELL DEPTH (ft): 11.97	STATIC DEPTH TO WATER (ft): ~~4.70~~ @ 3.70	WELL CAPACITY (gal/ft): 0.16

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH − STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
5.0 Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 6.97	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 6.97	PURGING INITIATED AT: 1006	PURGING ENDED AT: 1026	TOTAL VOLUME PURGED (Liters): 6.0

TIME	VOLUME PURGED ~~(gal)~~ (L)	CUMUL. VOLUME PURGED ~~(gal)~~ (L)	PURGE RATE ~~(gpm)~~ (mlpm)	DEPTH TO WATER (ft)	pH	TEMP. (°C)	COND. ~~(µmhos)~~ (µM/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	COLOR	ODOR
1006	-	-	300	3.70	-	-	-	-	-	CLEAR	NONE
1011	1.5	1.5	300	3.72	7.49	21.10	@ .447	0.81	7.9	"	"
1016	1.5	3.0	300	3.72	7.50	21.10	447	0.57	7.8	"	"
1021	1.5	4.5	300	3.72	7.51	21.18	446	0.47	4.6	"	"
1026	1.5	6.0	300	3.72	7.51	21.13	446	0.44	3.8	"	"
SAMPLE TIME 1028											

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ TERRY COTTENOIR	SAMPLER(S) SIGNATURES: Terry Cottenoir	SAMPLING INITIATED AT: 1028	SAMPLING ENDED AT: 1048
PUMP OR TUBING DEPTH IN WELL (feet): 6.97	SAMPLE PUMP FLOW RATE (mL per minute): 200/SM	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (mL)	FINAL pH		
PP	1	AG	1 L	NONE	NONE	-	PAH/8270 C	VT
PP	2	AG	1 L	H_2SO_4	NONE	-	TRPH/FLPRO	VT
PP	1	PE	250 mL	HNO_3	NONE	-	Pb	APP
PP	2	CG	40 mL	NONE	NONE	<2	EDB/8011	SM
PP	3	CG	40mL	HCl	NONE	<2	VOC/8260B	SM

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: NAVSTA MAYPORT	SITE LOCATION: BUILDING 413	
WELL NO: MW-05S	SAMPLE ID: MPT-413-MW05S-0106	DATE: 01/17/06

PURGING DATA

WELL DIAMETER (in): 2"	TOTAL WELL DEPTH (ft): 12.10	STATIC DEPTH TO WATER (ft): 3.60	WELL CAPACITY (gal/ft): 0.16

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH − STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable) 5.1 Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 7.10	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 7.10	PURGING INITIATED AT: 1147	PURGING ENDED AT: 1207	TOTAL VOLUME PURGED (Liters): 6.0

TIME	VOLUME PURGED ~~(gal)~~ (L)	CUMUL. VOLUME PURGED ~~(gal)~~ (L)	PURGE RATE ~~(gpm)~~ (mLpm)	DEPTH TO WATER (ft)	pH	TEMP. (°C)	COND. ~~(µmhos)~~ (mM/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	COLOR	ODOR
1147	-	-	300	3.60	-	-	-	-	-	CLEAR	NONE
1152	1.5	1.5	300	3.62	7.18	21.17	554	0.70	11	"	"
1157	1.5	3.0	300	3.62	7.17	21.08	549	0.30	10	"	"
1202	1.5	4.5	300	3.62	7.18	21.16	548	0.26	8.3	"	"
1207	1.5	6.0	300	3.62	7.19	21.14	544	0.33	7.5	"	"
SAMPLE TIME		1210									

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ TERRY COTTENOIR	SAMPLER(S) SIGNATURES: Terry Cottenoir	SAMPLING INITIATED AT: 1210	SAMPLING ENDED AT: 1230
PUMP OR TUBING DEPTH IN WELL (feet): 7.10	SAMPLE PUMP FLOW RATE (mL per minute): 200/SM	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (mL)	FINAL pH		
PP	1	AG	1 L	NONE	NONE	-	PAH/8270C	VT
PP	2	AG	1 L	H_2SO_4	NONE	-	TRPH/FLPRO	VT
PP	1	PE	250mL	HNO_3	NONE	-	Pb	APP
PP	2	CG	40mL	NONE	NONE	<2	EDB/8011	SM
PP	3	CG	40mL	HCl	NONE	<2	VOC/8260B	SM

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: NAVSTA MAYPORT		SITE LOCATION: BUILDING 413	
WELL NO: MW-03S	SAMPLE ID: MPT-413-MW03S-0106	DATE: 01/17/2006	

PURGING DATA

WELL DIAMETER (in): 2"	TOTAL WELL DEPTH (ft): 12.85	STATIC DEPTH TO WATER (ft): 4.29	WELL CAPACITY (gal/ft): 0.16

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH − STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)
5.2 Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 7.85	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 7.85	PURGING INITIATED AT: 1241	PURGING ENDED AT: 1301	TOTAL VOLUME PURGED (Liters): 6.0

TIME	VOLUME PURGED ~~(gal)~~ (L)	CUMUL. VOLUME PURGED ~~(gal)~~ (L)	PURGE RATE ~~(gpm)~~ (mL/min)	DEPTH TO WATER (ft)	pH	TEMP. (°C)	COND. (µmhos) (mS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	COLOR	ODOR
1241	-	-	300	4.29	-	-	-	-	-	CLEAR	NONE
1246	1.5	1.5	300	4.32	7.56	20.59	453	0.54	11	"	"
1251	1.5	3.0	300	4.32	7.54	20.51	451	0.19	6.9	"	"
1256	1.5	4.5	300	4.32	7.53	20.50	450	0.16	6.9	"	"
1301	1.5	6.0	300	4.32	7.51	20.50	451	0.14	5.2	"	"
SAMPLE TIME		1303									

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ TERRY COTTENOIR	SAMPLER(S) SIGNATURES: Terry Cottenoir	SAMPLING INITIATED AT: 1303	SAMPLING ENDED AT: 1323
PUMP OR TUBING DEPTH IN WELL (feet): 7.85	SAMPLE PUMP FLOW RATE (mL per minute): 200/SM	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (mL)	FINAL pH		
PP	1	AG	1 L	NONE	NONE	-	PAH/8270C	VT
PP	2	AG	1 L	H_2SO_4	NONE	-	TRPH/FLPRO	VT
PP	1	PE	250 mL	HNO_3	NONE	-	Pb	APP
PP	2	CG	40 mL	NONE	NONE	< 2	EDB/8011	SM
PP	3	CG	40 mL	HCl	NONE	< 2	VOC/8260B	SM

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: NAVSTA MAYPORT	SITE LOCATION: BUILDING 413	
WELL NO: MW-04	SAMPLE ID: MPT-413-MW04S-0106	DATE: 01/17/2006

PURGING DATA

WELL DIAMETER (in): 2"	TOTAL WELL DEPTH (ft): 12.85	STATIC DEPTH TO WATER (ft): 3.71	WELL CAPACITY (gal/ft): 0.16

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH − STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable) 5.5 Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 7.85	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 7.85	PURGING INITIATED AT: 1338	PURGING ENDED AT: 1358	TOTAL VOLUME PURGED (Liters): 6.0

TIME	VOLUME PURGED ~~(gal)~~ (L)	CUMUL. VOLUME PURGED ~~(gal)~~ (L)	PURGE RATE (gpm) (mL pm)	DEPTH TO WATER (ft)	pH	TEMP. (°C)	COND. ~~(µmhos)~~ (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	COLOR	ODOR
1338	–	–	300	3.71	–	–	–	–	–	CLEAR	NONE
1343	1.5	1.5	300	3.74	7.43	19.59	437	0.63	6.6	"	"
1348	1.5	3.0	300	3.74	7.43	19.56	429	0.17	4.8	"	"
1353	1.5	4.5	300	3.74	7.43	19.57	423	0.23	3.4	"	"
1358	1.5	6.0	300	3.74	7.42	19.62	424	0.22	3.1	"	"
SAMPLE TIME 1400											

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ TERRY COTTENOIR	SAMPLER(S) SIGNATURES: Terry Cottenoir	SAMPLING INITIATED AT: 1400	SAMPLING ENDED AT: 1420
PUMP OR TUBING DEPTH IN WELL (feet): 7.85	SAMPLE PUMP FLOW RATE (ml per minute): 200/SM	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (mL)	FINAL pH		
PP	1	AG	1 L	NONE	NONE	–	PAH/8270C	VT
PP	2	AG	1 L	H_2SO_4	NONE	–	TRPH/FLPRO	VT
PP	1	PE	250 mL	HNO_3	NONE	–	Pb	APP
PP	2	CG	40 mL	NONE	NONE	<2	EDB/8011	SM
PP	3	CG	40 mL	HCl	NONE	<2	VOC/8260B	SM

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: NAVSTA MAYPORT		SITE LOCATION: BUILDING 413	
WELL NO: MW-02S	SAMPLE ID: MPT-413-MW02S-0106	DATE: 01/17/2006	

PURGING DATA

WELL DIAMETER (in): 2"	TOTAL WELL DEPTH (ft): 12.55	STATIC DEPTH TO WATER (ft): 4.19	WELL CAPACITY (gal/ft): 0.16

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH − STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable) 5.1 Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 7.55	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 7.55	PURGING INITIATED AT: 1428	PURGING ENDED AT: 1448	TOTAL VOLUME PURGED (Liters): 6.0

TIME	VOLUME PURGED ~~(gal)~~ (L)	CUMUL. VOLUME PURGED ~~(gal)~~ (L)	PURGE RATE ~~(gpm)~~ (mL/pm)	DEPTH TO WATER (ft)	pH	TEMP. (°C)	COND. ~~(µmhos)~~ (mS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	COLOR	ODOR
1428	–	–	300	4.19	–	–	–	–	–	CLEAR	NONE
1433	1.5	1.5	300	4.22	7.67	19.72	380	1.21	11	"	"
1438	1.5	3.0	300	4.22	7.65	19.79	381	1.02	13	"	"
1443	1.5	4.5	300	4.22	7.63	19.78	391	1.10	10	"	"
1448	1.5	6.0	300	4.22	7.63	19.74	392	1.05	9.4	"	"
SAMPLE TIME 1450											

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ TERRY COTTENOIR	SAMPLER(S) SIGNATURES Terry Cottenoir	SAMPLING INITIATED AT: 1450	SAMPLING ENDED AT: 1510
PUMP OR TUBING DEPTH IN WELL (feet): 7.55	SAMPLE PUMP FLOW RATE (mL per minute): 200/SM	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (mL)	FINAL pH		
PP	1	AG	1 L	NONE	NONE	–	PAH/8270C	VT
PP	2	AG	1 L	H_2SO_4	NONE	–	TRPH/FLPRO	VT
PP	1	~~AG~~ PE	250 mL	HNO_3	NONE	–	Pb	APP
PP	2	CG	40 mL	NONE	NONE	<2	EDB/8011	SM
PP	3	CG	40 mL	HCl	NONE	<2	VOC/8260B	SM

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Florida Department of Environmental Protection
GROUNDWATER SAMPLING LOG

SITE NAME: b-413		SITE LOCATION: NS May point	
WELL NO: MW06	SAMPLE ID: MPT-413-MW06-0131 20060809		DATE: 8-9-06

PURGING DATA

WELL DIAMETER (in): 1	TOTAL WELL DEPTH (ft): 13	STATIC DEPTH TO WATER (ft): 4.44	WELL CAPACITY (gal/ft): 0.04

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH − DEPTH TO WATER) X WELL CAPACITY =

= (13 − 4.44) X 0.04 = 1.34 x 3.78 = 1.3L

PURGE METHOD: peristaltic	PURGE INITIATED AT: 1013	PURGE ENDED AT: 1033	TOTAL VOL. PURGED (~~gal~~): 5.25 L

TIME	VOLUME PURGED (~~gal~~) L	CUMUL. VOLUME PURGED (~~gal~~) L	PURGE RATE (~~gpm~~) mLPM	DEPTH TO WATER (ft)	pH	TEMP. (°C)	COND. (µmhos)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	COLOR	ODOR
1018	1.5	1.5	250	4.53	7.69	26.56	0.447	1.66	59.9	clear	none
1021	.75	2.25	250	4.54	7.69	26.55	0.443	1.62	42.7	"	"
1024	.75	3.0	250	4.54	7.65	26.52	0.442	1.29	36.3	"	"
1027	.75	3.75	250	4.54	7.61	26.79	0.445	1.30	19.6	"	"
1030	.75	4.5	250	4.54	7.58	26.80	0.448	1.46	13.4	"	"
1033	.75	5.25	250	4.55	7.57	26.79	0.447	1.57	9.84	"	"
		Sample Time: 1035									

WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: WB Harder / THWS	SAMPLER(S) SIGNATURE(S):	
SAMPLING METHOD(S): peristaltic / HL, VT, SM	SAMPLING INITIATED AT: 1035	SAMPLING ENDED AT: 1045
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N)	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (mL)	FINAL pH	
2	AG	1L	H_2SO_4		<2	TRPH
2	AG	1L	NP		~	8270 PAHs
1	PE	250mL	HNO_3		<2	Pb
2	CG	40mL	HCl		<2	EDB
3	CG	40mL	HCl		<2	BTEX + MTBE

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; PE = POLYETHYLENE; O = OTHER (SPECIFY)

NOTE: The above do not constitute all of the information required by Chapter 62-160, F.A.C.

