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CONTAMINATION ASSESSMENT PLAN FOR SITE ASSESSMENT AT SITE 413 NS  
MAYPORT FL  
7/1/2005  
TETRA TECH NUS

# Comprehensive Long-term Environmental Action Navy

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



Southern Division

Naval Facilities Engineering Command

2155 Eagle Drive

North Charleston, South Carolina 29406

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

**APPROVED FOR SUBMITTAL BY:**



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

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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

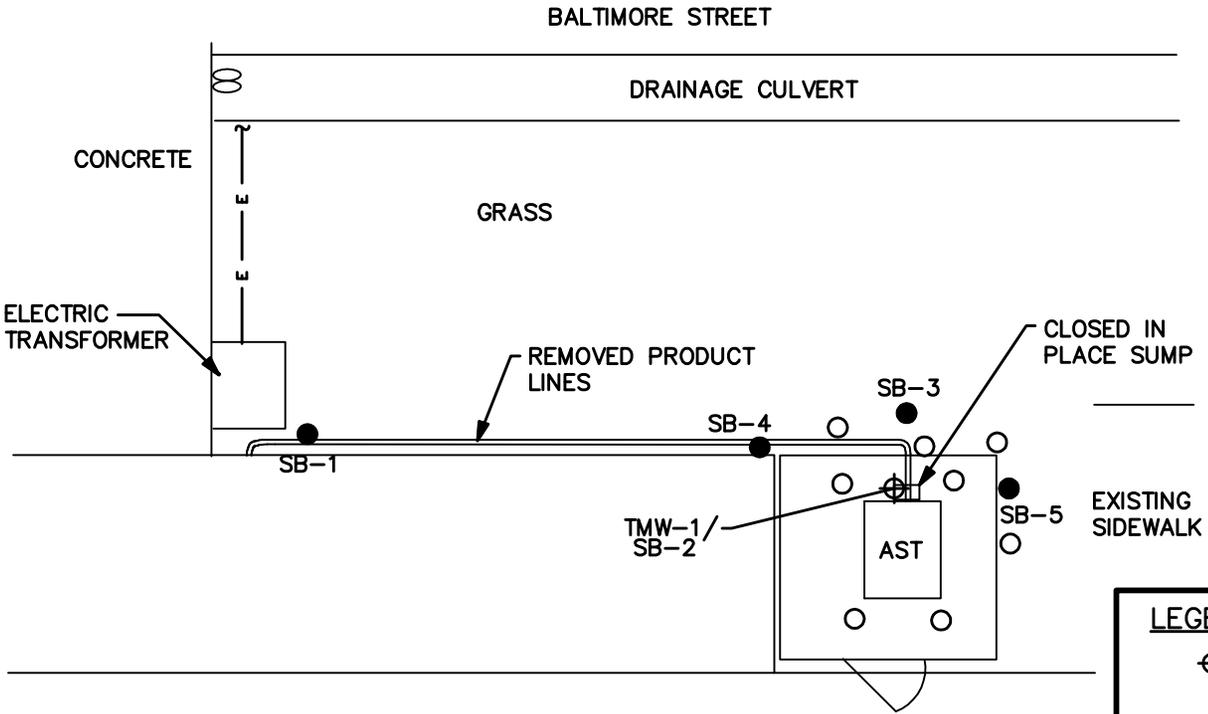
## 1.0 INTRODUCTION

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.



**LEGEND:**

- ⊕ TEMPORARY WELL LOCATION
- SOIL BORING LOCATION
- PROPOSED DPT BORING LOCATION
- E — UNDERGROUND ELECTRIC LINE



SOURCE: BASED ON DRAWING PREPARED BY EARTH SYSTEMS  
AUGUST 2004.

<b>DRAWN BY</b> HJB	<b>DATE</b> 6/16/05
<b>CHECKED BY</b>	<b>DATE</b>
<b>REVISED BY</b>	<b>DATE</b>
<b>SCALE</b> AS NOTED	



**SITE PLAN**  
**PROPOSED DPT BORING LOCATIONS**  
**BUILDING 413**  
**MAYPORT NAVAL STATION**  
**MAYPORT, FLORIDA**

<b>CONTRACT NO.</b> 0103	
<b>OWNER NO.</b> 0000	
<b>APPROVED BY</b>	<b>DATE</b>
<b>DRAWING NO.</b> FIGURE 1	<b>REV.</b> 0

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

**Notes:**

<sup>(1)</sup> Method referenced reflects FDEP requirements.

<sup>(2)</sup> 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.

<sup>(3)</sup> Includes 1-methylnaphthalene, 2-methylnaphthalene, and 16 method-listed PAHs included in Table A of Chapter 62-770, FAC.

<sup>(4)</sup> 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 <sup>(1)</sup>	Environmental Samples	Disposal Samples <sup>(2)</sup>	Equipment Blanks (Aqueous)	Trip Blanks (Aqueous)	Total Samples
<b>GROUNDWATER</b>						
BTEX/MTBE/ VOHs	SW-846 USEPA 8260B	5	1	1	1	8
PAHs <sup>(3)</sup>	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:**

<sup>(1)</sup> Method referenced reflects FDEP requirements.

<sup>(2)</sup> Groundwater analyticals will be used to determine the appropriate disposal method of the development and purge water.

<sup>(3)</sup> 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
<b>GROUNDWATER</b>				
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 <sub>2</sub> SO <sub>4</sub> to pH<2; 4 degrees Celsius	28 days
<b>SOIL</b>				
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<sub>2</sub>SO<sub>4</sub> = Sulfuric Acid  
Extr. = Extraction  
Pres. = Preservation