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SITE ASSESSMENT REPORT BRAVO PIER NS MAYPORT FL
1/1/1999
TETRA TECH NUS

SITE ASSESSMENT REPORT
BRAVO PIER

Naval Station Mayport
Mayport, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order CTO-0064

JANUARY 1999

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1/21/99

FINAL
SITE ASSESSMENT REPORT
BRAVO PIER

NAVAL STATION MAYPORT
MAYPORT, FLORIDA

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

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JANUARY 1999

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EXECUTIVE SUMMARY
OF
SITE ASSESSMENT for
Bravo Pier at Naval Station Mayport
Mayport, Florida

Tetra Tech NUS, Inc. (TtNUS) has completed a Site Assessment (SA) at the above-referenced facility in accordance with the requirements of Chapter 62-770, Florida Administrative Code (FAC). This assessment report is being submitted to the Florida Department of Environmental Protection (FDEP) for approval.

TtNUS performed the following tasks during the SA:

- Reviewed available U.S. Navy documents to identify potential petroleum hydrocarbon sources and receptors in the site vicinity, locate private potable wells within a 0.25-mile radius and public water supply wells within a 0.50-mile radius, locate nearby surface water bodies, and determine surface hydrology and drainage.
- Reviewed the Closure Report for the UST Storage Tank Remedial Action at Site 1330 (dated January 1996), Contamination Assessment Report for Site 1330 (dated May 1992), IRA Letter report for Bravo Pier JP-5 Fuel Line Leak (dated August 1994), and the Monitoring Only Plan Report for Site 1330 submitted August 1998.
- Conducted a site survey to identify utilities and to construct a site plan.
- Advanced 29 soil borings using Direct Push Technology (DPT) and analyzed soil and groundwater samples via mobile laboratory.
- Installed five (5) shallow monitoring wells and one (1) deep well, collected groundwater samples, and analyzed for constituents included in the Kerosene Analytical Group.

The results of the SA did not indicate the presence of "excessively contaminated" soil, as defined by Chapter 62-770.200 FAC, or groundwater with dissolved petroleum concentrations in excess of FDEP target cleanup target levels. Mobile laboratory results indicated that the soil samples did not contain detectable concentrations of petroleum hydrocarbons and groundwater samples contained low levels of dissolved petroleum constituents. Free product was not encountered in any onsite monitoring wells during the SA. Based on these results, TtNUS recommends No Further Action for this area of Bravo Pier.

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

A Site Assessment (SA) was conducted by Tetra Tech NUS (TtNUS) for the U.S. Navy (Navy) Southern Division Naval Facilities Engineering Command under Contract Task Order 0064, for the Comprehensive Long-term Environmental Action Navy (CLEAN III), Contract Number N62467-94-D-0888. The SA was conducted at Bravo Pier located at Naval Station Mayport (NS Mayport) in Mayport, Florida.

The purpose of this SA was to determine the nature and extent of petroleum hydrocarbon contamination in soil and groundwater in accordance with the requirements of Chapter 62-770 of the Florida Administrative Code (FAC). The cause of the investigation was a leaking valve on JP-5 fuel pipeline beneath Bravo Pier (Site).

A SA Summary Sheet, as required by Chapter 62-770, FAC is included in Appendix A.

1.2 SITE DESCRIPTION

1.2.1 Location

NS Mayport is located in eastern Duval County, approximately 16 miles northeast of downtown Jacksonville, Florida. NS Mayport is located in Township 1 South, Range 29 East, Section 38, as shown on the Mayport, Florida United States Geological Survey (USGS) Quadrangle (7.5 Minute Series) presented in **Figure 1-1**. Bravo Pier is located in the northern part of NS Mayport and is situated along the northwestern edge of the ship turning basin adjacent to the northeastern end of the NS Mayport runway. The location of Bravo Pier is depicted on **Figure 1-2**.

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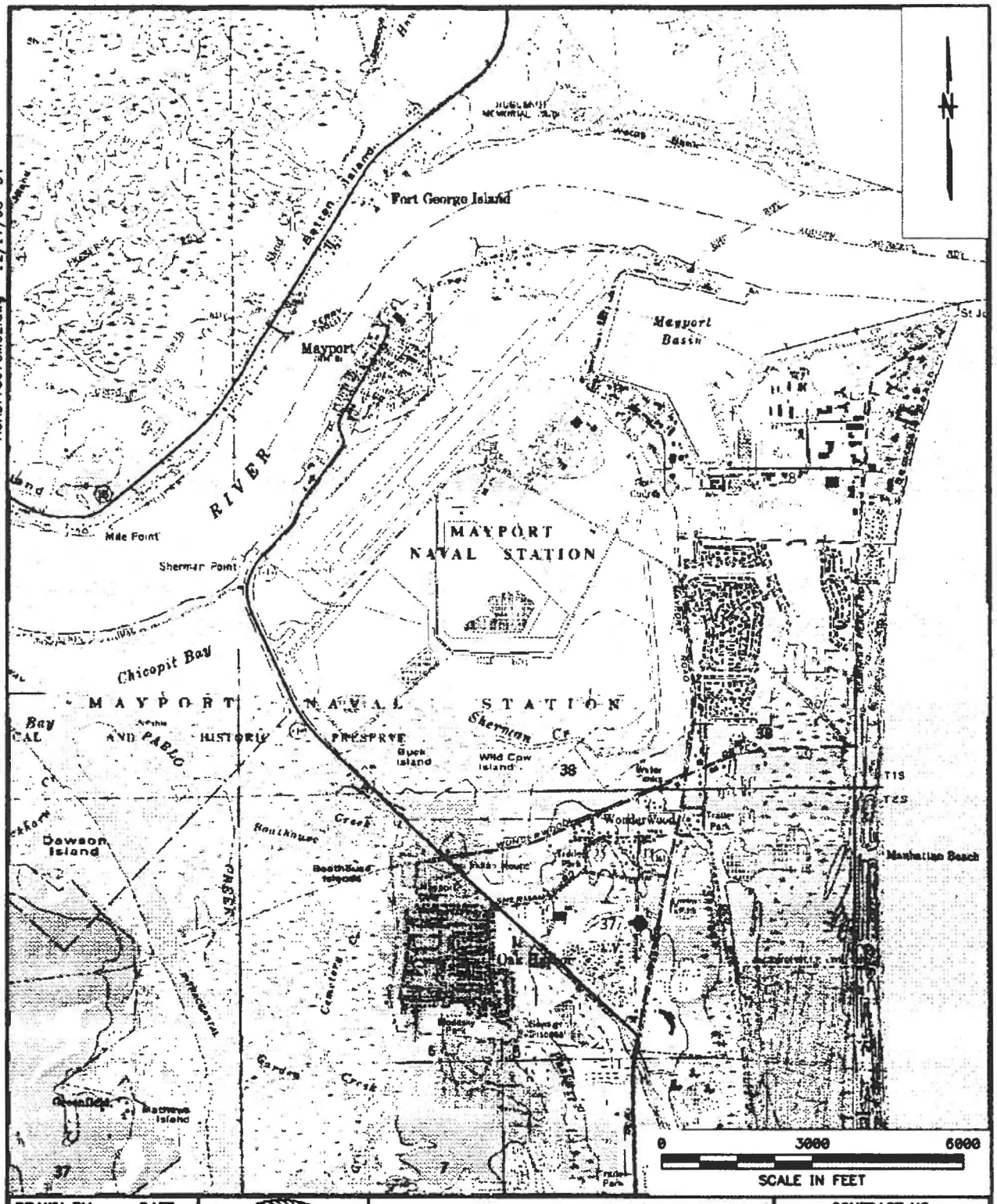