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NAVSTA Mayport
Project No.: 112G00103
Location: Building 1585/413/1388/351/245
Personnel: T. Cottenoir
Weather Conditions: 50°F, SUNNY
Measuring Device: ORS FREE PRODUCT PROBE
Tidally Influenced: Yes X No ___
Remarks:

Well or Piezometer Number MPT-	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	PID (ppm) BK/BH
1585-MW01S	2/13/2006	1129		14.75	7.86			
1585-MW02S	2/13/2006	1131		14.9	7.63			
1585-MW03S	2/13/2006	1133		14.6	9.89	~~1.66~~		
413-MW01S	2/13/2006	1113		11.97	3.90			
413-MW02S	2/13/2006	1115		12.55	4.40			
413-MW03S	2/13/2006	1117		12.85	4.48			
413-MW04S	2/13/2006	1119		12.85	3.91			
413-MW05S	2/13/2006	1121		12.1	3.73			
1388-MW01S	2/13/2006	1045		11.65	4.08			
1388-MW02S	2/13/2006	1048		13.8	5.21			
1388-MW03S	2/13/2006	1054		14.05	6.75	~~1.76~~		
1388-MW04D	2/13/2006	1052		39.45	5.45			
1388-MW05S	2/13/2006	1050		10.5				
351-MW01S	2/13/2006	1056		12.95	5.43			
351-MW02S	2/13/2006	1104		12.75	5.38			
351 MW03S	2/13/2006	1106		12.85	5.29			
351-MW04S	2/13/2006	1102		10.9	6.02			
351-MW05S	2/13/2006	1100		7.3	5.81			
351-MW06S	2/13/2006	1058		9.45				

ppm=parts per million; BK=background; and BH=borehole of the well.

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NAVSTA Mayport
Project No.: 112G00103
Location: Building 1585/413/1388/351
Personnel: T. Cottenoir
Weather Conditions: 65°F Sunny
Measuring Device:
Tidally Influenced: Yes X No
Remarks:

Well or Piezometer Number MPT-	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	PID (ppm) BK/BH
1585-MW01S	1/20/2006	0924		14.75	7.79			0.0/0.0
1585-MW02S	1/20/2006	0926		14.9	7.53			0.0/0.0
1585-MW03S	1/20/2006	0928		14.6	9.13			0.0/0.0
413-MW01S	1/20/2006	0938		11.97	3.79			0.0/0.0
413-MW02S	1/20/2006	0940		12.55	4.30			0.0/0.0
413-MW03S	1/20/2006	0942		12.85	4.39			0.0/0.0
413-MW04S	1/20/2006	0944		12.85	3.82			0.0/0.0
413-MW05S	1/20/2006	0936		12.1	3.69			0.0/0.0
1388-MW01S	1/20/2006	0956		11.65	4.16			0.0/0.0
1388-MW02S	1/20/2006	0958		13.8	5.15			0.0/0.0
1388-MW03S	1/20/2006	1000		14.05	5.16			0.0/0.0
1388-MW04D	1/20/2006	1002		39.45	5.42			0.0/0.0
351-MW01S	1/20/2006	1004		12.95	5.35			0.0/0.0
351-MW02S	1/20/2006	1006		12.75	5.12			0.0/0.0
351-MW03S	1/20/2006	1008		12.85	5.14			0.0/0.0
351-MW04S	1/20/2006	1010		10.9	5.14			0.0/0.0
351-MW05S	1/20/2006	1012		7.3	5.02			0.0/0.0

ppm=parts per million; BK=background; and BH=borehole of the well.

* All measurements to the nearest 0.01 foot

APPENDIX F

MOBILE LABORATORY ANALYTICAL RESULTS

KB LABS, INC.

Final Data Report

Project Number 05-167

MS Mayport CTO 386

Jacksonville, 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-413-SB01-04	8/8/05	Soil	1	< 0.050	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.050	< 0.050	< 0.050
MPT-413-SB04-02	8/8/05	Soil	1	< 0.050	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.050	< 0.050	< 0.050
MPT-413-SB02-02	8/8/05	Soil	1	< 0.050	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.050	< 0.050	< 0.050
MPT-413-SB03-02	8/8/05	Soil	1	< 0.050	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.050	< 0.050	< 0.050
MPT-413-SB05-02	8/8/05	Soil	1	< 0.050	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.050	< 0.050	< 0.050
MPT-413-SB06-02	8/8/05	Soil	1	< 0.050	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.050	< 0.050	< 0.050
MPT-413-SB07-02	8/8/05	Soil	1	< 0.050	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.050	< 0.050	< 0.050
MPT-413-SB08-02	8/8/05	Soil	1	< 0.050	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.050	< 0.050	< 0.050
MPT-413-TMW-01	8/8/05	Water	1	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0
MPT-413-TMW-02	8/8/05	Water	1	< 5.0	**4.5**	< 1.0	**13.8**	**38.3**	**1.1**	**34.2**	**31.9**	**27.0**
MPT-413-TMW-03	8/8/05	Water	1	< 5.0	< 1.0	< 1.0	**9.6**	**16.3**	< 1.0	**34.7**	**28.7**	**38.0**
MPT-413-TMW-04	8/8/05	Water	1	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0
MPT-413-TMW-06	8/8/05	Water	1	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	**1.7**	**9.4**	**22.4**	**22.4**

Reporting units for waters are ug/L and for soils are mg/Kg.

KB LABS, INC.

Final Data Report

Project Number 05-167

MS Mayport CTO 386

Jacksonville, 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-413-TMW-05	8/8/05	Water	1	< 5.0	< 1.0	< 1.0	< 1.0	**1.0**	< 1.0	< 5.0	< 5.0	< 5.0
MPT-413-TMW-07	8/8/05	Water	1	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0
MPT-413-TMW-08	8/8/05	Water	1	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0
MPT-413-TMW-09	8/8/05	Water	1	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0
MPT-413-TMW-10	8/8/05	Water	1	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0
MPT-413-TMW-11	8/8/05	Water	1	< 5.0	< 1.0	**1.1**	< 1.0	< 1.0	< 1.0	< 5.0	< 5.0	< 5.0
MPT-413-TMW-12	8/9/05	Water	1	< 5.0	< 1.0	**1.3**	**1.5**	**6.2**	**2.9**	< 5.0	< 5.0	< 5.0

Data Qualifier "J" sample results are estimated because of quality control criteria excedence.

Reporting units for waters are ug/L and for soils are mg/Kg.

APPENDIX G

FIXED-BASE LABORATORY ANALYTICAL RESULTS

Environmental Conservation Laboratories, Inc.
4810 Executive Park Court, Suite 211
Jacksonville FL, 32216-6069
Phone: 904.296.3007 FAX: 904.296.6210

www.encolabs.com

February 04, 2006

Tetra Tech NUS (BR006)
Attn: Mark Peterson
8640 Philips Highway Suite 16
Jacksonville, FL 32256

RE: Project Number: 112G00103, Project Name/Desc: CTO#386
ENCO Workorder: B600445

Dear Mark Peterson,

Enclosed is a copy of your laboratory report for test samples received by our laboratory on 1/20/06 4:45:00PM.

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. Results for these procedures apply only to the samples as submitted.

This data has been produced in accordance with NELAC standards (June, 2003). This report shall not be reproduced except in full, without the written approval of the Laboratory.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Chris Tompkins
Project Manager

Enclosure(s)

The total number of pages in this report, including this page is 44.

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SAMPLE SUMMARY/LABORATORY CHRONICLE

Client ID: MPT-413-MW01S-0106 **Lab ID:** B600445-01

Sampled: 01/17/06 10:28 **Received:** 01/20/06 16:45

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 6010B	07/16/06	01/25/06 15:30	1/27/2006 04:43
EPA 8011	01/31/06	01/30/06 07:36	1/31/2006 16:02
EPA 8260B	01/31/06	01/29/06 08:50	1/30/2006 13:41
EPA 8270C	01/24/06	01/23/06 07:30	1/29/2006 23:53
FLPRO	01/24/06	01/23/06 07:59	1/23/2006 22:26

Client ID: MPT-413-MW05S-0106 **Lab ID:** B600445-02

Sampled: 01/17/06 12:10 **Received:** 01/20/06 16:45

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 6010B	07/16/06	01/25/06 15:30	1/27/2006 04:51
EPA 8011	01/31/06	01/30/06 07:36	1/31/2006 16:20
EPA 8260B	01/31/06	01/29/06 08:50	1/30/2006 14:17
EPA 8270C	01/24/06	01/23/06 07:30	1/30/2006 00:10
FLPRO	01/24/06	01/23/06 07:59	1/23/2006 23:11

Client ID: MPT-413-MW03S-0106 **Lab ID:** B600445-03

Sampled: 01/17/06 13:03 **Received:** 01/20/06 16:45

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 6010B	07/16/06	01/25/06 15:30	1/27/2006 04:59
EPA 8011	01/31/06	01/30/06 07:36	1/31/2006 16:38
EPA 8260B	01/31/06	01/29/06 08:50	1/30/2006 14:52
EPA 8270C	01/24/06	01/23/06 07:30	1/30/2006 00:28
FLPRO	01/24/06	01/23/06 07:59	1/23/2006 23:33

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SAMPLE SUMMARY/LABORATORY CHRONICLE

Client ID: MPT-413-MW01S-0106 **Lab ID:** B600445-04

Sampled: 01/17/06 14:00 **Received:** 01/20/06 16:45

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 6010B	07/16/06	01/25/06 15:30	1/27/2006 05:06
EPA 8011	01/31/06	01/30/06 07:36	1/31/2006 17:14
EPA 8260B	01/31/06	01/29/06 08:50	1/30/2006 11:55
EPA 8270C	01/24/06	01/23/06 07:30	1/30/2006 00:46
FLPRO	01/24/06	01/23/06 07:59	1/23/2006 23:56

Client ID: MPT-413-MW02S-0106 **Lab ID:** B600445-05

Sampled: 01/17/06 14:50 **Received:** 01/20/06 16:45

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 6010B	07/16/06	01/25/06 15:30	1/27/2006 05:14
EPA 8011	01/31/06	01/30/06 07:36	1/31/2006 17:32
EPA 8260B	01/31/06	01/29/06 08:50	1/30/2006 12:31
EPA 8270C	01/24/06	01/23/06 07:30	1/30/2006 01:03
FLPRO	01/24/06	01/23/06 07:59	1/24/2006 00:18

Client ID: MPT-413-EB01-0106 **Lab ID:** B600445-06

Sampled: 01/17/06 15:15 **Received:** 01/20/06 16:45

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 8260B	01/31/06	01/29/06 08:50	1/30/2006 13:06

SUMMARY TABLE - SAMPLE DETECTS ONLY

Client ID: **MPT-413-MW01S-0106** Lab ID: **B600445-01**

No Results Detected

Client ID: **MPT-413-MW04S-0106** Lab ID: **B600445-04**

No Results Detected

Client ID: **MPT-413-MW02S-0106** Lab ID: **B600445-05**

No Results Detected

SUMMARY TABLE - SAMPLE DETECTS ONLY

Client ID: **MPT-413-MW05S-0106** Lab ID: **B600445-02**

Analyte	Results/Qual	MRL	Units	Method
C8-C40	0.530	0.170	mg/L	FLPRO
1-Methylnaphthalene	0.29	0.10	ug/L	EPA 8270C
Acenaphthene	0.11	0.10	ug/L	EPA 8270C
Fluorene	0.07 I	0.10	ug/L	EPA 8270C
Naphthalene	0.09 I	0.10	ug/L	EPA 8270C

Client ID: **MPT-413-MW03S-0106** Lab ID: **B600445-03**

Analyte	Results/Qual	MRL	Units	Method
m,p-Xylenes	1.02 I	2.00	ug/L	EPA 8260B

Client ID: **MPT-413-EB01-0106** Lab ID: **B600445-06**

Analyte	Results/Qual	MRL	Units	Method
Chloroform	0.770 I	1.00	ug/L	EPA 8260B

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW01S-0106	Project:	CTO#386
Lab #:	B600445-01	Work Order #:	B600445
Prep. Method:	EPA 5030B_MS	Matrix:	Water
Analyzed:	01/30/06 By: ds/	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A29004		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1,1,1-Trichloroethane	71-55-6	0.300 U	0.300	1.00	ug/L
1,1,2,2-Tetrachloroethane	79-34-5	0.200 U	0.200	0.200	ug/L
1,1,2-Trichloroethane	79-00-5	0.300 U	0.300	1.00	ug/L
1,1-Dichloroethane	75-34-3	0.200 U	0.200	1.00	ug/L
1,1-Dichloroethene	75-35-4	0.200 U	0.200	1.00	ug/L
1,2-Dichlorobenzene	95-50-1	0.200 U	0.200	1.00	ug/L
1,2-Dichloroethane	107-06-2	0.100 U	0.100	1.00	ug/L
1,2-Dichloropropane	78-87-5	0.400 U	0.400	1.00	ug/L
1,3-Dichlorobenzene	541-73-1	0.200 U	0.200	1.00	ug/L
1,4-Dichlorobenzene	106-46-7	0.100 U	0.100	1.00	ug/L
Benzene	71-43-2	0.200 U	0.200	1.00	ug/L
Bromodichloromethane	75-27-4	0.200 U	0.200	0.400	ug/L
Bromoform	75-25-2	0.200 U	0.200	1.00	ug/L
Bromomethane	74-83-9	0.600 U	0.600	1.00	ug/L
Carbon tetrachloride	56-23-5	0.300 U	0.300	1.00	ug/L
Chlorobenzene	108-90-7	0.200 U	0.200	1.00	ug/L
Chloroethane	75-00-3	0.300 U	0.300	1.00	ug/L
Chloroform	67-66-3	0.200 U	0.200	1.00	ug/L
Chloromethane	74-87-3	0.300 U	0.300	1.00	ug/L
cis-1,2-Dichloroethene	156-59-4	0.200 U	0.200	1.00	ug/L
cis-1,3-Dichloropropene	10061-01-5	0.100 U	0.100	0.200	ug/L
Dibromochloromethane	124-48-1	0.200 U	0.200	0.200	ug/L
Dichlorodifluoromethane	75-71-8	0.300 U	0.300	1.00	ug/L
Ethylbenzene	100-41-4	0.300 U	0.300	1.00	ug/L
m,p-Xylenes	108-38-3/106-42-3	0.300 U	0.300	2.00	ug/L
Methylene chloride	75-09-2	2.00 U	2.00	2.00	ug/L
Methyl-tert-Butyl Ether	1634-04-4	0.200 U	0.200	1.00	ug/L
o-Xylene	95-47-6	0.200 U	0.200	1.00	ug/L
Tetrachloroethene	127-18-4	0.300 U	0.300	1.00	ug/L
Toluene	108-88-3	0.200 U	0.200	1.00	ug/L
trans-1,2-Dichloroethene	156-60-5	0.200 U	0.200	1.00	ug/L
trans-1,3-Dichloropropene	10061-02-6	0.200 U	0.200	0.200	ug/L
Trichloroethene	79-01-6	0.300 U	0.300	1.00	ug/L
Trichlorofluoromethane	75-69-4	0.300 U	0.300	1.00	ug/L
Vinyl chloride	75-01-4	0.400 U	0.400	1.00	ug/L

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW01S-0106	Project:	CTO#386
Lab #:	B600445-01	Work Order #:	B600445
Prep. Method:	EPA 5030B_MS	Matrix:	Water
Analyzed:	01/30/06 By: ds/	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A29004		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results		MDL	MRL	Units
Surrogate Recovery		**Result**	**Spike Level**	**% Recovery**		**% Recovery Limits**
4-Bromofluorobenzene	460-00-4	48.4	50.0	97 %		60-130
4-Bromofluorobenzene	460-00-4	48.4	50.0	97 %		60-130
Dibromofluoromethane	1868-53-7	45.6	50.0	91 %		66-131
Dibromofluoromethane	1868-53-7	45.6	50.0	91 %		66-131
Toluene-d8	2037-26-5	49.3	50.0	99 %		67-139
Toluene-d8	2037-26-5	49.3	50.0	99 %		67-139

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW01S-0106	Project:	CTO#386
Lab #:	B600445-01	Work Order #:	B600445
Prep. Method:	EPA 3510C	Matrix:	Water
Analyzed:	01/23/06 By: rw	Unit:	mg/L
Anal. Method:	FLPRO	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A23002		

FL Petroleum Range Organics

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
C8-C40	NA	0.094 U	0.094	0.170	mg/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
n-Nonatriacontane	7194-86-7	0.0527	0.100	53 %	22-137
o-Terphenyl	84-15-1	0.0388	0.0500	78 %	33-133

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW01S-0106	Project:	CTO#386
Lab #:	B600445-01	Work Order #:	B600445
Prep. Method:	EPA 3520C	Matrix:	Water
Analyzed:	01/31/06 By: rw	Unit:	ug/L
Anal. Method:	EPA 8011	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A30006		

Semivolatile Organic Compounds by GC

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1,2-Dibromoethane	106-93-4	0.01 U	0.01	0.02	ug/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
1,3-Dichlorobenzene	541-73-1	1.11	1.00	111 %	30-170

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW01S-0106	Project:	CTO#386
Lab #:	B600445-01	Work Order #:	B600445
Prep. Method:	EPA 3510C_MS	Matrix:	Water
Analyzed:	01/29/06 By: jj	Unit:	ug/L
Anal. Method:	EPA 8270C	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A23001		

Semivolatile Organic Compounds by GCMS SIM

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1-Methylnaphthalene	90-12-0	0.02 U	0.02	0.10	ug/L
2-Methylnaphthalene	91-57-6	0.02 U	0.02	0.10	ug/L
Acenaphthene	83-32-9	0.02 U	0.02	0.10	ug/L
Acenaphthylene	208-96-8	0.01 U	0.01	0.10	ug/L
Anthracene	120-12-7	0.02 U	0.02	0.10	ug/L
Benzo(a)anthracene	56-55-3	0.01 U	0.01	0.10	ug/L
Benzo(a)pyrene	50-32-8	0.01 U	0.01	0.10	ug/L
Benzo(b)fluoranthene	205-99-2	0.03 U	0.03	0.10	ug/L
Benzo(g,h,i)perylene	191-24-2	0.03 U	0.03	0.10	ug/L
Benzo(k)fluoranthene	207-08-9	0.02 U	0.02	0.10	ug/L
Chrysene	218-01-9	0.02 U	0.02	0.10	ug/L
Dibenzo(a,h)anthracene	53-70-3	0.02 U	0.02	0.10	ug/L
Fluoranthene	206-44-0	0.01 U	0.01	0.10	ug/L
Fluorene	86-73-7	0.02 U	0.02	0.10	ug/L
Indeno(1,2,3-cd)pyrene	193-39-5	0.02 U	0.02	0.10	ug/L
Naphthalene	91-20-3	0.02 U	0.02	0.10	ug/L
Phenanthrene	85-01-8	0.02 U	0.02	0.10	ug/L
Pyrene	129-00-0	0.02 U	0.02	0.10	ug/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
p-Terphenyl	92-94-4	3.89	5.00	78 %	10-167

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW01S-0106	Project:	CTO#386
Lab #:	B600445-01	Work Order #:	B600445
		Matrix:	Water

Metals by EPA 6000/7000 Series Methods

Parameter	CAS Number	Analytical Results		MDL	MRL	Units	Analysis Method	Prep Method	Analytical Batch
Lead	7439-92-1	0.002	U	0.002	0.01	mg/L	EPA 6010B	EPA 3005A	6A23015

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW05S-0106	Project:	CTO#386
Lab #:	B600445-02	Work Order #:	B600445
Prep. Method:	EPA 5030B_MS	Matrix:	Water
Analyzed:	01/30/06 By: ds/	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A29004		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1,1,1-Trichloroethane	71-55-6	0.300 U	0.300	1.00	ug/L
1,1,2,2-Tetrachloroethane	79-34-5	0.200 U	0.200	0.200	ug/L
1,1,2-Trichloroethane	79-00-5	0.300 U	0.300	1.00	ug/L
1,1-Dichloroethane	75-34-3	0.200 U	0.200	1.00	ug/L
1,1-Dichloroethene	75-35-4	0.200 U	0.200	1.00	ug/L
1,2-Dichlorobenzene	95-50-1	0.200 U	0.200	1.00	ug/L
1,2-Dichloroethane	107-06-2	0.100 U	0.100	1.00	ug/L
1,2-Dichloropropane	78-87-5	0.400 U	0.400	1.00	ug/L
1,3-Dichlorobenzene	541-73-1	0.200 U	0.200	1.00	ug/L
1,4-Dichlorobenzene	106-46-7	0.100 U	0.100	1.00	ug/L
Benzene	71-43-2	0.200 U	0.200	1.00	ug/L
Bromodichloromethane	75-27-4	0.200 U	0.200	0.400	ug/L
Bromoform	75-25-2	0.200 U	0.200	1.00	ug/L
Bromomethane	74-83-9	0.600 U	0.600	1.00	ug/L
Carbon tetrachloride	56-23-5	0.300 U	0.300	1.00	ug/L
Chlorobenzene	108-90-7	0.200 U	0.200	1.00	ug/L
Chloroethane	75-00-3	0.300 U	0.300	1.00	ug/L
Chloroform	67-66-3	0.200 U	0.200	1.00	ug/L
Chloromethane	74-87-3	0.300 U	0.300	1.00	ug/L
cis-1,2-Dichloroethene	156-59-4	0.200 U	0.200	1.00	ug/L
cis-1,3-Dichloropropene	10061-01-5	0.100 U	0.100	0.200	ug/L
Dibromochloromethane	124-48-1	0.200 U	0.200	0.200	ug/L
Dichlorodifluoromethane	75-71-8	0.300 U	0.300	1.00	ug/L
Ethylbenzene	100-41-4	0.300 U	0.300	1.00	ug/L
m,p-Xylenes	108-38-3/106-42-3	0.300 U	0.300	2.00	ug/L
Methylene chloride	75-09-2	2.00 U	2.00	2.00	ug/L
Methyl-tert-Butyl Ether	1634-04-4	0.200 U	0.200	1.00	ug/L
o-Xylene	95-47-6	0.200 U	0.200	1.00	ug/L
Tetrachloroethene	127-18-4	0.300 U	0.300	1.00	ug/L
Toluene	108-88-3	0.200 U	0.200	1.00	ug/L
trans-1,2-Dichloroethene	156-60-5	0.200 U	0.200	1.00	ug/L
trans-1,3-Dichloropropene	10061-02-6	0.200 U	0.200	0.200	ug/L
Trichloroethene	79-01-6	0.300 U	0.300	1.00	ug/L
Trichlorofluoromethane	75-69-4	0.300 U	0.300	1.00	ug/L
Vinyl chloride	75-01-4	0.400 U	0.400	1.00	ug/L

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW05S-0106	Project:	CTO#386
Lab #:	B600445-02	Work Order #:	B600445
Prep. Method:	EPA 5030B_MS	Matrix:	Water
Analyzed:	01/30/06 By: ds/	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A29004		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
Surrogate Recovery		**Result**	**Spike Level**	**% Recovery**	**% Recovery Limits**
4-Bromofluorobenzene	460-00-4	51.7	50.0	103 %	60-130
4-Bromofluorobenzene	460-00-4	51.7	50.0	103 %	60-130
Dibromofluoromethane	1868-53-7	45.5	50.0	91 %	66-131
Dibromofluoromethane	1868-53-7	45.5	50.0	91 %	66-131
Toluene-d8	2037-26-5	49.7	50.0	99 %	67-139
Toluene-d8	2037-26-5	49.7	50.0	99 %	67-139

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW05S-0106	Project:	CTO#386
Lab #.	B600445-02	Work Order #:	B600445
Prep. Method:	EPA 3510C	Matrix:	Water
Analyzed:	01/23/06 By: rw	Unit:	mg/L
Anal. Method:	FLPRO	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A23002		

FL Petroleum Range Organics

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
C8-C40	NA	**0.530**	0.094	0.170	mg/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
n-Nonatriacontane	7194-86-7	0.0453	0.100	45 %	22-137
o-Terphenyl	84-15-1	0.0378	0.0500	76 %	33-133

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW05S-0106	Project:	CTO#386
Lab #:	B600445-02	Work Order #:	B600445
Prep. Method:	EPA 3520C	Matrix:	Water
Analyzed:	01/31/06 By: rw	Unit:	ug/L
Anal. Method:	EPA 8011	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A30006		

Semivolatile Organic Compounds by GC

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1,2-Dibromoethane	106-93-4	0.01 U	0.01	0.02	ug/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
1,3-Dichlorobenzene	541-73-1	1.13	1.00	113 %	30-170

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW05S-0106	Project:	CTO#386
Lab #:	D600445-02	Work Order #:	D600445
Prep. Method:	EPA 3510C_MS	Matrix:	Water
Analyzed:	01/30/06 By: jj	Unit:	ug/L
Anal. Method:	EPA 8270C	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A23001		

Semivolatile Organic Compounds by GCMS SIM

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1-Methylnaphthalene	90-12-0	**0.29**	0.02	0.10	ug/L
2-Methylnaphthalene	91-57-6	0.02 U	0.02	0.10	ug/L
Acenaphthene	83-32-9	**0.11**	0.02	0.10	ug/L
Acenaphthylene	208-96-8	0.01 U	0.01	0.10	ug/L
Anthracene	120-12-7	0.02 U	0.02	0.10	ug/L
Benzo(a)anthracene	56-55-3	0.01 U	0.01	0.10	ug/L
Benzo(a)pyrene	50-32-8	0.01 U	0.01	0.10	ug/L
Benzo(b)fluoranthene	205-99-2	0.03 U	0.03	0.10	ug/L
Benzo(g,h,i)perylene	191-24-2	0.03 U	0.03	0.10	ug/L
Benzo(k)fluoranthene	207-08-9	0.02 U	0.02	0.10	ug/L
Chrysene	218-01-9	0.02 U	0.02	0.10	ug/L
Dibenzo(a,h)anthracene	53-70-3	0.02 U	0.02	0.10	ug/L
Fluoranthene	206-44-0	0.01 U	0.01	0.10	ug/L
Fluorene	86-73-7	**0.07** I	0.02	0.10	ug/L
Indeno(1,2,3-cd)pyrene	193-39-5	0.02 U	0.02	0.10	ug/L
Naphthalene	91-20-3	**0.09** I	0.02	0.10	ug/L
Phenanthrene	85-01-8	0.02 U	0.02	0.10	ug/L
Pyrene	129-00-0	0.02 U	0.02	0.10	ug/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
p-Terphenyl	92-94-4	3.67	5.00	73 %	10-167

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ANALYTICAL REPORT

Sample ID: MPT-413-MW05S-0106
Lab #: B600445-02

Project: CTO#386
Work Order #: B600445
Matrix: Water

Metals by EPA 6000/7000 Series Methods

Parameter	CAS Number	Analytical Results	MDL	MRL	Units	Analysis Method	Prep Method	Analytical Batch
Lead	7439-92-1	0.002 U	0.002	0.01	mg/L	EPA 6010B	EPA 3005A	6A23015