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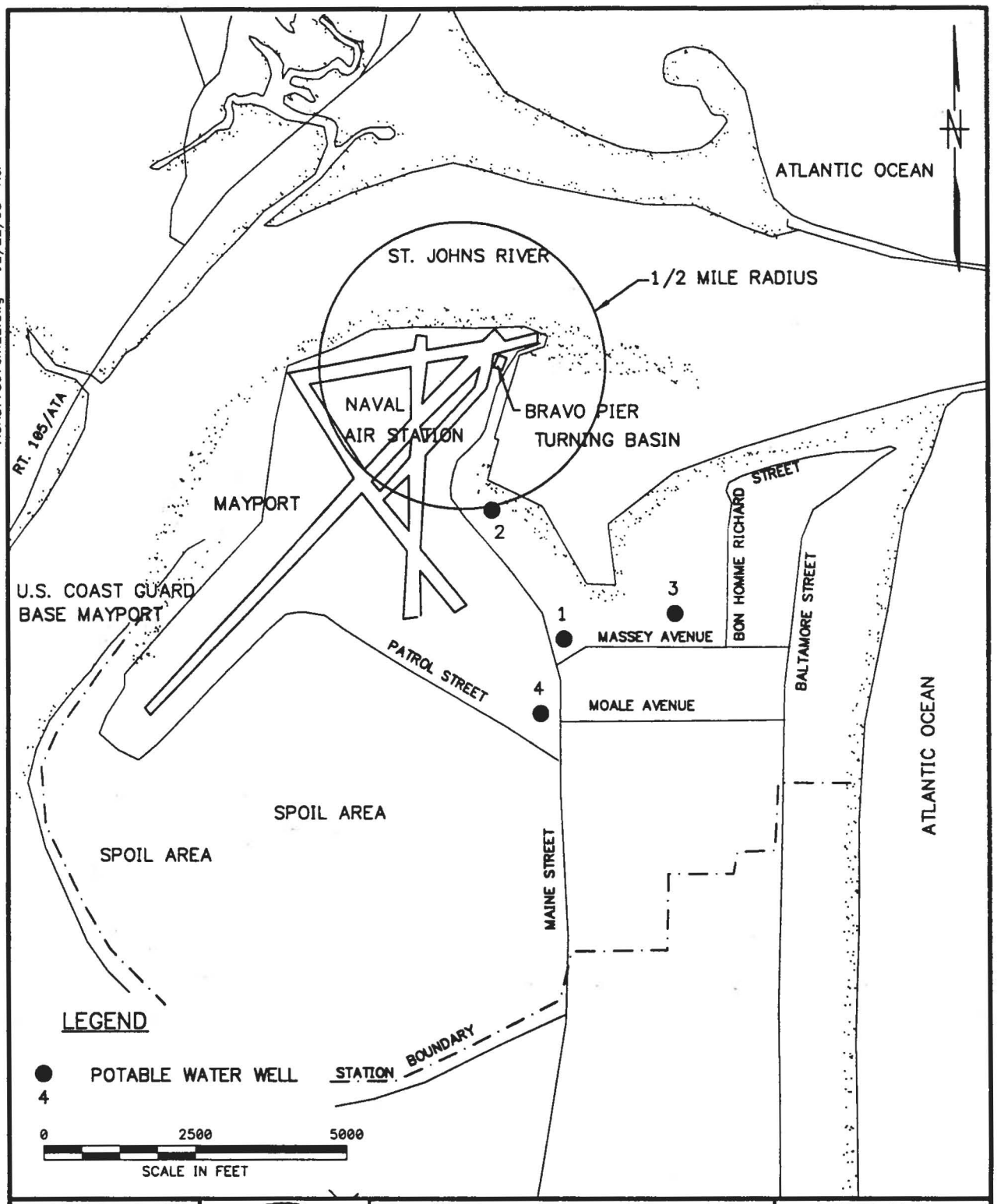

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DRAWN BY HJP DATE 6/22/98			CONTRACT NO. 7867
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COST/SCHED-AREA			APPROVED BY DATE
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1.2.2 Potable Water Well Survey

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

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

Information gathered during the potable well survey is summarized on **Table 1-1**. The locations of the potable wells are depicted on **Figure 1-2**. Well No. 2, the inactive potable well, is the only potable well located within 0.5-mile radius of the assessment area. This well is upgradient from Bravo Pier and is cased to a depth of over 400 feet. If water recovery resumed from this well it does not appear that the shallow contaminants of Bravo Pier would be a threat to the water supply.

1.2.3 Site Description, Topography and Drainage

The Site is centrally located on Bravo Pier and is situated approximately 60 feet to the east of Building 46 and approximately 95 feet west of the edge of the turning basin. Bravo Pier runs in a north-south direction, bound to the south by the NS Mayport runway and north by the mouth of the St. Johns River. The land surface elevation is approximately 10 feet above mean sea level. Site surface water drainage is dictated by the St. Johns River to the north, marsh and wetlands areas to the west, and the Atlantic Ocean to the east of the Site. A site plan is shown in **Figure 1-3**.

1.2.4 Regional Hydrogeology

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

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

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

1.2.5 Land Use

The Site is located on Bravo Pier, which runs in a north-south direction along the northern border of the base adjacent to the mouth of the St. Johns River. Bravo Pier is used for docking active duty Naval vessels such as Destroyers and also ships that are being decommissioned.

TABLE 1-1: POTABLE WATER WELL SURVEY SUMMARY

Facility Name: Bravo Pier, Naval Station Mayport

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

1 = refer to figure 1-1 for locations of potable wells

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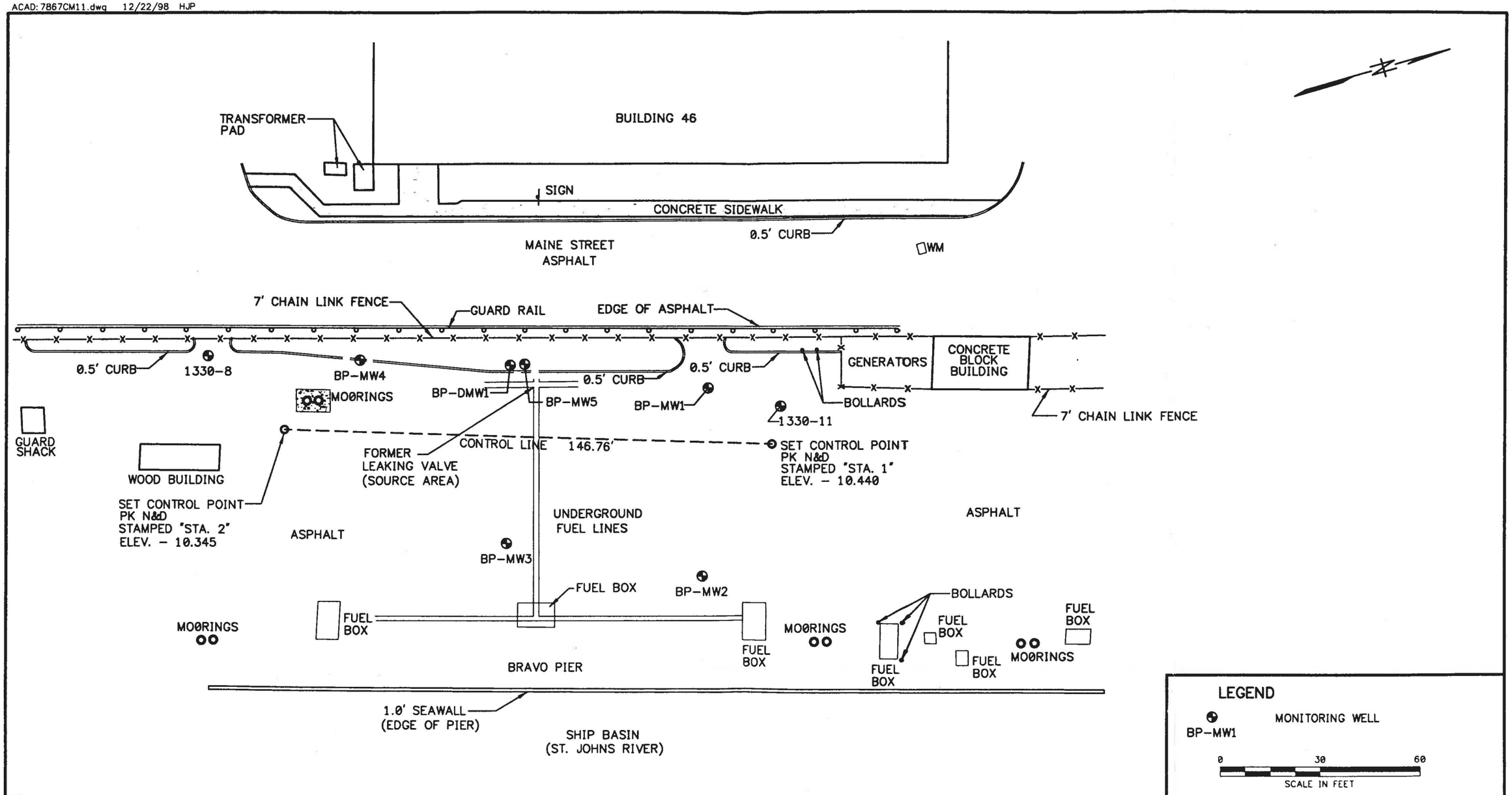

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SCALE AS NOTED

SITE PLAN
MAYPORT NAVAL AIR STATION
MAYPORT, FLORIDA

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1.3 SITE HISTORY AND OPERATIONS

1.3.1 Site History

Bravo Pier has a long history of fuel handling operations. Remnants of the old gasoline dispensing lines still exist toward the northern part of the pier. These lines were utilized to fuel seaplanes, various boats, and Naval ships prior to 1960. Currently, JP-5 and other fuel pipelines run parallel to the pier and supply various Naval operations.