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW03S-0106	Project:	CTO#386
Lab #:	B600445-03	Work Order #:	B600445
Prep. Method:	EPA 5030B_MS	Matrix:	Water
Analyzed:	01/30/06 By: ds/	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A29004		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1,1,1-Trichloroethane	71-55-6	0.300 U	0.300	1.00	ug/L
1,1,2,2-Tetrachloroethane	79-34-5	0.200 U	0.200	0.200	ug/L
1,1,2-Trichloroethane	79-00-5	0.300 U	0.300	1.00	ug/L
1,1-Dichloroethane	75-34-3	0.200 U	0.200	1.00	ug/L
1,1-Dichloroethene	75-35-4	0.200 U	0.200	1.00	ug/L
1,2-Dichlorobenzene	95-50-1	0.200 U	0.200	1.00	ug/L
1,2-Dichloroethane	107-06-2	0.100 U	0.100	1.00	ug/L
1,2-Dichloropropane	78-87-5	0.400 U	0.400	1.00	ug/L
1,3-Dichlorobenzene	541-73-1	0.200 U	0.200	1.00	ug/L
1,4-Dichlorobenzene	106-46-7	0.100 U	0.100	1.00	ug/L
Benzene	71-43-2	0.200 U	0.200	1.00	ug/L
Bromodichloromethane	75-27-4	0.200 U	0.200	0.400	ug/L
Bromoform	75-25-2	0.200 U	0.200	1.00	ug/L
Bromomethane	74-83-9	0.600 U	0.600	1.00	ug/L
Carbon tetrachloride	56-23-5	0.300 U	0.300	1.00	ug/L
Chlorobenzene	108-90-7	0.200 U	0.200	1.00	ug/L
Chloroethane	75-00-3	0.300 U	0.300	1.00	ug/L
Chloroform	67-66-3	0.200 U	0.200	1.00	ug/L
Chloromethane	74-87-3	0.300 U	0.300	1.00	ug/L
cis-1,2-Dichloroethene	156-59-4	0.200 U	0.200	1.00	ug/L
cis-1,3-Dichloropropene	10061-01-5	0.100 U	0.100	0.200	ug/L
Dibromochloromethane	124-48-1	0.200 U	0.200	0.200	ug/L
Dichlorodifluoromethane	75-71-8	0.300 U	0.300	1.00	ug/L
Ethylbenzene	100-41-4	0.300 U	0.300	1.00	ug/L
m,p-Xylenes	108-38-3/106-42-3	**1.02** I	0.300	2.00	ug/L
Methylene chloride	75-09-2	2.00 U	2.00	2.00	ug/L
Methyl-tert-Butyl Ether	1634-04-4	0.200 U	0.200	1.00	ug/L
o-Xylene	95-47-6	0.200 U	0.200	1.00	ug/L
Tetrachloroethene	127-18-4	0.300 U	0.300	1.00	ug/L
Toluene	108-88-3	0.200 U	0.200	1.00	ug/L
trans-1,2-Dichloroethene	156-60-5	0.200 U	0.200	1.00	ug/L
trans-1,3-Dichloropropene	10061-02-6	0.200 U	0.200	0.200	ug/L
Trichloroethene	79-01-6	0.300 U	0.300	1.00	ug/L
Trichlorofluoromethane	75-69-4	0.300 U	0.300	1.00	ug/L
Vinyl chloride	75-01-4	0.400 U	0.400	1.00	ug/L

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW03S-0106	Project:	CTO#386
Lab #:	B600445-03	Work Order #:	B600445
Prep. Method:	EPA 5030B_MS	Matrix:	Water
Analyzed:	01/30/06 By: ds/	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A29004		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results		MDL	MRL	Units
Surrogate Recovery		**Result**	**Spike Level**	**% Recovery**		**% Recovery Limits**
4-Bromofluorobenzene	460-00-4	51.7	50.0	103 %		60-130
4-Bromofluorobenzene	460-00-4	51.7	50.0	103 %		60-130
Dibromofluoromethane	1868-53-7	46.8	50.0	94 %		66-131
Dibromofluoromethane	1868-53-7	46.8	50.0	94 %		66-131
Toluene-d8	2037-26-5	51.4	50.0	103 %		67-139
Toluene-d8	2037-26-5	51.4	50.0	103 %		67-139

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW03S-0106	Project:	CTO#386
Lab #:	B600445-03	Work Order #:	B600445
Prep. Method:	EPA 3510C	Matrix:	Water
Analyzed:	01/23/06 By: rw	Unit:	mg/L
Anal. Method:	FLPRO	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A23002		

FL Petroleum Range Organics

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
C8-C40	NA	0.094 U	0.094	0.170	mg/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
n-Nonatriacontane	7194-86-7	0.0515	0.100	52 %	22-137
o-Terphenyl	84-15-1	0.0420	0.0500	84 %	33-133

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW03S-0106	Project:	CTO#386
Lab #:	B600445-03	Work Order #:	B600445
Prep. Method:	EPA 3520C	Matrix:	Water
Analyzed:	01/31/06 By: rw	Unit:	ug/L
Anal. Method:	EPA 8011	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A30006		

Semivolatile Organic Compounds by GC

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1,2-Dibromoethane	106-93-4	0.01 U	0.01	0.02	ug/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
1,3-Dichlorobenzene	541-73-1	1.16	1.00	116 %	30-170

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW03S-0106	Project:	CTO#386
Lab #:	B600445-03	Work Order #:	B600445
Prep. Method:	EPA 3510C_MS	Matrix:	Water
Analyzed:	01/30/06 By: jj	Unit:	ug/L
Anal. Method:	EPA 8270C	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A23001		

Semivolatile Organic Compounds by GCMS SIM

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1-Methylnaphthalene	90-12-0	0.02 U	0.02	0.10	ug/L
2-Methylnaphthalene	91-57-6	0.02 U	0.02	0.10	ug/L
Acenaphthene	83-32-9	0.02 U	0.02	0.10	ug/L
Acenaphthylene	208-96-8	0.01 U	0.01	0.10	ug/L
Anthracene	120-12-7	0.02 U	0.02	0.10	ug/L
Benzo(a)anthracene	56-55-3	0.01 U	0.01	0.10	ug/L
Benzo(a)pyrene	50-32-8	0.01 U	0.01	0.10	ug/L
Benzo(b)fluoranthene	205-99-2	0.03 U	0.03	0.10	ug/L
Benzo(g,h,i)perylene	191-24-2	0.03 U	0.03	0.10	ug/L
Benzo(k)fluoranthene	207-08-9	0.02 U	0.02	0.10	ug/L
Chrysene	218-01-9	0.02 U	0.02	0.10	ug/L
Dibenzo(a,h)anthracene	53-70-3	0.02 U	0.02	0.10	ug/L
Fluoranthene	206-44-0	0.01 U	0.01	0.10	ug/L
Fluorene	86-73-7	0.02 U	0.02	0.10	ug/L
Indeno(1,2,3-cd)pyrene	193-39-5	0.02 U	0.02	0.10	ug/L
Naphthalene	91-20-3	0.02 U	0.02	0.10	ug/L
Phenanthrene	85-01-8	0.02 U	0.02	0.10	ug/L
Pyrene	129-00-0	0.02 U	0.02	0.10	ug/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
p-Terphenyl	92-94-4	4.15	5.00	83 %	10-167

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW03S-0106	Project:	CTO#386
Lab #:	B600445-03	Work Order #.	B600445
		Matrix:	Water

Metals by EPA 6000/7000 Series Methods

Parameter	CAS Number	Analytical Results	MDL	MRL	Units	Analysis Method	Prep Method	Analytical Batch
Lead	7439-92-1	0.002 U	0.002	0.01	mg/L	EPA 6010B	EPA 3005A	6A23015

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW04S-0106	Project:	CTO#386
Lab #:	B600445-04	Work Order #:	B600445
Prep. Method:	EPA 5030B_MS	Matrix:	Water
Analyzed:	01/30/06 By: ds/	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A29004		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1,1,1-Trichloroethane	71-55-6	0.300 U	0.300	1.00	ug/L
1,1,2,2-Tetrachloroethane	79-34-5	0.200 U	0.200	0.200	ug/L
1,1,2-Trichloroethane	79-00-5	0.300 U	0.300	1.00	ug/L
1,1-Dichloroethane	75-34-3	0.200 U	0.200	1.00	ug/L
1,1-Dichloroethene	75-35-4	0.200 U	0.200	1.00	ug/L
1,2-Dichlorobenzene	95-50-1	0.200 U	0.200	1.00	ug/L
1,2-Dichloroethane	107-06-2	0.100 U	0.100	1.00	ug/L
1,2-Dichloropropane	78-87-5	0.400 U	0.400	1.00	ug/L
1,3-Dichlorobenzene	541-73-1	0.200 U	0.200	1.00	ug/L
1,4-Dichlorobenzene	106-46-7	0.100 U	0.100	1.00	ug/L
Benzene	71-43-2	0.200 U	0.200	1.00	ug/L
Bromodichloromethane	75-27-4	0.200 U	0.200	0.400	ug/L
Bromoform	75-25-2	0.200 U	0.200	1.00	ug/L
Bromomethane	74-83-9	0.600 U	0.600	1.00	ug/L
Carbon tetrachloride	56-23-5	0.300 U	0.300	1.00	ug/L
Chlorobenzene	108-90-7	0.200 U	0.200	1.00	ug/L
Chloroethane	75-00-3	0.300 U	0.300	1.00	ug/L
Chloroform	67-66-3	0.200 U	0.200	1.00	ug/L
Chloromethane	74-87-3	0.300 U	0.300	1.00	ug/L
cis-1,2-Dichloroethene	156-59-4	0.200 U	0.200	1.00	ug/L
cis-1,3-Dichloropropene	10061-01-5	0.100 U	0.100	0.200	ug/L
Dibromochloromethane	124-48-1	0.200 U	0.200	0.200	ug/L
Dichlorodifluoromethane	75-71-8	0.300 U	0.300	1.00	ug/L
Ethylbenzene	100-41-4	0.300 U	0.300	1.00	ug/L
m,p-Xylenes	108-38-3/106-42-3	0.300 U	0.300	2.00	ug/L
Methylene chloride	75-09-2	2.00 U	2.00	2.00	ug/L
Methyl-tert-Butyl Ether	1634-04-4	0.200 U	0.200	1.00	ug/L
o-Xylene	95-47-6	0.200 U	0.200	1.00	ug/L
Tetrachloroethene	127-18-4	0.300 U	0.300	1.00	ug/L
Toluene	108-88-3	0.200 U	0.200	1.00	ug/L
trans-1,2-Dichloroethene	156-60-5	0.200 U	0.200	1.00	ug/L
trans-1,3-Dichloropropene	10061-02-6	0.200 U	0.200	0.200	ug/L
Trichloroethene	79-01-6	0.300 U	0.300	1.00	ug/L
Trichlorofluoromethane	75-69-4	0.300 U	0.300	1.00	ug/L
Vinyl chloride	75-01-4	0.400 U	0.400	1.00	ug/L

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW04S-0106	Project:	CTO#386
Lab #:	B600445-04	Work Order #:	B600445
Prep. Method:	EPA 5030B_MS	Matrix:	Water
Analyzed:	01/30/06 By: ds/	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A29004		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
Surrogate Recovery		**Result**	**Spike Level**	**% Recovery**	**% Recovery Limits**
4-Bromofluorobenzene	460-00-4	50.9	50.0	102 %	60-130
4-Bromofluorobenzene	460-00-4	50.9	50.0	102 %	60-130
Dibromofluoromethane	1868-53-7	49.0	50.0	98 %	66-131
Dibromofluoromethane	1868-53-7	49.0	50.0	98 %	66-131
Toluene-d8	2037-26-5	49.0	50.0	98 %	67-139
Toluene-d8	2037-26-5	49.0	50.0	98 %	67-139

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW04S-0106	Project:	CTO#386
Lab #:	B600445-04	Work Order #:	B600445
Prep. Method:	EPA 3510C	Matrix:	Water
Analyzed:	01/23/06 By: rw	Unit:	mg/L
Anal. Method:	FLPRO	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A23002		

FL Petroleum Range Organics

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
C8-C40	NA	0.094 U	0.094	0.170	mg/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
n-Nonatriacontane	7194-86-7	0.0444	0.100	44 %	22-137
o-Terphenyl	84-15-1	0.0405	0.0500	81 %	33-133

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW04S-0106	Project:	CTO#386
Lab #:	B600445-04	Work Order #:	B600445
Prep. Method:	EPA 3520C	Matrix:	Water
Analyzed:	01/31/06 By: rw	Unit:	ug/L
Anal. Method:	EPA 8011	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A30006		

Semivolatile Organic Compounds by GC

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1,2-Dibromoethane	106-93-4	0.01 U	0.01	0.02	ug/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
1,3-Dichlorobenzene	541-73-1	1.02	1.00	102 %	30-170

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW04S-0106	Project:	CTO#386
Lab #:	B600445-04	Work Order #:	B600445
Prep. Method:	EPA 3510C_MS	Matrix:	Water
Analyzed:	01/30/06 By: jj	Unit:	ug/L
Anal. Method:	EPA 8270C	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A23001		

Semivolatile Organic Compounds by GCMS SIM

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1-Methylnaphthalene	90-12-0	0.02 U	0.02	0.10	ug/L
2-Methylnaphthalene	91-57-6	0.02 U	0.02	0.10	ug/L
Acenaphthene	83-32-9	0.02 U	0.02	0.10	ug/L
Acenaphthylene	208-96-8	0.01 U	0.01	0.10	ug/L
Anthracene	120-12-7	0.02 U	0.02	0.10	ug/L
Benzo(a)anthracene	56-55-3	0.01 U	0.01	0.10	ug/L
Benzo(a)pyrene	50-32-8	0.01 U	0.01	0.10	ug/L
Benzo(b)fluoranthene	205-99-2	0.03 U	0.03	0.10	ug/L
Benzo(g,h,i)perylene	191-24-2	0.03 U	0.03	0.10	ug/L
Benzo(k)fluoranthene	207-08-9	0.02 U	0.02	0.10	ug/L
Chrysene	218-01-9	0.02 U	0.02	0.10	ug/L
Dibenzo(a,h)anthracene	53-70-3	0.02 U	0.02	0.10	ug/L
Fluoranthene	206-44-0	0.01 U	0.01	0.10	ug/L
Fluorene	86-73-7	0.02 U	0.02	0.10	ug/L
Indeno(1,2,3-cd)pyrene	193-39-5	0.02 U	0.02	0.10	ug/L
Naphthalene	91-20-3	0.02 U	0.02	0.10	ug/L
Phenanthrene	85-01-8	0.02 U	0.02	0.10	ug/L
Pyrene	129-00-0	0.02 U	0.02	0.10	ug/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
p-Terphenyl	92-94-4	4.26	5.00	85 %	10-167