Two 25,000-gallon gasoline tanks and one 40,000-gallon lubricating oil tank, situated in an area adjacent to the northwest of Bravo Pier (known as Site 1330), supplied the fuel used near Bravo Pier in the past. These tanks were removed in the 1950's, but a contamination assessment of Site 1330 in 1992 revealed a dissolved petroleum plume that extended beneath Bravo Pier. The CAR for Site 1330 concluded that the dissolved petroleum discovered near the Site was attributable to a fuel line source on the pier and was not associated with the former operations at Site 1330.

Subsequent to the CAR submittal for Site 1330, pressure tests were performed on the fuel lines at Bravo pier. A leak was detected from a JP-5 lateral fuel line near the central part of Bravo Pier. At this point, an Initial Remedial Action (IRA) was initiated to remove vadose zone contaminants. The following section describes the IRA activities in greater detail.

1.3.2 Initial Remedial Action

Between August 28, 1995 and September 6, 1995, Bechtel Environmental, Inc. (Bechtel) performed remedial actions at Bravo Pier. These activities were completed in response to recommendations made during the contamination assessment at Site 1330. During the assessment of Site 1330, pressure tests were performed on fuel lines located in the area of confirmed contamination. At this time, a small leak was detected from the JP-5 lateral line valve connection.

Bechtel excavated an area (11' X 8' X 5' deep) of soil to expose the leaking valve. Soils on the excavation floor were screened for organic vapors to delineate the area of "excessively contaminated" soils. "Excessively contaminated," per Chapter 62-770 Florida Administrative Code (FAC), is defined as soils with organic vapor readings greater than 50 parts per million (ppm). Organic vapor analysis indicated that contamination greater than 50 ppm remained in the soils on the excavation floor.

Bechtel continued the excavation of "excessively contaminated" soils and removed a total area with dimensions of 12' X 9' X 7.5' deep. Groundwater was encountered at a depth of 7.5 feet, therefore Bechtel did not go deeper into the subsurface. Due to the limitations of Bechtel's scope of work as defined by their workplan, additional soil excavation was not authorized by SOUTHDIV. As a result of the workplan limitations, the total area of "excessively contaminated" soils was not delineated. SOUTHDIV determined that this would be accomplished at a later date.

After replacement of the leaking JP-5 valve, the excavated area was backfilled with clean soil and the surface was restored to its original condition. A total of 23 tons of "excessively contaminated" soil was removed from Bravo Pier and disposed of at the Industrial Waste East disposal facility located in Woodbine, Georgia.

2.0 SUBSURFACE INVESTIGATION METHODS

2.1 QUALITY ASSURANCE

The site investigation was conducted in accordance with the Standard Operating Procedures prescribed by the FDEP Quality Assurance Section Document DER-001/92, and adopted by the TtNUS Comprehensive Quality Assurance Plan Number 980038 dated August 24, 1998.

2.2 SOIL SAMPLING

2.2.1 Soil Boring Procedures

The soil hydrocarbon contamination assessment was conducted between August 11 and 13, 1998, using direct push technology (DPT). Twenty-nine soil borings were installed surrounding the source area. The borings were advanced continuously until the water table was encountered. Soil samples were collected at three-foot intervals for organic vapor screening and lithologic description. In addition, soil samples were collected from the vadose zone of select soil borings and analyzed by a mobile laboratory for volatile organic aromatics and naphthalene. Lithologic descriptions for the soil borings are included in Appendix B.

2.2.2 Confirmatory Soil Sampling

To further assess vadose zone soil conditions in the vicinity of the source area, three soil samples were collected on September 24, 1998. The samples were collected at a depth of 4 feet, using split spoon sampling equipment. The samples were properly preserved and shipped to Savannah Laboratories in Tallahassee, Florida. Laboratory analysis of the samples used EPA Method 8260B for Volatile Organic Aromatic (VOA) compounds, EPA Method 8310 for Polynuclear Aromatic Hydrocarbons (PAHs), EPA Method 6010B for lead, and FL-PRO for Petroleum Range Organics.

2.3 SOIL VAPOR ANALYSIS

Soil vapor analysis was conducted on each soil sample using an Organic Vapor Analyzer-Flame Ionization Detector (OVA-FID). The soil vapor analysis was performed according to the head space method prescribed in Rule 62-770.200 (2) FAC. The release was from a jet fuel pipeline, which is considered equivalent to the Kerosene Analytical Group. Therefore, soil samples with headspace levels in excess of 50 ppm are considered "excessively contaminated." The

Headspace Methodology for Determining Soil Organic Vapor Concentrations is described in detail in Appendix D.

2.4 MONITORING WELL INSTALLATION

Five shallow monitoring wells and one deep monitoring well were installed during the week of September 21, 1998. The monitoring wells were installed using hollow-stem auger drilling techniques, and the wells were constructed of 2-inch inner diameter (ID), Schedule 40, flush-joint polyvinyl chloride (PVC) riser and flush-joint, 0.01-inch, factory slotted well screen. All of the shallow monitoring wells were screened from 4 to 14 feet bls. The average depth to water was located approximately 6 feet bls. The deep monitoring well was screened from 25 to 30 feet bls. The annulus around the well screen was filter packed with No. 20-30 graded silica sand and capped with a 0.5-foot 30/65 sand seal. The remainder of the annular space was grouted to the surface with cement/bentonite grout. The monitoring wells were developed to remove fine particles using a submersible pump. Monitoring well completion logs are included in Appendix C.

2.5 LITHOLOGIC SAMPLING

Representative soil samples were collected during both the DPT investigation and monitoring well installation, in order to assess the shallow subsurface geologic conditions at the site. Samples used for lithologic description during the DPT assessment were collected from a stainless steel split spoon sampler lined with plastic sleeves. Grab samples from soil cuttings generated during monitoring well installations were also used for lithologic description. Soil boring logs are included as Appendix B.

2.6 HYDROLOGIC INVESTIGATION

During the DPT assessment, temporary piezometers were installed in soil borings SB-27 and SB-28. The temporary piezometers and existing Bravo Pier monitoring wells were used to determine preliminary groundwater elevation and flow direction. The tops of the piezometers were measured in reference to a common and arbitrary datum using an auto level. The groundwater elevation was then measured using an oil/ water interface probe. The depth to water was generally 6 feet below the land surface, with flow towards the east-northeast.

Following the installation of the monitoring wells, two complete rounds of water level measurements were collected on September 25 and November 13, 1998.

Specific capacity tests were not completed during the assessment as intended. Upon the approval of the Florida Department of Environmental Protection (FDEP) site manager, TtNUS referenced the document titled *Ground-Water Flow in the Surficial Aquifer System and Potential Movement of Contaminants from Selected Waste-Disposal Sites at Naval Station Mayport, Florida* (USGS, 1997) for determination of hydraulic conductivity at the Site.

The horizontal groundwater gradient across the site was evaluated from the average of water level measurements collected on September 25 and November 13, 1998. The groundwater gradient was calculated by determining the perpendicular distance between groundwater contours developed from groundwater elevation data.

The groundwater flow gradient was determined using the following equation:

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

where:

I = the hydraulic gradient

h_1 = the water elevation at point 1

h_2 = the water elevation at point 2

d = the distance between point 1 and point 2

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

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

where:

V = average seepage velocity

K = hydraulic conductivity

n = effective porosity

I = average hydraulic gradient

Site specific transmissivity is calculated using the following equation:

$T = Kb_e$

where:

T = transmissivity

K = hydraulic conductivity

b_e = affected aquifer thickness

2.7 GROUND WATER SAMPLING

2.7.1 Temporary Well Point Groundwater Sampling

During the DPT investigation, TtNUS personnel installed temporary PVC 2-inch diameter well points in each soil boring and collected groundwater samples from the surficial aquifer system. The samples were collected at a depth of 12 feet bls, and analyzed by a mobile laboratory for select volatile organic aromatic compounds and naphthalene, 1-methyl-naphthalene, and 2-methyl-naphthalene.