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ANALYTICAL REPORT

Sample ID: MPT-413-MW04S-0106
Lab #. B600445-04

Project: CTO#386
Work Order #: B600445
Matrix: Water

Metals by EPA 6000/7000 Series Methods

Parameter	CAS Number	Analytical Results		MDL	MRL	Units	Analysis Method	Prep Method	Analytical Batch
Lead	7439-92-1	0.002	U	0.002	0.01	mg/L	EPA 6010B	EPA 3005A	6A23015

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW02S-0106	Project:	CTO#386
Lab #:	B600445-05	Work Order #:	B600445
Prep. Method:	EPA 5030B_MS	Matrix:	Water
Analyzed:	01/30/06 By: ds/	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A29004		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1,1,1-Trichloroethane	71-55-6	0.300 U	0.300	1.00	ug/L
1,1,2,2-Tetrachloroethane	79-34-5	0.200 U	0.200	0.200	ug/L
1,1,2-Trichloroethane	79-00-5	0.300 U	0.300	1.00	ug/L
1,1-Dichloroethane	75-34-3	0.200 U	0.200	1.00	ug/L
1,1-Dichloroethene	75-35-4	0.200 U	0.200	1.00	ug/L
1,2-Dichlorobenzene	95-50-1	0.200 U	0.200	1.00	ug/L
1,2-Dichloroethane	107-06-2	0.100 U	0.100	1.00	ug/L
1,2-Dichloropropane	78-87-5	0.400 U	0.400	1.00	ug/L
1,3-Dichlorobenzene	541-73-1	0.200 U	0.200	1.00	ug/L
1,4-Dichlorobenzene	106-46-7	0.100 U	0.100	1.00	ug/L
Benzene	71-43-2	0.200 U	0.200	1.00	ug/L
Bromodichloromethane	75-27-4	0.200 U	0.200	0.400	ug/L
Bromoform	75-25-2	0.200 U	0.200	1.00	ug/L
Bromomethane	74-83-9	0.600 U	0.600	1.00	ug/L
Carbon tetrachloride	56-23-5	0.300 U	0.300	1.00	ug/L
Chlorobenzene	108-90-7	0.200 U	0.200	1.00	ug/L
Chloroethane	75-00-3	0.300 U	0.300	1.00	ug/L
Chloroform	67-66-3	0.200 U	0.200	1.00	ug/L
Chloromethane	74-87-3	0.300 U	0.300	1.00	ug/L
cis-1,2-Dichloroethene	156-59-4	0.200 U	0.200	1.00	ug/L
cis-1,3-Dichloropropene	10061-01-5	0.100 U	0.100	0.200	ug/L
Dibromochloromethane	124-48-1	0.200 U	0.200	0.200	ug/L
Dichlorodifluoromethane	75-71-8	0.300 U	0.300	1.00	ug/L
Ethylbenzene	100-41-4	0.300 U	0.300	1.00	ug/L
m,p-Xylenes	108-38-3/106-42-3	0.300 U	0.300	2.00	ug/L
Methylene chloride	75-09-2	2.00 U	2.00	2.00	ug/L
Methyl-tert-Butyl Ether	1634-04-4	0.200 U	0.200	1.00	ug/L
o-Xylene	95-47-6	0.200 U	0.200	1.00	ug/L
Tetrachloroethene	127-18-4	0.300 U	0.300	1.00	ug/L
Toluene	108-88-3	0.200 U	0.200	1.00	ug/L
trans-1,2-Dichloroethene	156-60-5	0.200 U	0.200	1.00	ug/L
trans-1,3-Dichloropropene	10061-02-6	0.200 U	0.200	0.200	ug/L
Trichloroethene	79-01-6	0.300 U	0.300	1.00	ug/L
Trichlorofluoromethane	75-69-4	0.300 U	0.300	1.00	ug/L
Vinyl chloride	75-01-4	0.400 U	0.400	1.00	ug/L

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW02S-0106	Project:	CTO#386
Lab #:	B600445-05	Work Order #:	B600445
Prep. Method:	EPA 5030B_MS	Matrix:	Water
Analyzed:	01/30/06 By: ds/	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A29004		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
Surrogate Recovery		**Result**	**Spike Level**	**% Recovery**	**% Recovery Limits**
4-Bromofluorobenzene	460-00-4	49.4	50.0	99 %	60-130
4-Bromofluorobenzene	460-00-4	49.4	50.0	99 %	60-130
Dibromofluoromethane	1868-53-7	46.6	50.0	93 %	66-131
Dibromofluoromethane	1868-53-7	46.6	50.0	93 %	66-131
Toluene-d8	2037-26-5	52.6	50.0	105 %	67-139
Toluene-d8	2037-26-5	52.6	50.0	105 %	67-139

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW02S-0106	Project:	CTO#386
Lab #:	B600445-05	Work Order #:	B600445
Prep. Method:	EPA 3510C	Matrix:	Water
Analyzed:	01/24/06 By: rw	Unit:	mg/L
Anal. Method:	FLPRO	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A23002		

FL Petroleum Range Organics

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
C8-C40	NA	0.094 U	0.094	0.170	mg/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
n-Nonatriacontane	7194-86-7	0.0441	0.100	44 %	22-137
o-Terphenyl	84-15-1	0.0380	0.0500	76 %	33-133

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW02S-0106	Project:	CTO#386
Lab #:	B600445-05	Work Order #:	B600445
Prep. Method:	EPA 3520C	Matrix:	Water
Analyzed:	01/31/06 By: rw	Unit:	ug/L
Anal. Method:	EPA 8011	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A30006		

Semivolatile Organic Compounds by GC

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1,2-Dibromoethane	106-93-4	0.01 U	0.01	0.02	ug/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
1,3-Dichlorobenzene	541-73-1	1.08	1.00	108 %	30-170

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW02S-0106	Project:	CTO#386
Lab #:	B600445-05	Work Order #:	B600445
Prep. Method:	EPA 3510C_MS	Matrix:	Water
Analyzed:	01/30/06 By: jj	Unit:	ug/L
Anal. Method:	EPA 8270C	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A23001		

Semivolatile Organic Compounds by GCMS SIM

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1-Methylnaphthalene	90-12-0	0.02 U	0.02	0.10	ug/L
2-Methylnaphthalene	91-57-6	0.02 U	0.02	0.10	ug/L
Acenaphthene	83-32-9	0.02 U	0.02	0.10	ug/L
Acenaphthylene	208-96-8	0.01 U	0.01	0.10	ug/L
Anthracene	120-12-7	0.02 U	0.02	0.10	ug/L
Benzo(a)anthracene	56-55-3	0.01 U	0.01	0.10	ug/L
Benzo(a)pyrene	50-32-8	0.01 U	0.01	0.10	ug/L
Benzo(b)fluoranthene	205-99-2	0.03 U	0.03	0.10	ug/L
Benzo(g,h,i)perylene	191-24-2	0.03 U	0.03	0.10	ug/L
Benzo(k)fluoranthene	207-08-9	0.02 U	0.02	0.10	ug/L
Chrysene	218-01-9	0.02 U	0.02	0.10	ug/L
Dibenzo(a,h)anthracene	53-70-3	0.02 U	0.02	0.10	ug/L
Fluoranthene	206-44-0	0.01 U	0.01	0.10	ug/L
Fluorene	86-73-7	0.02 U	0.02	0.10	ug/L
Indeno(1,2,3-cd)pyrene	193-39-5	0.02 U	0.02	0.10	ug/L
Naphthalene	91-20-3	0.02 U	0.02	0.10	ug/L
Phenanthrene	85-01-8	0.02 U	0.02	0.10	ug/L
Pyrene	129-00-0	0.02 U	0.02	0.10	ug/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
p-Terphenyl	92-94-4	4.68	5.00	94 %	10-167

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW02S-0106	Project:	CTO#386
Lab #:	B600445-05	Work Order #:	B600445
		Matrix:	Water

Metals by EPA 6000/7000 Series Methods

Parameter	CAS Number	Analytical Results	MDL	MRL	Units	Analysis Method	Prep Method	Analytical Batch
Lead	7439-92-1	0.002 U	0.002	0.01	mg/L	EPA 6010B	EPA 3005A	6A23015

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ANALYTICAL REPORT

Sample ID:	MPT-413-EB01-0106	Project:	CTO#386
Lab #.	B600445-06	Work Order #.	B600445
Prep. Method:	EPA 5030B_MS	Matrix:	Water
Analyzed:	01/30/06 By: ds/	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A29004		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1,1,1-Trichloroethane	71-55-6	0.300 U	0.300	1.00	ug/L
1,1,2,2-Tetrachloroethane	79-34-5	0.200 U	0.200	0.200	ug/L
1,1,2-Trichloroethane	79-00-5	0.300 U	0.300	1.00	ug/L
1,1-Dichloroethane	75-34-3	0.200 U	0.200	1.00	ug/L
1,1-Dichloroethene	75-35-4	0.200 U	0.200	1.00	ug/L
1,2-Dichlorobenzene	95-50-1	0.200 U	0.200	1.00	ug/L
1,2-Dichloroethane	107-06-2	0.100 U	0.100	1.00	ug/L
1,2-Dichloropropane	78-87-5	0.400 U	0.400	1.00	ug/L
1,3-Dichlorobenzene	541-73-1	0.200 U	0.200	1.00	ug/L
1,4-Dichlorobenzene	106-46-7	0.100 U	0.100	1.00	ug/L
Benzene	71-43-2	0.200 U	0.200	1.00	ug/L
Bromodichloromethane	75-27-4	0.200 U	0.200	0.400	ug/L
Bromoform	75-25-2	0.200 U	0.200	1.00	ug/L
Bromomethane	74-83-9	0.600 U	0.600	1.00	ug/L
Carbon tetrachloride	56-23-5	0.300 U	0.300	1.00	ug/L
Chlorobenzene	108-90-7	0.200 U	0.200	1.00	ug/L
Chloroethane	75-00-3	0.300 U	0.300	1.00	ug/L
Chloroform	67-66-3	**0.770 I**	0.200	1.00	ug/L
Chloromethane	74-87-3	0.300 U	0.300	1.00	ug/L
cis-1,2-Dichloroethene	156-59-4	0.200 U	0.200	1.00	ug/L
cis-1,3-Dichloropropene	10061-01-5	0.100 U	0.100	0.200	ug/L
Dibromochloromethane	124-48-1	0.200 U	0.200	0.200	ug/L
Dichlorodifluoromethane	75-71-8	0.300 U	0.300	1.00	ug/L
Ethylbenzene	100-41-4	0.300 U	0.300	1.00	ug/L
m,p-Xylenes	108-38-3/106-42-3	0.300 U	0.300	2.00	ug/L
Methylene chloride	75-09-2	2.00 U	2.00	2.00	ug/L
Methyl-tert-Butyl Ether	1634-04-4	0.200 U	0.200	1.00	ug/L
o-Xylene	95-47-6	0.200 U	0.200	1.00	ug/L
Tetrachloroethene	127-18-4	0.300 U	0.300	1.00	ug/L
Toluene	108-88-3	0.200 U	0.200	1.00	ug/L
trans-1,2-Dichloroethene	156-60-5	0.200 U	0.200	1.00	ug/L
trans-1,3-Dichloropropene	10061-02-6	0.200 U	0.200	0.200	ug/L
Trichloroethene	79-01-6	0.300 U	0.300	1.00	ug/L
Trichlorofluoromethane	75-69-4	0.300 U	0.300	1.00	ug/L
Vinyl chloride	75-01-4	0.400 U	0.400	1.00	ug/L

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ANALYTICAL REPORT

Sample ID:	MPT-413-EB01-0106	Project:	CTO#386
Lab #:	B600445-06	Work Order #:	B600445
Prep. Method:	EPA 5030B_MS	Matrix:	Water
Analyzed:	01/30/06 By: ds/	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6A29004		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results		MDL	MRL	Units
Surrogate Recovery		**Result**	**Spike Level**	**% Recovery**		**% Recovery Limits**
4-Bromofluorobenzene	460-00-4	49.0	50.0	98 %		60-130
4-Bromofluorobenzene	460-00-4	49.0	50.0	98 %		60-130
Dibromofluoromethane	1868-53-7	46.6	50.0	93 %		66-131
Dibromofluoromethane	1868-53-7	46.6	50.0	93 %		66-131
Toluene-d8	2037-26-5	49.3	50.0	99 %		67-139
Toluene-d8	2037-26-5	49.3	50.0	99 %		67-139

CLIENT : Tetra Tech NUS
ADDRESS: Foster Plaza 7
661 Andersen Dr.
Pittsburgh, PA 15220-2745

REPORT # : JAX51161
DATE SUBMITTED: August 13, 2005
DATE REPORTED : August 23, 2005

ATTENTION: Mr. Mark Peterson

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

REFERENCE: CTO 386

BLDG 413

JAX51161-1	: MPT-413-SB11-02	@ 13:30 (08/12/05)
JAX51161-2	: MPT-413-SB01-02	@ 13:00 (08/12/05)
JAX51161-3	: MPT-413-TMW11-20'	@ 12:15 (08/08/05)

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. This data has been produced in accordance with NELAC Standards (June, 2003). This report shall not be reproduced except in full, without the written approval of the laboratory. Results for these procedures apply only to the samples as submitted.

Note: Analytical values are reported on a dry weight basis.

Note: Discrepancy in ID's on COC & containers. Logged in according to containers per client request.