2.7.2 Free Product Sampling

Prior to groundwater sampling, TtNUS personnel checked each monitoring well for free product using an oil/water interface probe. Free product was not encountered during any of the sampling events.

2.7.3 Monitoring Well Groundwater Sampling

On September 25, 1998, TtNUS personnel collected groundwater samples from the five newly installed shallow monitoring wells (BP-MW01, BP-MW02, BP-MW03, BP-MW04, BP-MW05) and from the deep monitoring well (BP-DMW01). An additional groundwater sample was collected from monitoring well BP-MW01 on December 5, 1998 to confirm the results from previous sampling. Groundwater samples were collected using a peristaltic pump and low flow methodology. Field sampling forms are provided in Appendix E.

Groundwater samples from both sampling events were preserved and shipped to Savannah Laboratories in Tallahassee, Florida. All groundwater samples were analyzed using EPA Method 6010 for lead (filtered and unfiltered), EPA Method 504.1 for 1-2-dibromoethane (EDB), EPA Method 601 for Purgeable Halocarbons, EPA method 8260 for volatile organic aromatics (VOA) (including benzene, toluene, ethylbenzene, and xylenes, and methyl-tert butyl ether), EPA Method 8310 for Polynuclear Aromatic Hydrocarbons (PAHs), and FL-PRO for Petroleum Range Organics.

During the sampling events, quality control samples (i.e. duplicates and trip blanks) were prepared and submitted to the laboratory as required by the approved TtNUS Comprehensive Quality Assurance Plan. Sampling activities were documented in a site specific field logbook, and samples were transmitted under chain-of-custody protocols.

3.0 RESULTS OF INVESTIGATION

3.1 SITE HYDROGEOLOGY

3.1.1 Lithology

The site is underlain by light brown to gray sand, with some shell fragments and dredge spoils intermixed to a depth of 30 feet bls. Confining units were not encountered during drilling activities. Due to the relative homogeneity of the subsurface across the Site, a geologic cross section was not depicted as a figure. Soil boring logs describe the lithology across the Site and are included as Appendix B.

3.1.2 Aquifer Characteristics and Classification

The site is underlain by the surficial aquifer, which is classified as a G-II aquifer by the State of Florida. Based on water level data collected on September 25 and November 13, 1998, the depth to the shallow aquifer ranges from approximately 5.6 to 6.9 feet bls across the Site. Groundwater elevations are presented in **Table 3-1**. The groundwater elevation and flow direction for the September 25 and November 13 events are illustrated in **Figures 3-1** and **3-2**, respectively. No free product was detected in the monitoring wells during the assessment.

A tidal influence survey was completed on November 13, 1998 to assess the tidal influence on the shallow aquifer beneath the study area. During the 12-hour study period, an average change of 0.01 feet was measured in the sites monitoring wells.

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

Based on the groundwater flow gradient equation presented in Section 2.8.3, an average hydraulic gradient of 0.012 feet per feet (ft/ft) to the east-northeast of the source area, was calculated from the data collected on September 25 and November 13, 1998 (Figures 3-2 and 3-3). Lithologic data and available literature indicate the effective porosity of the soils comprising the surficial aquifer is approximately 0.25 (Driscoll, 1986). The site specific groundwater seepage

velocity across the site was calculated at 0.48 ft/day in a east-northeast direction, using a hydraulic conductivity of 10 ft/day, the hydraulic gradient 0.012 ft/ft, and an assumed effective porosity of 0.25. The transmissivity of the surficial aquifer system was calculated as 200 ft^2/day. Groundwater flow calculations are included in Appendix F.

TABLE 3-1: GROUNDWATER ELEVATION/DATA TABLE

Facility Name: **Bravo Pier**

Naval Station Mayport

ELEV =Elevation (ft)
DTW = Depth to water (ft)
FP = Free Product (ft)
TOC = top of casing

WELL NO.	BP-MW01			BP-MW02			BP-MW03			BP-MW04			BP-MW05		
DIAMETER	2.00			2.00			2.00			2.00			2.00		
WELL DEPTH	13.90			13.07			13.92			13.74			13.88		
SCREEN INTERVAL	3.9-13.9			3.07-13.07			3.92-13.92			3.74-13.74			3.88-13.88		
TOC ELEV	9.88			9.62			10.02			10.76			10.64		
DATE	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP
9/25/98	4.26	5.62	0.00	3.27	6.35	0.00	3.58	6.44	0.00	4.34	6.42	0.00	4.29	6.35	0.00
11/13/98	3.88	6.00	0.00	2.84	6.78	0.00	3.13	6.89	0.00	3.88	6.88	0.00	3.84	6.80	0.00

WELL NO.	BP-DMW01			MAY-1330-08			MAY-1330-11								
DIAMETER	2.00			2.00			2.00								
WELL DEPTH	29.76			13.01			13.53								
SCREEN INTERVAL	24.76-29.76			3.01-13.01			3.53-13.53								
TOC ELEV	10.56			10.32			10.09								
DATE	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP	ELEV	DTW	FP
9/25/98	4.29	6.27	0.00	4.51	5.81	0.00	3.76	6.33	0.00						
11/13/98	3.87	6.69	0.00	3.94	6.38	0.00	3.88	6.21	0.00						

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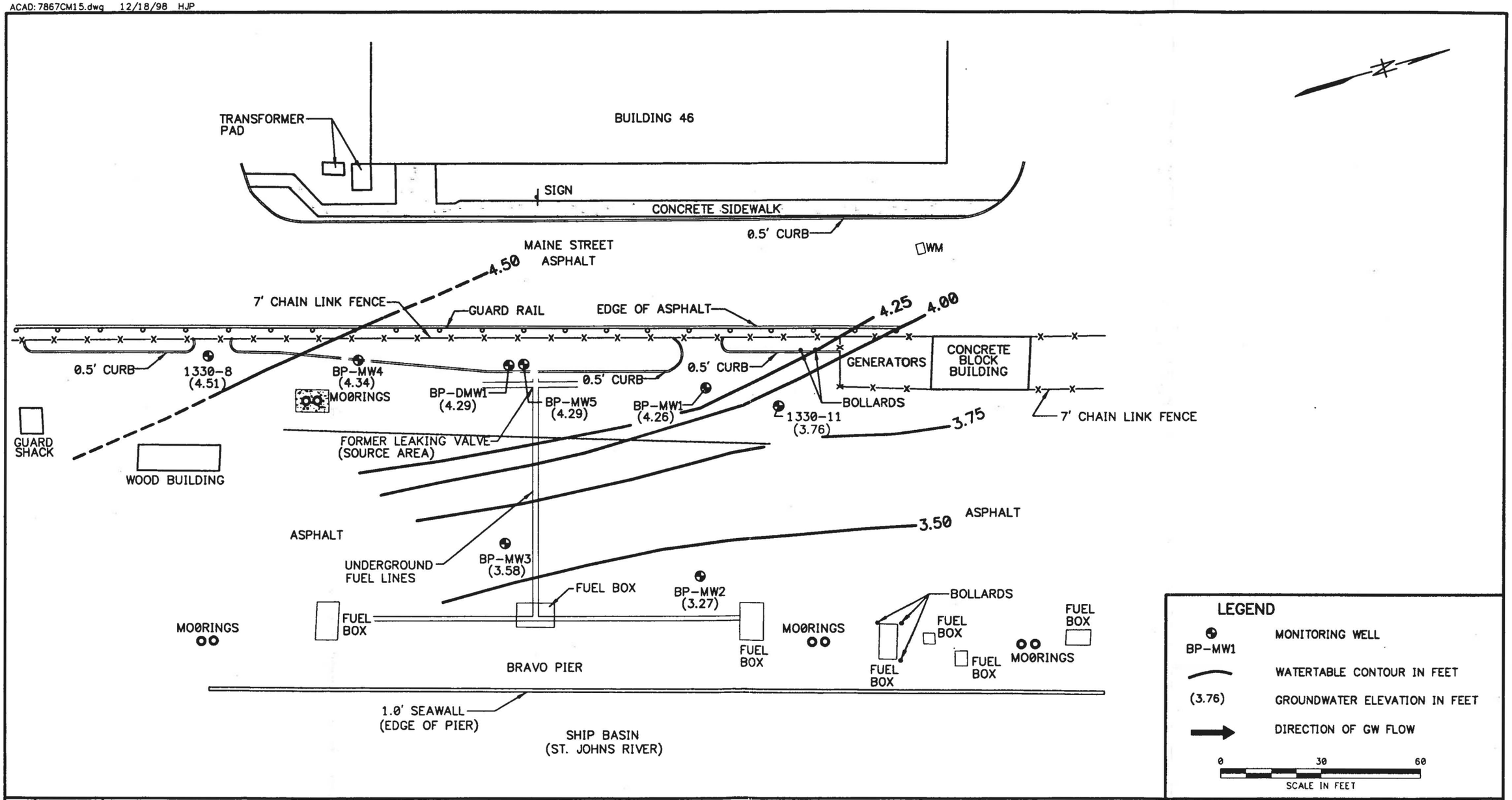