PROJECT MANAGER Signature Not Verified Christina Tompkins Digitally signed by Christina Tompkins DN: cn=Christina Tompkins, ou=Enco Labs, o=US Date: 2005.08.24 12:37:16 -04'00'

Christina M. Tompkins

RESULTS OF ANALYSIS

EPA METHOD 8260 - VOLATILE ORGANICS	**MPT-413-SB11-02**	**Units**
Methyl tert-butyl ether	1. U D1	ug/Kg
Benzene	1. U D1	ug/Kg
Toluene	**2.** D1	ug/Kg
Chlorobenzene	1. U D1	ug/Kg
Ethylbenzene	1. U D1	ug/Kg
m-Xylene & p-Xylene	2. U D1	ug/Kg
o-Xylene	1. U D1	ug/Kg
1,3-Dichlorobenzene	1. U D1	ug/Kg
1,4-Dichlorobenzene	1. U D1	ug/Kg
1,2-Dichlorobenzene	1. U D1	ug/Kg
Surrogate:	**% RECOV**	**LIMITS**
Dibromofluoromethane	98	61-128
D8-Toluene	97	77-119
Bromofluorobenzene	96	60-130
Date Prepared	08/13/05 14:00	
Date Analyzed	08/23/05 11:45	

U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:.94 dilution.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	**MPT-413-SB11-02**	**Units**
Naphthalene	36. U	ug/Kg
2-Methylnaphthalene	36. U	ug/Kg
1-Methylnaphthalene	36. U	ug/Kg
Acenaphthylene	36. U	ug/Kg
Acenaphthene	36. U	ug/Kg
Fluorene	36. U	ug/Kg
Phenanthrene	36. U	ug/Kg
Anthracene	36. U	ug/Kg
Fluoranthene	36. U	ug/Kg
Pyrene	36. U	ug/Kg
Chrysene	36. U	ug/Kg
Benzo(a)anthracene	36. U	ug/Kg
Benzo(b)fluoranthene	36. U	ug/Kg
Benzo(k)fluoranthene	36. U	ug/Kg
Benzo(a)pyrene	36. U	ug/Kg
Indeno(1,2,3-cd)pyrene	36. U	ug/Kg
Dibenzo(a,h)anthracene	36. U	ug/Kg
Benzo(g,h,i)perylene	36. U	ug/Kg
Surrogate:	**% RECOV**	**LIMITS**
p-Terphenyl	104	10-167
Date Prepared	08/17/05	
Date Analyzed	08/19/05 16:00	

Miscellaneous	**METHOD**	**MPT-413-SB11-02**	**Units**
Percent Solids	WETS/72	**91.4**	%
Date Prepared		08/17/05	
Date Analyzed		08/17/05 15:30	

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

ENCO LABORATORIES
REPORT # : JAX51161
DATE REPORTED: August 23, 2005
REFERENCE : CTO 386
PROJECT NAME : BLDG 413

RESULTS OF ANALYSIS

EPA METHOD FLPRO - PETROL. RESIDUAL ORG.	MPT-413-SB11-02	Units
Hydrocarbons (C8-C40)	8. U	mg/Kg
Surrogate:	**% RECOV**	**LIMITS**
o-Terphenyl	114	36-140
Nonatriacontane	108	29-145
Date Prepared	08/17/05	
Date Analyzed	08/19/05 13:00	

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

RESULTS OF ANALYSIS

EPA METHOD 8260 - VOLATILE ORGANICS	MPT-413-SB01-02	Units
Methyl tert-butyl ether	1. U D2	ug/Kg
Benzene	1. U D2	ug/Kg
Toluene	2. D2	ug/Kg
Chlorobenzene	1. U D2	ug/Kg
Ethylbenzene	1. U D2	ug/Kg
m-Xylene & p-Xylene	2. U D2	ug/Kg
o-Xylene	1. U D2	ug/Kg
1,3-Dichlorobenzene	1. U D2	ug/Kg
1,4-Dichlorobenzene	1. U D2	ug/Kg
1,2-Dichlorobenzene	1. U D2	ug/Kg
Surrogate:	**% RECOV**	**LIMITS**
Dibromofluoromethane	97	61-128
D8-Toluene	98	77-119
Bromofluorobenzene	97	60-130
Date Prepared	08/13/05 14:00	
Date Analyzed	08/23/05 12:21	

U = Compound was analyzed for but not detected to the level shown.
D2 = Analyte value determined from a 1:1.04 dilution.

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	MPT-413-SB01-02	Units
Naphthalene	34. U	ug/Kg
2-Methylnaphthalene	34. U	ug/Kg
1-Methylnaphthalene	34. U	ug/Kg
Acenaphthylene	34. U	ug/Kg
Acenaphthene	34. U	ug/Kg
Fluorene	34. U	ug/Kg
Phenanthrene	34. U	ug/Kg
Anthracene	34. U	ug/Kg
Fluoranthene	34. U	ug/Kg
Pyrene	34. U	ug/Kg
Chrysene	34. U	ug/Kg
Benzo(a)anthracene	34. U	ug/Kg
Benzo(b)fluoranthene	34. U	ug/Kg
Benzo(k)fluoranthene	34. U	ug/Kg
Benzo(a)pyrene	34. U	ug/Kg
Indeno(1,2,3-cd)pyrene	34. U	ug/Kg
Dibenzo(a,h)anthracene	34. U	ug/Kg
Benzo(g,h,i)perylene	34. U	ug/Kg
Surrogate:	**% RECOV**	**LIMITS**
p-Terphenyl	103	10-167
Date Prepared	08/17/05	
Date Analyzed	08/19/05 16:18	

Miscellaneous	METHOD	MPT-413-SB01-02	Units
Percent Solids	WETS/72	**96.3**	%
Date Prepared		08/17/05	
Date Analyzed		08/17/05 15:30	

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

RESULTS OF ANALYSIS

EPA METHOD FLPRO - PETROL. RESIDUAL ORG.	MPT-413-SB01-02	Units
Hydrocarbons (C8-C40)	7. U	mg/Kg
Surrogate:	**% RECOV**	**LIMITS**
o-Terphenyl	86	36-140
Nonatriacontane	82	29-145
Date Prepared	08/17/05	
Date Analyzed	08/19/05 11:28	

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

RESULTS OF ANALYSIS

EPA METHOD 8260 - VOLATILE ORGANICS	**MPT-413-TMW11-20'**	**Units**
Methyl tert-butyl ether	1. U	ug/L
Benzene	1. U	ug/L
Toluene	1. U	ug/L
Chlorobenzene	1. U	ug/L
Ethylbenzene	1. U	ug/L
m-Xylene & p-Xylene	2. U	ug/L
o-Xylene	1. U	ug/L
1,3-Dichlorobenzene	1. U	ug/L
1,4-Dichlorobenzene	1. U	ug/L
1,2-Dichlorobenzene	1. U	ug/L
Surrogate:	**% RECOV**	**LIMITS**
Dibromofluoromethane	112	67-139
D8-Toluene	98	80-115
Bromofluorobenzene	94	66-131
Date Analyzed	08/18/05 14:02	

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

RESULTS OF ANALYSIS

EPA METHOD 8260 - VOLATILE ORGANICS	**LAB BLANK**	**Units**
Methyl tert-butyl ether	1. U	ug/L
Benzene	1. U	ug/L
Toluene	1. U	ug/L
Chlorobenzene	1. U	ug/L
Ethylbenzene	1. U	ug/L
m-Xylene & p-Xylene	2. U	ug/L
o-Xylene	1. U	ug/L
1,3-Dichlorobenzene	1. U	ug/L
1,4-Dichlorobenzene	1. U	ug/L
1,2-Dichlorobenzene	1. U	ug/L
Surrogate:	**% RECOV**	**LIMITS**
Dibromofluoromethane	107	67-139
D8-Toluene	96	80-115
Bromofluorobenzene	88	66-131
Date Analyzed	08/18/05 06:19	

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

RESULTS OF ANALYSIS

EPA METHOD 8260 - VOLATILE ORGANICS	**LAB BLANK**	**Units**
Methyl tert-butyl ether	1. U	ug/Kg
Benzene	1. U	ug/Kg
Toluene	1. U	ug/Kg
Chlorobenzene	1. U	ug/Kg
Ethylbenzene	1. U	ug/Kg
m-Xylene & p-Xylene	2. U	ug/Kg
o-Xylene	1. U	ug/Kg
1,3-Dichlorobenzene	1. U	ug/Kg
1,4-Dichlorobenzene	1. U	ug/Kg
1,2-Dichlorobenzene	1. U	ug/Kg
Surrogate:	**% RECOV**	**LIMITS**
Dibromofluoromethane	98	61-128
D8-Toluene	98	77-119
Bromofluorobenzene	98	60-130
Date Analyzed	08/23/05 06:57	

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

RESULTS OF ANALYSIS

EPA METHOD 8270 - PAH Compounds by SIM	LAB BLANK	Units
Naphthalene	33. U	ug/Kg
2-Methylnaphthalene	33. U	ug/Kg
1-Methylnaphthalene	33. U	ug/Kg
Acenaphthylene	33. U	ug/Kg
Acenaphthene	33. U	ug/Kg
Fluorene	33. U	ug/Kg
Phenanthrene	33. U	ug/Kg
Anthracene	33. U	ug/Kg
Fluoranthene	33. U	ug/Kg
Pyrene	33. U	ug/Kg
Chrysene	33. U	ug/Kg
Benzo(a)anthracene	33. U	ug/Kg
Benzo(b)fluoranthene	33. U	ug/Kg
Benzo(k)fluoranthene	33. U	ug/Kg
Benzo(a)pyrene	33. U	ug/Kg
Indeno(1,2,3-cd)pyrene	33. U	ug/Kg
Dibenzo(a,h)anthracene	33. U	ug/Kg
Benzo(g,h,i)perylene	33. U	ug/Kg
Surrogate:	**% RECOV**	**LIMITS**
p-Terphenyl	102	10-167
Date Prepared	08/17/05	
Date Analyzed	08/19/05 15:25	

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

ENCO LABORATORIES
REPORT # : JAX51161
DATE REPORTED: August 23, 2005
REFERENCE : CTO 386
PROJECT NAME : BLDG 413

RESULTS OF ANALYSIS

EPA METHOD FLPRO - PETROL. RESIDUAL ORG.	LAB BLANK	Units
Hydrocarbons (C8-C40)	7. U	mg/Kg
Surrogate:	**% RECOV**	**LIMITS**
o-Terphenyl	81	36-140
Nonatriacontane	82	29-145
Date Prepared	08/17/05	
Date Analyzed	08/19/05 10:43	

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

LABORATORY CERTIFICATIONS

Laboratory Certification: NELAC:E82277

All analyses reported with this project were analyzed by the facility indicated unless identified below.

QUALITY CONTROL DATA

Parameter	% RECOVERY LCS/MS/MSD	LCS LIMITS	MS/MSD LIMITS	RPD MS/MSD	RPD LIMITS
EPA Method 8260					
1,1-Dichloroethene	99/108/ 83	58-149	31-145	#26	19
Benzene	104/116/ 86	62-135	64-138	#30	10
Trichloroethene	114/129/ 94	66-136	47-150	#31	12
Toluene	106/124/ 89	72-126	74-124	#33	13
Chlorobenzene	121/131/ 96	77-124	81-125	#31	11
EPA Method 8260					
1,1-Dichloroethene	70/ 42/ 44	59-144	14-137	5	19
Benzene	88/ 86/ 88	67-150	49-130	2	23
Trichloroethene	99/ 94/ 97	69-137	38-134	3	17
Toluene	102/103/103	72-124	55-124	<1	22
Chlorobenzene	112/113/112	75-125	53-130	<1	24
EPA Method 8270					
Naphthalene	88/ 88/ 96	50-104	48-112	9	22
Acenaphthene	84/ 82/ 89	52-109	48-119	8	31
Benzo(a)pyrene	80/ 78/ 84	41-125	43-136	7	34
Benzo(g,h,i)perylene	108/124/132	10-168	10-168	6	48
PETROL. RESIDUAL ORG.					
Hydrocarbons (C8-C40)	96/ * / *	48-118	40-136	*	25

* - MS/MSD/RPD is unavailable due to high original analyte concentration.
\# = One or more of the associated values failed to meet laboratory established limits for precision.
< = Less Than
MS = Matrix Spike
MSD = Matrix Spike Duplicate
LCS = Laboratory Control Standard
RPD = Relative Percent Difference

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 3168 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO 386	3206 413	Mark Peterson	334-7260	ENCO
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		David Sathen	334-7260	4810 Executive Park, Ct. Suite 211
		CARRIER/WAYBILL NUMBER		CITY, STATE
		Drop off		Jacksonville, FL 32216

STANDARD TAT ☐
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2005	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)								PRESERVATIVE USED			TYPE OF ANALYSIS 8260 & BTEX	8270 SIM	TRPH - FL-PRO	COMMENTS
12-Aug	1330	MPT-413-SB11-02	SB-11	2	2	SO	G	5	G	G	G						HCl	—	—	4	1	(E)	Cool to 4°C
12-Aug	1300	MPT-413-SB01-01	SB-01	1	1	SO	G	5	G	G	G						HCl	—	—	4	1	(E)	
																							See attached Contract
Aug 8	1715	MPT-413 TMW-11-20'	TMW11	—	—	GW	G	3	P	P	P						HCl	—	—	3			

1. RELINQUISHED BY		DATE	TIME	1. RECEIVED BY		DATE 8/13/05	TIME 1350
2. RELINQUISHED BY		DATE	TIME	2. RECEIVED BY		DATE	TIME
3. RELINQUISHED BY		DATE	TIME	3. RECEIVED BY		DATE	TIME

COMMENTS: JAX511161 rec'd on wet ice @ 4.2°C & 3.3°C

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

Environmental Conservation Laboratories, Inc.
4810 Executive Park Court, Suite 211
Jacksonville FL, 32216-6069
Phone: 904.296.3007 FAX: 904.296.6210

www.encolabs.com

Thursday, August 17, 2006

Tetra Tech NUS (BR006)

Attn: Mark Peterson

8640 Philips Highway Suite 16

Jacksonville, FL 32256

RE: Project Number: 112G00103, Project Name/Desc: NS Mayport
ENCO Workorder: B606941

Dear Mark Peterson,

Enclosed is a copy of your laboratory report for test samples received by our laboratory on Thursday, August 10, 2006.