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJP DATE 12/18/98
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

GROUNDWATER ELEVATIONS-CONTOUR MAP
SEPTEMBER 25, 1998
MAYPORT NAVAL AIR STATION
MAYPORT, FLORIDA

CONTRACT NO. 7867
APPROVED BY DATE
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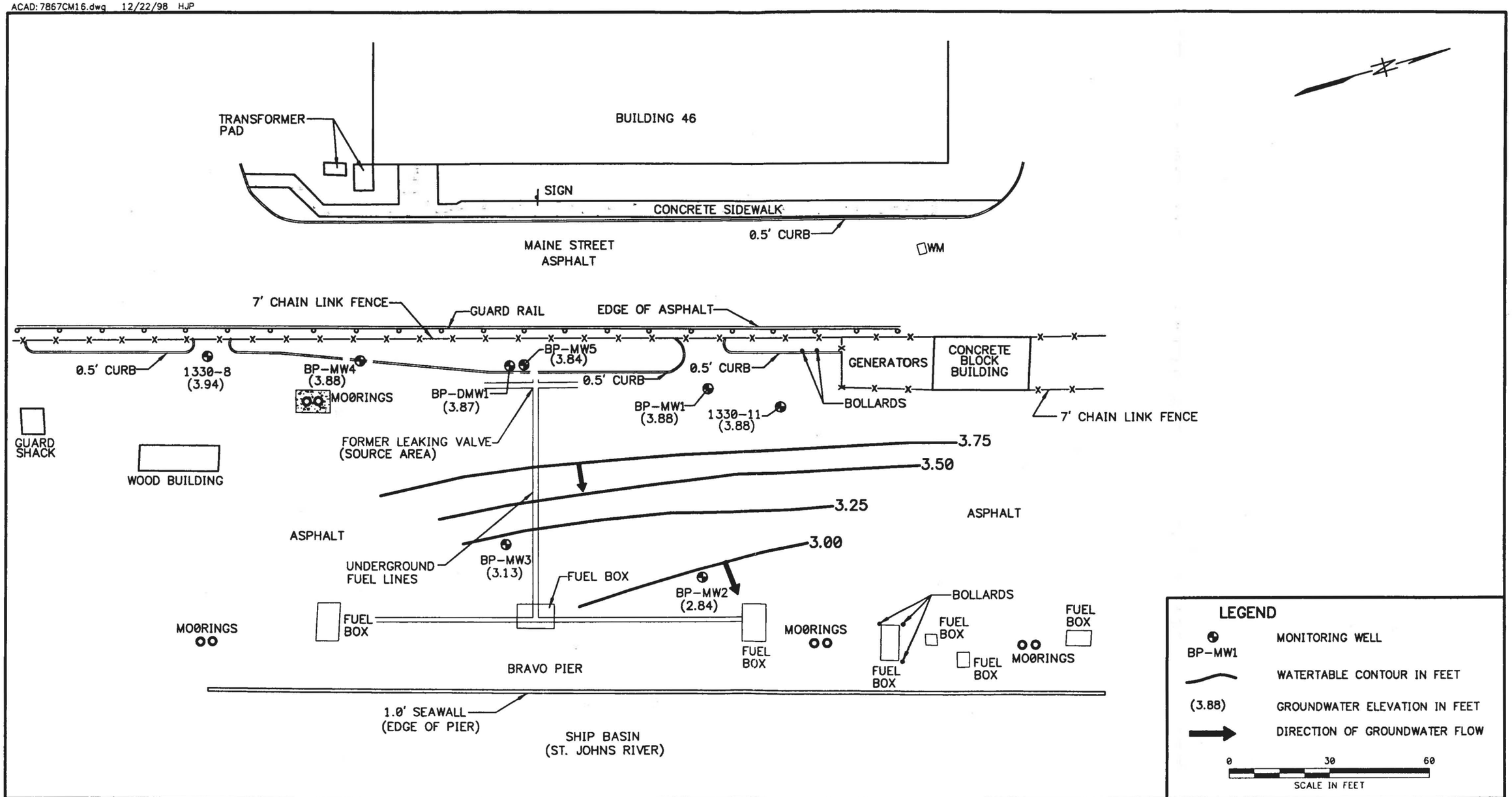
DRAWING NO. FIGURE 3-1 REV. 0

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

ACAD: 7867CM16.dwg 12/22/98 HJP



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJP DATE 12/18/98
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

GROUNDWATER ELEVATIONS-CONTOUR MAP
NOVEMBER 13, 1998
MAYPORT NAVAL AIR STATION
MAYPORT, FLORIDA

CONTRACT NO. 7867
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3-2
REV. 0

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

3.2 SOIL QUALITY

3.2.1 Soil Boring Investigation

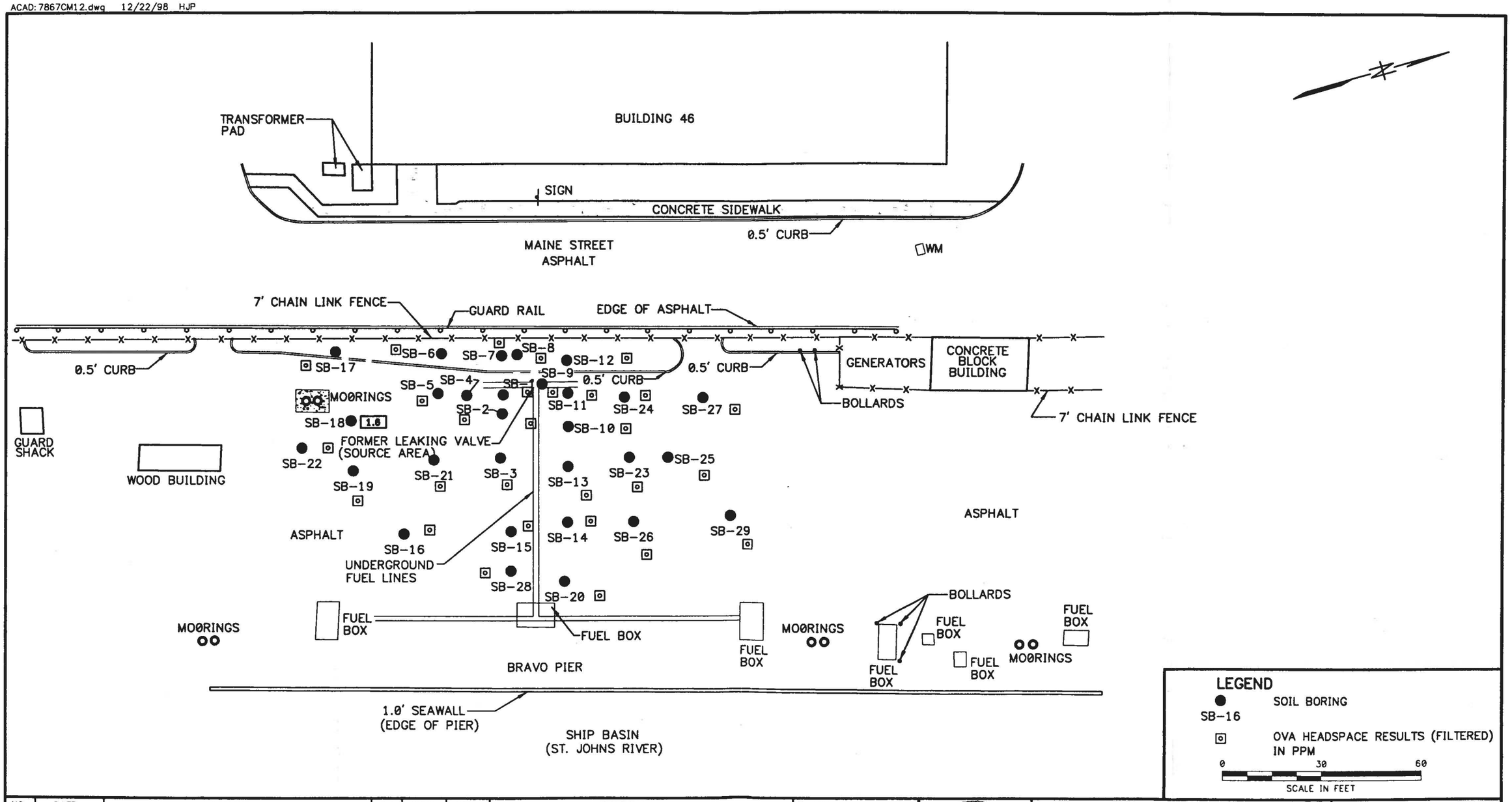
"Excessively contaminated" soil (greater than 50 ppm OVA response as defined by Chapter 62-770.200, FAC) was not encountered during the SA. Hydrocarbon vapors were detected at a concentration of 1.8 ppm in the 4-6 ft bls soil sample collected from soil borings SB-18. Hydrocarbon vapors were not detected above zero in the other 28 soil borings. Vapor screening results with soil boring locations are shown on **Figure 3-3**. Vapor Screening Results are not presented in tabular form due to the lack of data.

Soil samples were collected from the vadose zone and analyzed by a mobile laboratory for select volatile organic aromatic compounds and for naphthalene, 1-methylnapthalene, and 2-methylnapthalene. The mobile laboratory analytical results are presented in **Table 3-2.** Levels of benzene exceeding laboratory detection limits were found in one sample from soil boring SB-23 (3.83 μg/kg). Toluene, ethylbenzene, total xylenes, and naphthalene were not detected above laboratory limits in any of the remaining 13 soil borings. FDEP Soil Cleanup Target Levels (SCTLs) were not exceeded in any of the soil samples collected for mobile laboratory analysis. Mobile laboratory results for analysis of soil are depicted on **Figure 3-4**. Mobile laboratory soil analytical results are included as Appendix G.

3.2.2 Confirmatory Soil Sampling Results

The analytical data for the confirmatory samples indicated VOA and PAH compounds were not present above laboratory detection limits. Benzo (a) pyrene and dibenzo (a,h) anthracene were detected in two of the samples at concentrations above Soil Target Cleanup Levels. The detected concentration of benzo (a) pyrene in soil samples BRPR-SS-MW01 (430 μg/kg) and BRPR-SS-MW04 (430 μg/kg) exceeded the FDEP soil cleanup target level of 100 μg/kg. The detected concentration of dibenzo (a,h) anthracene in soil samples BRPR-SS-MW01 (160 μg/kg) and BRPR-SS-MW04 (160 μg/kg) exceeded the FDEP soil cleanup target level of 100 μg/kg. The analytical results are presented in **Table 3-3**. VOA and Naphthalene concentrations in soil are depicted on **Figure 3-5**. Confirmatory soil sampling analytical results are included as Appendix H.

ACAD: 7867CM12.dwg 12/22/98 HJP



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DRAWN BY HJP DATE 12/17/98
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

OVA HEADSPACE SCREENING RESULTS
MAYPORT NAVAL AIR STATION
MAYPORT, FLORIDA

CONTRACT NO. 7867
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3-3
REV. 0

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

TABLE 3-2: MOBILE LABORATORY SOIL ANALYTICAL RESULTS

Facility Name: Bravo Pier, Naval Station Mayport

< = below laboratory detection limit
Analytical Results = ppb (ug/l)

Sample				Ethyl	Total	Total		
Location	Date	Benzene	Toluene	Benzene	Xylenes	VOA	MTBE	Napth.
SB-01	8/11/98	<2	<2	<2	<2	<2	<10	<10
SB-02	8/11/98	<2	<2	<2	<2	<2	<10	<10
SB-03	8/11/98	<2	<2	<2	<2	<2	<10	<10
SB-04	8/11/98	<2	<2	<2	<2	<2	<10	<10
SB-05	8/11/98	<2	<2	<2	<2	<2	<10	<10
SB-06	8/11/98	<2	<2	<2	<2	<2	<10	<10
SB-07	8/11/98	<2	<2	<2	<2	<2	<10	<10
SB-08	8/11/98	<2	<2	<2	<2	<2	<10	<10
SB-09	8/11/98	<2	<2	<2	<2	<2	<10	<10
SB-10	8/11/98	<2	<2	<2	<2	<2	<10	<10
SB-11	8/12/98	<2	<2	<2	<2	<2	<10	<10
SB-12	8/12/98	<2	<2	<2	<2	<2	<10	<10
SB-13	8/12/98	<2	<2	<2	<2	<2	<10	<10
SB-23	8/13/98	3.83	<2	<2	<2	3.83	<10	<10
FDEP Target Levels		1.1×10^3	3×10^5	$2. \times 10^5$	2.9×10^5		3.5×10^5	1.0×10^5

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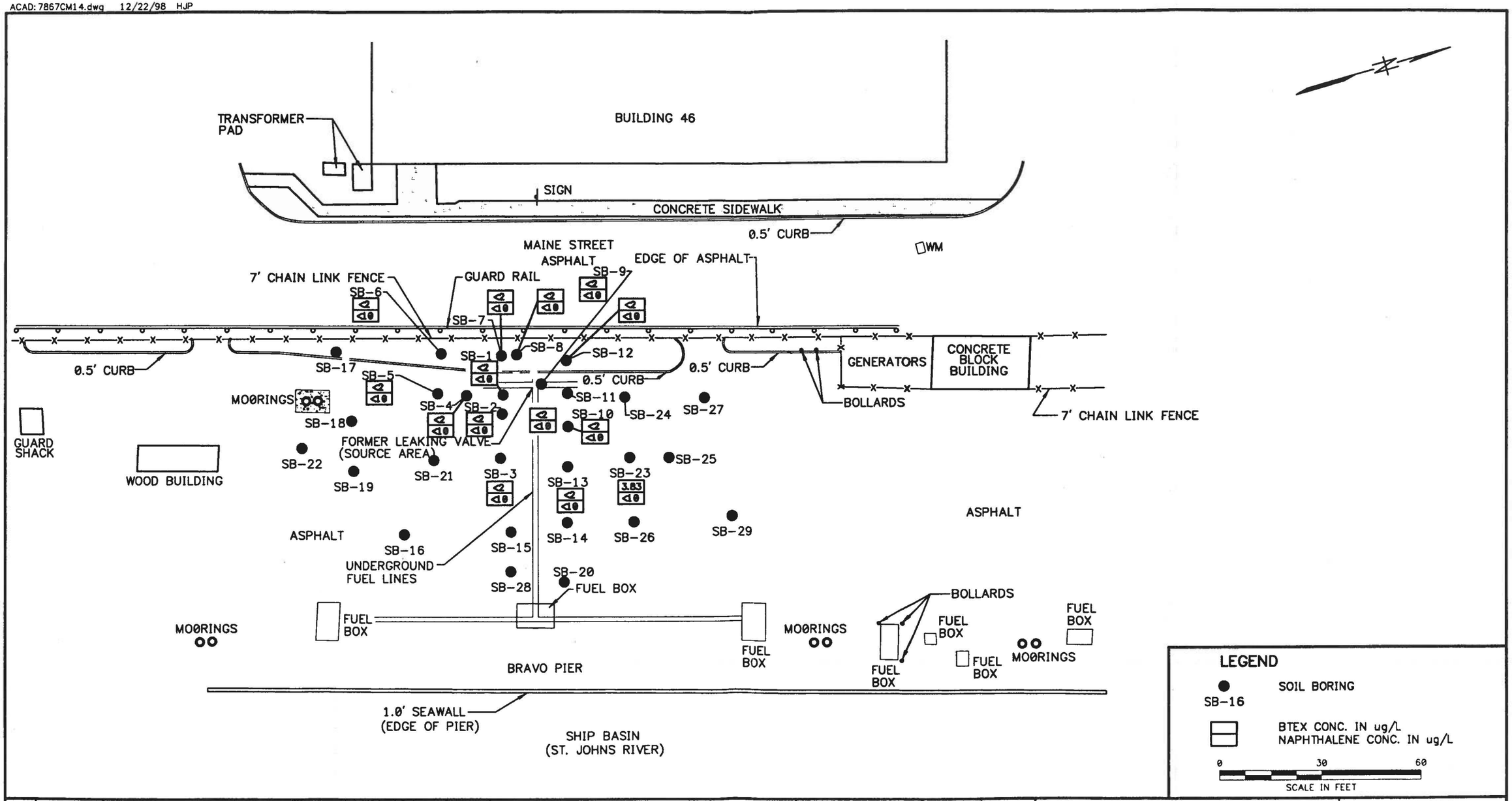