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. Results for these procedures apply only to the samples as submitted.

This data has been produced in accordance with NELAC standards (June, 2003). This report shall not be reproduced except in full, without the written approval of the Laboratory.

This report contains only those analyses performed by Environmental Conservation Laboratories. Data from outside organizations will be reported under separate cover.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Chris Tompkins

Project Manager

Enclosure(s)

The total number of pages in this report, including this page is 15.

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SAMPLE SUMMARY/LABORATORY CHRONICLE

Client ID: MPT-413-MW065-013-20060809 **Lab ID:** B606941-01

Sampled: 08/09/06 10:35 **Received:** 08/10/06 14:16

Parameter	Hold Date/Time(s)		Prep Date/Time(s)	Analysis Date/Time(s)
EPA 6010B	02/05/07		08/14/06 11:56	8/14/2006 20:49
EPA 8011	09/06/06		08/16/06 10:49	8/16/2006 17:24
EPA 8260B	08/23/06		08/16/06 08:00	8/16/2006 20:22
EPA 8270C	08/16/06	09/20/06	08/11/06 12:29	8/14/2006 14:00
FLPRO	08/16/06	09/20/06	08/11/06 10:33	8/11/2006 20:08

SAMPLE DETECTION SUMMARY

Client ID: MPT-413-MW065-013-20060809 **Lab ID:** B606941-01

Analyte	Results/Qual	MRL	Units	Method
1-Methylnaphthalene	1.61	0.10	ug/L	EPA 8270C
2-Methylnaphthalene	2.50	0.10	ug/L	EPA 8270C
Acenaphthene	0.13	0.10	ug/L	EPA 8270C
Ethylbenzene	0.9 I	1.0	ug/L	EPA 8260B
Fluorene	0.22	0.10	ug/L	EPA 8270C
m,p-Xylenes	2.8	2.0	ug/L	EPA 8260B
Naphthalene	1.38	0.10	ug/L	EPA 8270C
o-Xylene	0.3 I	1.0	ug/L	EPA 8260B
Phenanthrene	0.30	0.10	ug/L	EPA 8270C
Pyrene	0.12	0.10	ug/L	EPA 8270C
TPH (C8-C40)	0.446	0.170	mg/L	FLPRO

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW065-013-20060809	Project:	NS Mayport
Lab #:	B606941-01	Work Order #:	B606941
Prep. Method:	EPA 5030B_MS	Matrix:	Ground Water
Analyzed:	08/16/06 By: ds/	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6H16013		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1,1,1-Trichloroethane	71-55-6	0.3 U	0.3	1.0	ug/L
1,1,2,2-Tetrachloroethane	79-34-5	0.2 U	0.2	0.2	ug/L
1,1,2-Trichloroethane	79-00-5	0.3 U	0.3	1.0	ug/L
1,1-Dichloroethane	75-34-3	0.2 U	0.2	1.0	ug/L
1,1-Dichloroethene	75-35-4	0.2 U	0.2	1.0	ug/L
1,2-Dichlorobenzene	95-50-1	0.2 U	0.2	1.0	ug/L
1,2-Dichloroethane	107-06-2	0.1 U	0.1	1.0	ug/L
1,2-Dichloropropane	78-87-5	0.4 U	0.4	1.0	ug/L
1,3-Dichlorobenzene	541-73-1	0.2 U	0.2	1.0	ug/L
1,4-Dichlorobenzene	106-46-7	0.1 U	0.1	1.0	ug/L
2-Chloroethyl Vinyl Ether	110-75-8	0.8 U	0.8	5.0	ug/L
Benzene	71-43-2	0.2 U	0.2	1.0	ug/L
Bromodichloromethane	75-27-4	0.2 U	0.2	0.4	ug/L
Bromoform	75-25-2	0.2 U	0.2	1.0	ug/L
Bromomethane	74-83-9	0.6 U	0.6	1.0	ug/L
Carbon tetrachloride	56-23-5	0.3 U	0.3	1.0	ug/L
Chlorobenzene	108-90-7	0.2 U	0.2	1.0	ug/L
Chloroethane	75-00-3	0.3 U	0.3	1.0	ug/L
Chloroform	67-66-3	0.2 U	0.2	1.0	ug/L
Chloromethane	74-87-3	0.3 U	0.3	1.0	ug/L
cis-1,2-Dichloroethene	156-59-2	0.2 U	0.2	1.0	ug/L
cis-1,3-Dichloropropene	10061-01-5	0.1 U	0.1	0.2	ug/L
Dibromochloromethane	124-48-1	0.2 U	0.2	0.2	ug/L
Dichlorodifluoromethane	75-71-8	0.3 U	0.3	1.0	ug/L
Ethylbenzene	100-41-4	**0.9** I	0.3	1.0	ug/L
m,p-Xylenes	108-38-3/106-42-3	**2.8**	0.3	2.0	ug/L
Methylene chloride	75-09-2	2.0 U	2.0	2.0	ug/L
Methyl-tert-Butyl Ether	1634-04-4	0.2 U	0.2	1.0	ug/L
o-Xylene	95-47-6	**0.3** I	0.2	1.0	ug/L
Tetrachloroethene	127-18-4	0.3 U	0.3	1.0	ug/L
Toluene	108-88-3	0.2 U	0.2	1.0	ug/L
trans-1,2-Dichloroethene	156-60-5	0.2 U	0.2	1.0	ug/L
trans-1,3-Dichloropropene	10061-02-6	0.2 U	0.2	0.2	ug/L
Trichloroethene	79-01-6	0.3 U	0.3	1.0	ug/L
Trichlorofluoromethane	75-69-4	0.3 U	0.3	1.0	ug/L
Vinyl chloride	75-01-4	0.4 U	0.4	1.0	ug/L

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW065-013-20060809	Project:	NS Mayport
Lab #:	B606941-01	Work Order #:	B606941
Prep. Method:	EPA 5030B_MS	Matrix:	Ground Water
Analyzed:	08/16/06 By: ds/	Unit:	ug/L
Anal. Method:	EPA 8260B	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6H16013		

Volatile Organic Compounds by GCMS

Parameter	CAS Number	Analytical Results		MDL	MRL	Units
Surrogate Recovery		**Result**	**Spike Level**	**% Recovery**		**% Recovery Limits**
4-Bromofluorobenzene	460-00-4	49.7	50.0	99 %		60-130
4-Bromofluorobenzene	460-00-4	49.7	50.0	99 %		60-130
Dibromofluoromethane	1868-53-7	55.8	50.0	112 %		66-131
Dibromofluoromethane	1868-53-7	55.8	50.0	112 %		66-131
Toluene-d8	2037-26-5	51.0	50.0	102 %		67-139
Toluene-d8	2037-26-5	51.0	50.0	102 %		67-139

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW065-013-20060809	Project:	NS Mayport
Lab #:	B606941-01	Work Order #:	B606941
Prep. Method:	EPA 3510C_MS	Matrix:	Ground Water
Analyzed:	08/14/06 By: jj	Unit:	ug/L
Anal. Method:	EPA 8270C	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6H11002		

Semivolatile Organic Compounds by GCMS SIM

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1-Methylnaphthalene	90-12-0	**1.61**	0.02	0.10	ug/L
2-Methylnaphthalene	91-57-6	**2.50**	0.02	0.10	ug/L
Acenaphthene	83-32-9	**0.13**	0.02	0.10	ug/L
Acenaphthylene	208-96-8	0.01 U	0.01	0.10	ug/L
Anthracene	120-12-7	0.02 U	0.02	0.10	ug/L
Benzo(a)anthracene	56-55-3	0.01 U	0.01	0.10	ug/L
Benzo(a)pyrene	50-32-8	0.01 U	0.01	0.10	ug/L
Benzo(b)fluoranthene	205-99-2	0.03 U	0.03	0.10	ug/L
Benzo(g,h,i)perylene	191-24-2	0.03 U	0.03	0.10	ug/L
Benzo(k)fluoranthene	207-08-9	0.02 U	0.02	0.10	ug/L
Chrysene	218-01-9	0.02 U	0.02	0.10	ug/L
Dibenzo(a,h)anthracene	53-70-3	0.02 U	0.02	0.10	ug/L
Fluoranthene	206-44-0	0.01 U	0.01	0.10	ug/L
Fluorene	86-73-7	**0.22**	0.02	0.10	ug/L
Indeno(1,2,3-cd)pyrene	193-39-5	0.02 U	0.02	0.10	ug/L
Naphthalene	91-20-3	**1.38**	0.02	0.10	ug/L
Phenanthrene	85-01-8	**0.30**	0.02	0.10	ug/L
Pyrene	129-00-0	**0.12**	0.02	0.10	ug/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
p-Terphenyl	92-94-4	3.15	5.00	63 %	10-167

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW065-013-20060809	Project:	NS Mayport
Lab #:	B606941-01	Work Order #:	B606941
Prep. Method:	EPA 3520C	Matrix:	Ground Water
Analyzed:	08/16/06 By: rw	Unit:	ug/L
Anal. Method:	EPA 8011	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6H16001		

Semivolatile Organic Compounds by GC

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
1,2-Dibromo-3-chloropropane	96-12-8	0.009 U	0.009	0.020	ug/L
1,2-Dibromoethane	106-93-4	0.014 U	0.014	0.020	ug/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
1,3-Dichlorobenzene	541-73-1	1.27	1.00	127 %	30-170

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW065-013-20060809	Project:	NS Mayport
Lab #:	B606941-01	Work Order #:	B606941
Prep. Method:	EPA 3510C	Matrix:	Ground Water
Analyzed:	08/11/06 By: jbh	Unit:	mg/L
Anal. Method:	FLPRO	Dilution Factor:	1
Anal. Batch:			
QC Batch:	6H11008		

FL Petroleum Range Organics

Parameter	CAS Number	Analytical Results	MDL	MRL	Units
TPH (C8-C40)	NA	**0.446**	0.094	0.170	mg/L

Surrogate Recovery		Result	Spike Level	% Recovery	% Recovery Limits
n-Nonatriacontane	7194-86-7	0.109	0.100	109 %	22-137
o-Terphenyl	84-15-1	0.0646	0.0500	129 %	33-133

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ANALYTICAL REPORT

Sample ID:	MPT-413-MW065-013-20060809	Project:	NS Mayport
Lab #:	B606941-01	Work Order #:	B606941
		Matrix:	Ground Water

Metals by EPA 6000/7000 Series Methods

Parameter	CAS Number	Analytical Results	MDL	MRL	Units	Analysis Method	Prep Method	Analytical Batch
Lead	7439-92-1	2 U	2	10	ug/L	EPA 6010B	EPA 3005A	6H14008

QUALITY CONTROL

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Sanple Notes
Volatile Organic Compounds by GCMS - Quality Control										
Batch 6H16013 - EPA 5030B_MS										
Blank (6H16013-BLK1)				Prepared: 08/16/2006 08:00 Analyzed: 08/16/2006 14:45						
Dichlorodifluoromethane	0.3 U	1.0	ug/L							
Chloromethane	0.3 U	1.0	ug/L							
Vinyl chloride	0.4 U	1.0	ug/L							
Bromomethane	0.6 U	1.0	ug/L							
Chloroethane	0.3 U	1.0	ug/L							
Trichlorofluoromethane	0.3 U	1.0	ug/L							
1,1-Dichloroethene	0.2 U	1.0	ug/L							
Methylene chloride	2.0 U	2.0	ug/L							
Methyl-tert-Butyl Ether	0.2 U	1.0	ug/L							
trans-1,2-Dichloroethene	0.2 U	1.0	ug/L							
1,1-Dichloroethane	0.2 U	1.0	ug/L							
cis-1,2-Dichloroethene	0.2 U	1.0	ug/L							
Chloroform	0.2 U	1.0	ug/L							
1,1,1-Trichloroethane	0.3 U	1.0	ug/L							
Carbon tetrachloride	0.3 U	1.0	ug/L							
1,2-Dichloroethane	0.1 U	1.0	ug/L							
Benzene	0.2 U	1.0	ug/L							
Trichloroethene	0.3 U	1.0	ug/L							
1,2-Dichloropropane	0.4 U	1.0	ug/L							
Bromodichloromethane	0.2 U	0.4	ug/L							
2-Chloroethyl Vinyl Ether	0.8 U	5.0	ug/L							
cis-1,3-Dichloropropene	0.1 U	0.2	ug/L							
Toluene	0.2 U	1.0	ug/L							
trans-1,3-Dichloropropene	0.2 U	0.2	ug/L							
1,1,2-Trichloroethane	0.3 U	1.0	ug/L							
Tetrachloroethene	0.3 U	1.0	ug/L							
Dibromochloromethane	0.2 U	0.2	ug/L							
Chlorobenzene	0.2 U	1.0	ug/L							
Ethylbenzene	0.3 U	1.0	ug/L							
m,p-Xylenes	0.3 U	2.0	ug/L							
o-Xylene	0.2 U	1.0	ug/L							
Bromoform	0.2 U	1.0	ug/L							
1,1,2,2-Tetrachloroethane	0.2 U	0.2	ug/L							
1,3-Dichlorobenzene	0.2 U	1.0	ug/L							
1,4-Dichlorobenzene	0.1 U	1.0	ug/L							
1,2-Dichlorobenzene	0.2 U	1.0	ug/L							
LCS (6H16013-BS1)				Prepared: 08/16/2006 08:00 Analyzed: 08/16/2006 15:23						
1,1-Dichloroethene	16.7	1.0	ug/L	20.0		84	31-145			
Benzene	17.1	1.0	ug/L	20.0		86	62-135			
Trichloroethene	16.3	1.0	ug/L	20.0		82	66-136			
Toluene	15.3	1.0	ug/L	20.0		76	74-126			
Chlorobenzene	16.0	1.0	ug/L	20.0		80	77-124			
Matrix Spike (6H16013-MS1)		**Source: B607035-15**		Prepared: 08/16/2006 08:00 Analyzed: 08/16/2006 15:53						
1,1-Dichloroethene	17.2	1.0	ug/L	20.0	0.2 U	86	58-149			
Benzene	17.1	1.0	ug/L	20.0	0.2 U	86	64-138			