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJP DATE 12/18/98
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COST/SCHED-AREA
SCALE AS NOTED

MOBILE LAB FIELD SCREENING RESULTS-SOIL
MAYPORT NAVAL AIR STATION
MAYPORT, FLORIDA

CONTRACT NO. 7867
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3-4
REV. 0

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

TABLE 3-3: SOIL ANALYTICAL SUMMARY-FIXED-BASED LABORATORY

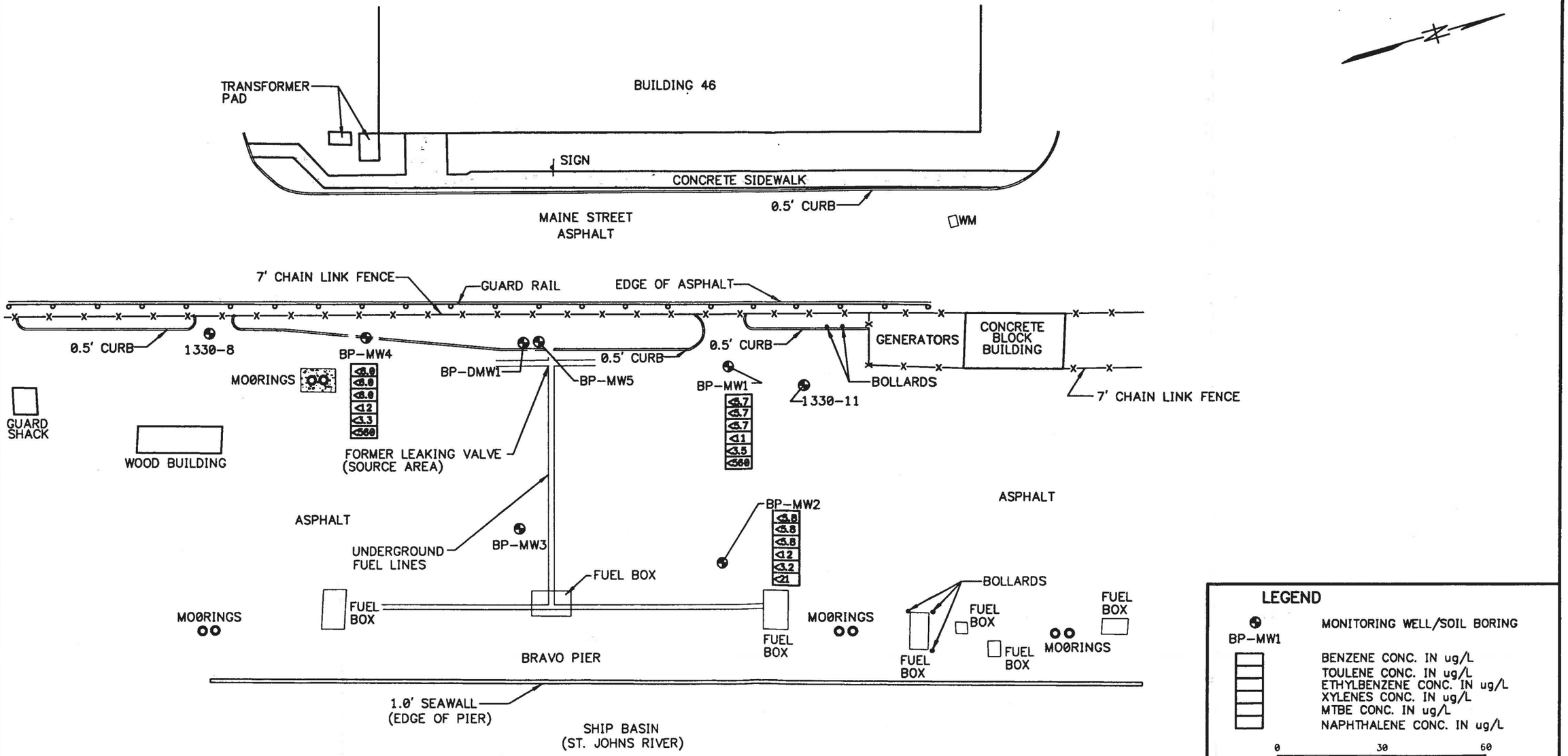
Facility Name: Bravo Pier, Naval Station Mayport

< = below laboratory detection limit

Analytical Results = ug/kg

Sample Location	Sample Date	Benzene	Toluene	Ethyl Benzene	Total Xylenes	MTBE	Napth.	Lead	Isopropyl-benzene	TRPH	Benzo (a) pyrene	Dibenzo (a,h) anthracene
BRPR-SS-MW01	9/24/98	<5.7	<5.7	<5.7	<11	<3.5	<560	7800	<5.7	2.2×10^5	430	160
BRPR-SS-MW02	9/24/98	<5.8	<5.8	<5.8	<12	<3.2	<21	2000	<5.8	1.2×10^4	9.1	<10
BRPR-SS-MW04	9/24/98	<6.0	<6.0	<6.0	<12	<3.3	<560	2300	<6.0	8400	430	160
FDEP Target Levels		1100.00	3×10^5	2.4×10^5	2.9×10^5	3.5×10^5	1.0×10^6	5.0×10^5		3.5×10^5	100	100

ACAD:7867CM21.dwg 12/18/98 HJP



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJP DATE 12/18/98
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COST/SCHED-AREA
SCALE AS NOTED

VOLATILE ORGANIC AROMATICS AND NAPHTHALENE IN SOIL (METHOD 8260)
MAYPORT NAVAL AIR STATION
MAYPORT, FLORIDA

CONTRACT NO. 7867
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3-5
REV. 0

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

3.3 WATER QUALITY

3.3.1 Temporary Well Point Sampling

TtNUS personnel collected groundwater samples from temporary well points installed in each soil boring during the DPT investigation. One groundwater sample was also collected form existing monitoring well MAY1330-11. Twenty-five (25) groundwater samples were collected between August 11 and 13, 1998. The mobile laboratory analytical results for groundwater are presented in **Table 3-4**. VOA and naphthalene concentrations are depicted on **Figure 3-6**.

Benzene was detected at concentrations exceeding method detection limits (2 µg/L) in twelve groundwater samples. Method detection limits for benzene could not be lowered below 2 µg/L, even though the FDEP Groundwater Cleanup Target Level (GCTL) is 1 µg/L. Toluene was detected above FDEP GCTLs in four well points (SB-03, SB-08, SB-23, and MAY1330-11. FDEP GCTLs for ethylbenzene were exceeded in one well point (SB-08). FDEP GCTLs for total xylenes were exceeded in two well points (SB-12 and SB-17). MTBE was detected above FDEP GCTLs in two well points (SB-08 and SB-12) and FDEP GCTLs for naphthalene were exceeded in five well points (SB-03, SB-08, SB-09, SB-14, and SB-28).

3.3.2 Monitoring Well Sampling

TtNUS personnel collected groundwater samples from six monitoring wells on September 25, 1998, and from one monitoring well on December 5, 1998. A summary of groundwater analytical results is presented in **Table 3-5**.

Laboratory results from the initial sampling event indicate that benzene was detected in the groundwater sample from one monitoring well, BP-MW01, at a concentration of 1.8 µg/L. The FDEP GCTL for benzene is 1.0 µg/L. Benzene was not detected above laboratory detection limits in any of the other sampled wells. In an effort to confirm the benzene result for monitoring well BP-MW01, a second groundwater sample was collected from the well on December 5, 1998. Laboratory results from this sampling event indicate that benzene was below laboratory detection limits.

FDEP GCTLs for toluene, ethylbenzene, total xylenes, methyl tert-butyl ether (MTBE), ethylene dibromide (EDB), Naphthalene, Lead, and total recoverable petroleum hydrocarbons (TRPH) were not exceeded in any of the six monitoring wells. Isopropylbenzene was detected above the

FDEP GCTL in four of the monitoring wells. Concentrations of isopropylbenzene ranged from 1.90 μg/L (BP-DMW01) to 590 μg/L (BP-MW05).