QUALITY CONTROL

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Sanple Notes
Volatile Organic Compounds by GCMS - Quality Control										
Batch 6H16013 - EPA 5030B_MS										
Matrix Spike (6H16013-MS1) Continued		**Source: B607035-15**		Prepared: 08/16/2006 08:00 Analyzed: 08/16/2006 15:53						
Trichloroethene	16.1	1.0	ug/L	20.0	0.3 U	80	47-150			
Toluene	15.0	1.0	ug/L	20.0	0.2 U	75	72-124			
Chlorobenzene	15.6 QM-07	1.0	ug/L	20.0	0.2 U	78	81-125			QM-07
Matrix Spike Dup (6H16013-MSD1)		**Source: B607035-15**		Prepared: 08/16/2006 08:00 Analyzed: 08/16/2006 16:23						
1,1-Dichloroethene	17.0	1.0	ug/L	20.0	0.2 U	85	58-149	1	26	
Benzene	17.3	1.0	ug/L	20.0	0.2 U	86	64-138	1	22	
Trichloroethene	16.8	1.0	ug/L	20.0	0.3 U	84	47-150	4	24	
Toluene	15.6	1.0	ug/L	20.0	0.2 U	78	72-124	4	24	
Chlorobenzene	15.7 QM-07	1.0	ug/L	20.0	0.2 U	78	81-125	0.6	11	QM-07
Semivolatile Organic Compounds by GCMS SIM - Quality Control										
Batch 6H11002 - EPA 3510C_MS										
Blank (6H11002-BLK1)				Prepared: 08/11/2006 12:29 Analyzed: 08/14/2006 16:03						
Naphthalene	0.02 U	0.10	ug/L							
2-Methylnaphthalene	0.02 U	0.10	ug/L							
1-Methylnaphthalene	0.02 U	0.10	ug/L							
Acenaphthylene	0.01 U	0.10	ug/L							
Acenaphthene	0.02 U	0.10	ug/L							
Benzo(a)anthracene	0.01 U	0.10	ug/L							
Benzo(b)fluoranthene	0.03 U	0.10	ug/L							
Benzo(k)fluoranthene	0.02 U	0.10	ug/L							
Fluorene	0.02 U	0.10	ug/L							
Benzo(g,h,i)perylene	0.03 U	0.10	ug/L							
Benzo(a)pyrene	0.01 U	0.10	ug/L							
Phenanthrene	0.02 U	0.10	ug/L							
Anthracene	0.02 U	0.10	ug/L							
Fluoranthene	0.01 U	0.10	ug/L							
Pyrene	0.02 U	0.10	ug/L							
Chrysene	0.02 U	0.10	ug/L							
Dibenzo(a,h)anthracene	0.02 U	0.10	ug/L							
Indeno(1,2,3-cd)pyrene	0.02 U	0.10	ug/L							
Surrogate: p-Terphenyl	*3.14*		*ug/L*	*5.00*		*63*	*10-167*			
LCS (6H11002-BS1)				Prepared: 08/11/2006 12:29 Analyzed: 08/14/2006 16:22						
Naphthalene	0.88	0.10	ug/L	2.00		44	33-102			
Acenaphthene	0.76 S-GC	0.10	ug/L	2.00		38	41-104			S-GC
Benzo(g,h,i)perylene	0.73	0.10	ug/L	2.00		36	10-159			
Benzo(a)pyrene	0.85	0.10	ug/L	2.00		42	38-125			
Surrogate: p-Terphenyl	*3.16*		*ug/L*	*5.00*		*63*	*10-167*			
Matrix Spike (6H11002-MS1)		**Source: B606690-01**		Prepared: 08/11/2006 12:29 Analyzed: 08/14/2006 16:39						
Naphthalene	1.18	0.10	ug/L	2.00	0.190	50	32-101			
Acenaphthene	1.16 S-GC	0.10	ug/L	2.00	0.340	41	43-102			S-GC
Benzo(g,h,i)perylene	0.94	0.10	ug/L	2.00	0.03 U	47	10-173			
Benzo(a)pyrene	0.95	0.10	ug/L	2.00	0.01 U	48	37-127			

QUALITY CONTROL

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Sanple Notes
Semivolatile Organic Compounds by GCMS SIM - Quality Control										
Batch 6H11002 - EPA 3510C_MS										
Matrix Spike (6H11002-MS1) Continued		**Source: B606690-01**		Prepared: 08/11/2006 12:29 Analyzed: 08/14/2006 16:39						
Surrogate: p-Terphenyl	*3.34*		*ug/L*	*5.00*		*67*	*10-167*			
Matrix Spike Dup (6H11002-MSD1)		**Source: B606690-01**		Prepared: 08/11/2006 12:29 Analyzed: 08/14/2006 16:57						
Naphthalene	1.17	0.10	ug/L	2.00	0.190	49	32-101	0.9	28	
Acenaphthene	1.15 S-GC	0.10	ug/L	2.00	0.340	40	43-102	0.9	22	S-GC
Benzo(g,h,i)perylene	0.98	0.10	ug/L	2.00	0.03 U	49	10-173	4	35	
Benzo(a)pyrene	0.94	0.10	ug/L	2.00	0.01 U	47	31-121	1	19	
Surrogate: p-Terphenyl	*3.23*		*ug/L*	*5.00*		*65*	*10-167*			
Semivolatile Organic Compounds by GC - Quality Control										
Batch 6H16001 - EPA 3520C										
Blank (6H16001-BLK1)				Prepared: 08/16/2006 10:49 Analyzed: 08/16/2006 15:55						
1,2-Dibromoethane	0.014 U	0.020	ug/L							
1,2-Dibromo-3-chloropropane	0.009 U	0.020	ug/L							
Surrogate: 1,3-Dichlorobenzene	*1.26*		*ug/L*	*1.00*		*126*	*30-170*			
LCS (6H16001-BS1)				Prepared: 08/16/2006 10:49 Analyzed: 08/16/2006 16:13						
1,2-Dibromoethane	0.291	0.020	ug/L	0.250		116	60-140			
1,2-Dibromo-3-chloropropane	0.343	0.020	ug/L	0.250		137	60-140			
Surrogate: 1,3-Dichlorobenzene	*1.34*		*ug/L*	*1.00*		*134*	*30-170*			
Matrix Spike (6H16001-MS1)		**Source: B607029-01**		Prepared: 08/16/2006 10:49 Analyzed: 08/16/2006 16:31						
1,2-Dibromoethane	0.297	0.020	ug/L	0.250	0.014 U	119	60-140			
1,2-Dibromo-3-chloropropane	0.344	0.020	ug/L	0.250	0.009 U	138	60-140			
Surrogate: 1,3-Dichlorobenzene	*1.33*		*ug/L*	*1.00*		*133*	*30-170*			
Matrix Spike Dup (6H16001-MSD1)		**Source: B607029-01**		Prepared: 08/16/2006 10:49 Analyzed: 08/16/2006 16:49						
1,2-Dibromoethane	0.301	0.020	ug/L	0.250	0.014 U	120	60-140	1	18	
1,2-Dibromo-3-chloropropane	0.351	0.020	ug/L	0.250	0.009 U	140	60-140	2	20	
Surrogate: 1,3-Dichlorobenzene	*1.42*		*ug/L*	*1.00*		*142*	*30-170*			
FL Petroleum Range Organics - Quality Control										
Batch 6H11008 - EPA 3510C										
Blank (6H11008-BLK1)				Prepared: 08/11/2006 10:33 Analyzed: 08/11/2006 15:52						
TPH (C8-C40)	0.094 U	0.170	mg/L							
Surrogate: n-Nonatriacontane	*0.0968*		*mg/L*	*0.100*		*97*	*22-137*			
Surrogate: o-Terphenyl	*0.0573*		*mg/L*	*0.0500*		*115*	*33-133*			
LCS (6H11008-BS1)				Prepared: 08/11/2006 10:33 Analyzed: 08/11/2006 16:14						
TPH (C8-C40)	1.72	0.170	mg/L	1.70		101	46-126			
Surrogate: n-Nonatriacontane	*0.182*		*mg/L*	*0.200*		*91*	*22-137*			
Surrogate: o-Terphenyl	*0.104*		*mg/L*	*0.100*		*104*	*33-133*			
Matrix Spike (6H11008-MS1)		**Source: B606690-02**		Prepared: 08/11/2006 10:33 Analyzed: 08/11/2006 16:36						
TPH (C8-C40)	5.42 D	0.340	mg/L	3.40	0.796	136	48-118			D
Surrogate: n-Nonatriacontane	*0.271*		*mg/L*	*0.200*		*136*	*22-137*			

QUALITY CONTROL

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Sanple Notes
FL Petroleum Range Organics - Quality Control										
Batch 6H11008 - EPA 3510C										
Matrix Spike (6H11008-MS1) Continued		**Source: B606690-02**		Prepared: 08/11/2006 10:33 Analyzed: 08/11/2006 16:36						
Surrogate: o-Terphenyl	*0.137*		*mg/L*	*0.100*		*137*	*33-133*			
Matrix Spike Dup (6H11008-MSD1)		**Source: B606690-02**		Prepared: 08/11/2006 10:33 Analyzed: 08/11/2006 16:59						
TPH (C8-C40)	4.58 D	0.340	mg/L	3.40	0.796	111	48-118	17	30	D
Surrogate: n-Nonatriacontane	*0.213*		*mg/L*	*0.200*		*106*	*22-137*			
Surrogate: o-Terphenyl	*0.109*		*mg/L*	*0.100*		*109*	*33-133*			
Metals by EPA 6000/7000 Series Methods - Quality Control										
Batch 6H14008 - EPA 3005A										
Blank (6H14008-BLK1)				Prepared: 08/14/2006 11:56 Analyzed: 08/14/2006 20:01						
Lead	2 I	10	ug/L							
LCS (6H14008-BS1)				Prepared: 08/14/2006 11:56 Analyzed: 08/14/2006 20:08						
Lead	1010	10	ug/L	1000		101	82-117			
Matrix Spike (6H14008-MS1)		**Source: B606941-01**		Prepared: 08/14/2006 11:56 Analyzed: 08/14/2006 20:15						
Lead	994	10	ug/L	1000	2 U	99	68-126			
Matrix Spike Dup (6H14008-MSD1)		**Source: B606941-01**		Prepared: 08/14/2006 11:56 Analyzed: 08/14/2006 20:42						
Lead	984	10	ug/L	1000	2 U	98	68-126	1	19	

NOTES AND DEFINITIONS

U	Analyte included in the analysis, but not detected
S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
I	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
D	Data reported from a dilution

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Laboratory Certification Summary

Analysis	Matrix	Cert ID	Cert Number
8011	Water	NELAC	E82277
8260B Arom	Water	NELAC	E82277
8260B Halo	Water	NELAC	E82277
8270C PAH SIM	Water	NELAC	E82277
FLPRO	Water	NELAC	E82277
Lead Total EPA 6010B	Water	NELAC	E82277

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 3342 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G00103	NS Mayport	Mark Peterson	404-562-6115	Enco
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
		Dave Sleffin	904-354-7266	4810 Executive Park Ct. #211
		CARRIER/WAYBILL NUMBER		CITY, STATE
				Jacksonville, FL

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)								PRESERVATIVE USED								TYPE OF ANALYSIS								COMMENTS
									G	V	V	P	V	P			HCl	1	HNO3	H2SO4	HCl				8260B VOA+10+4 MTBE	8270 SIM*	Pb (Lead) Total	FL-PRO (TRPH)	EDB SOIL				
	1035	MPT-GW-MW06S-01-20060809				GW	G	9	X	X															X	X	X	X	X				1001 to PM c
																																VOA=BTEX+MTBE
																																* 1,2 MN + 1/6 method listed

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	8-10-06	1416	1. RECEIVED BY	8/10/06	1416
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: GS2 1.2°C B606941

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4102R
FORM NO. TINUS-001

The total number of pages in this report, including this page is 1.

APPENDIX B

FIELD FORMS

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : ______________________________________ PROJECT NAME :

MANUFACTURER : ______________________________________ PROJECT NUMBER :

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: _____ BORING NUMBER: _____
PROJECT NUMBER: _____ DATE: _____
DRILLING COMPANY: _____ GEOLOGIST: _____
DRILLING RIG: _____ DRILLER: _____

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
													0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area

Remarks: _____ Background (ppm): ____

Converted to Well: Yes _____ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: _____
Project No.: _____

[] Surface Soil (SS)
[] Subsurface Soil (SU)
[] Sediment (SD)
[] Other: _____
[] QA Sample Type: _____

Sample ID No.: _____
Sample Location: _____
Sampled By: _____
C.O.C. No.: _____

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date:	**Depth**	**Color**	**Description (Sand, Silt, Clay, Moisture, etc.)**
Time:			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	**Time**	**Depth**	**Color**	**Description (Sand, Silt, Clay, Moisture, etc.)**
Method:				
Monitor Readings				
(Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	**Container Requirements**	**Collected**	**LAB**
PCB	(1) 8oz. Glass Jar		Accutest

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):