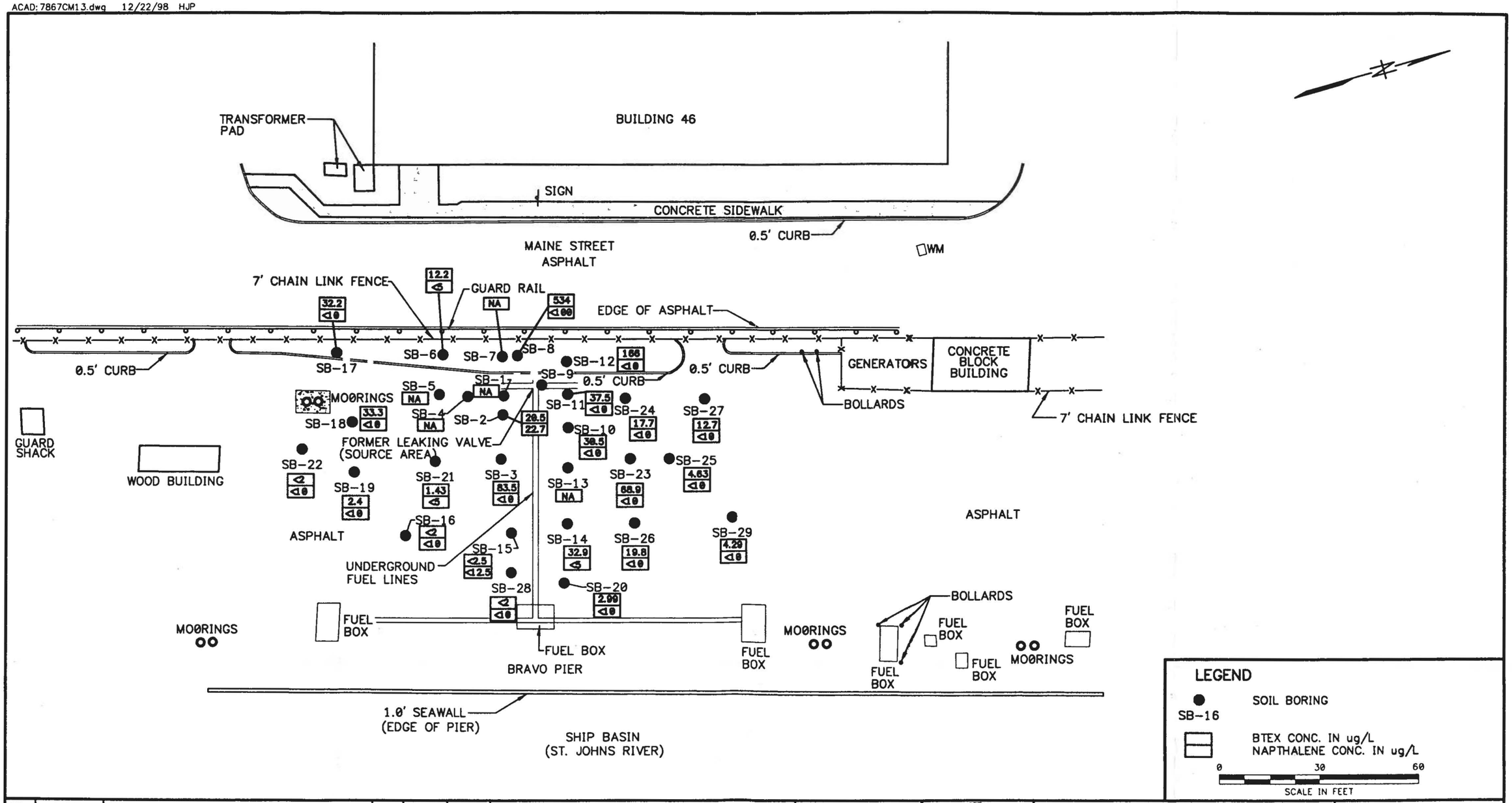
TABLE 3-4: MOBILE LABORATORY GROUNDWATER ANALYTICAL RESULTS

Facility Name: Bravo Pier, Naval Station Mayport

< = below laboratory detection limit
NCD = no compounds detected
Analytical Results = ppb (ug/l)

Sample				Ethyl	Total	Total		
Location	Date	Benzene	Toluene	Benzene	Xylenes	VOA	MTBE	Napth.
SB-02	8/11/98	7.19	20.70	<1	2.64	30.50	31.10	13.40
SB-03	8/17/98	<2	80.90	<2	2.56	83.50	18.20	32.10
SB-06	8/17/98	8.36	<1	3.88	<1	12.20	15.30	<5
SB-08	8/17/98	51.60	255.00	227.00	<20	534.00	151.00	<100
SB-09	8/11/98	<5	<5	<5	<5	<5	<25	<25
SB-10	8/11/98	<2	27.80	<2	2.74	30.50	31.60	<10
SB-11	8/11/98	7.07	20.40	<2	10.00	37.50	26.60	<10
SB-12	8/11/98	9.23	37.20	19.50	99.60	166.00	35.30	<10
SB-14	8/12/98	4.52	23.10	<2	5.29	32.90	15.80	22.50
SB-15	8/12/98	<2.5	<2.5	<2.5	<2.5	<2.5	13.80	<12.5
SB-16	8/12/98	<2	<2	<2	<2	<2	<10	<10
SB-17	8/12/98	<2	11.50	<2	20.70	32.20	<10	<10
SB-18	8/12/98	<2	20.10	<1	13.20	33.30	<10	<10
SB-19	8/12/98	<2	<2	<2	2.40	2.40	<10	<10
SB-20	8/12/98	2.99	<2	<2	<2	2.99	15.00	<10
SB-21	8/12/98	<1	<1	<1	1.43	1.43	<5	<5
SB-22	8/12/98	<2	<2	<2	<2	<2	<10	<10
SB-23	8/12/98	9.60	57.30	<2	2.04	68.90	20.00	<10
SB-24	8/13/98	<2	14.90	<2	2.80	17.70	28.20	<10
SB-25	8/13/98	4.63	<2	<2	<2	4.63	10.30	<10
SB-26	8/13/98	6.41	7.80	2.07	3.47	19.80	24.30	<10
SB-27	8/13/98	<2	12.70	<2	<2	12.70	<10	<10
SB-28	8/13/98	<2	<2	<2	<2	<2	<10	41.90
SB-29	8/13/98	4.29	<2	<2	<2	4.29	12.50	<10
MAY1330-11	8/13/98	17.80	112.00	5.37	4.20	139.00	31.20	12.90
FDEP Target Levels		1.00	40.00	30.00	20.00		35.00	20.00

ACAD: 7867CM13.dwg 12/22/98 HJP



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SCALE: AS NOTED

MOBILE LAB FIELD SCREENING RESULTS
GROUNDWATER
MAYPORT NAVAL AIR STATION
MAYPORT, FLORIDA

CONTRACT NO. 7867
APPROVED BY DATE
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DRAWING NO. FIGURE 3-6
REV. 0

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

TABLE 3-5: GROUNDWATER ANALYTICAL SUMMARY-FIXED-BASED LABORATORY

Facility Name: Bravo Pier, Naval Station Mayport

< = below laboratory detection limit

NS = not sampled

Analytical Results = ppb (ug/l)

Sample Location	Sample Date	Benzene	Toluene	Ethyl Benzene	Total Xylenes	MTBE	EDB	Napth.	Lead	Isopropyl-benzene	TRPH
BP-MW01	9/25/98	1.80	1.10	1.90	<2.0	<10	<0.02	<1.0	<5.0	81.00	<300
	12/5/98	<1.0	<1.0	<1.0	<2.0	<10	NS	NS	NS	84.00	NS
BP-MW02	9/25/98	<1.0	<1.0	<1.0	<2.0	<10	<0.02	<1.0	2.70	68.00	<300
BP-MW03	9/25/98	<1.0	<1.0	<1.0	<2.0	<10	<0.02	<0.5	<5.0	<1.0	<300
BP-MW04	9/25/98	<1.0	<1.0	<1.0	<2.0	<10	<0.02	<20	1.90	<1.0	460.00
BP-MW05	9/25/98	<1.0	<1.0	1.60	<2.0	<10	<0.02	<1.0	<5.0	590.00	740.00
BP-DMW01	9/25/98	<1.0	<1.0	<1.0	<2.0	<10	<0.02	<1.0	<5.0	1.90	300.00
FDEP Target Levels		1.00	40.00	30.00	20.00	35.00	0.02	20.00	15.00	0.80	5000.00

The concentration map for selected VOA compounds in groundwater is presented as **Figure 3-7**. PAH and TRPH concentrations are depicted on **Figure 3-8**. EDB and Lead concentrations are depicted on **Figure 3-9**. Isopropylbenzene concentrations for Bravo Pier are depicted on **Figure 3-10**. A groundwater data summary map, which combines water quality data from Bravo Pier and Site 1330, is included as **Figure 3-11**. Groundwater analytical results are included as Appendix H.

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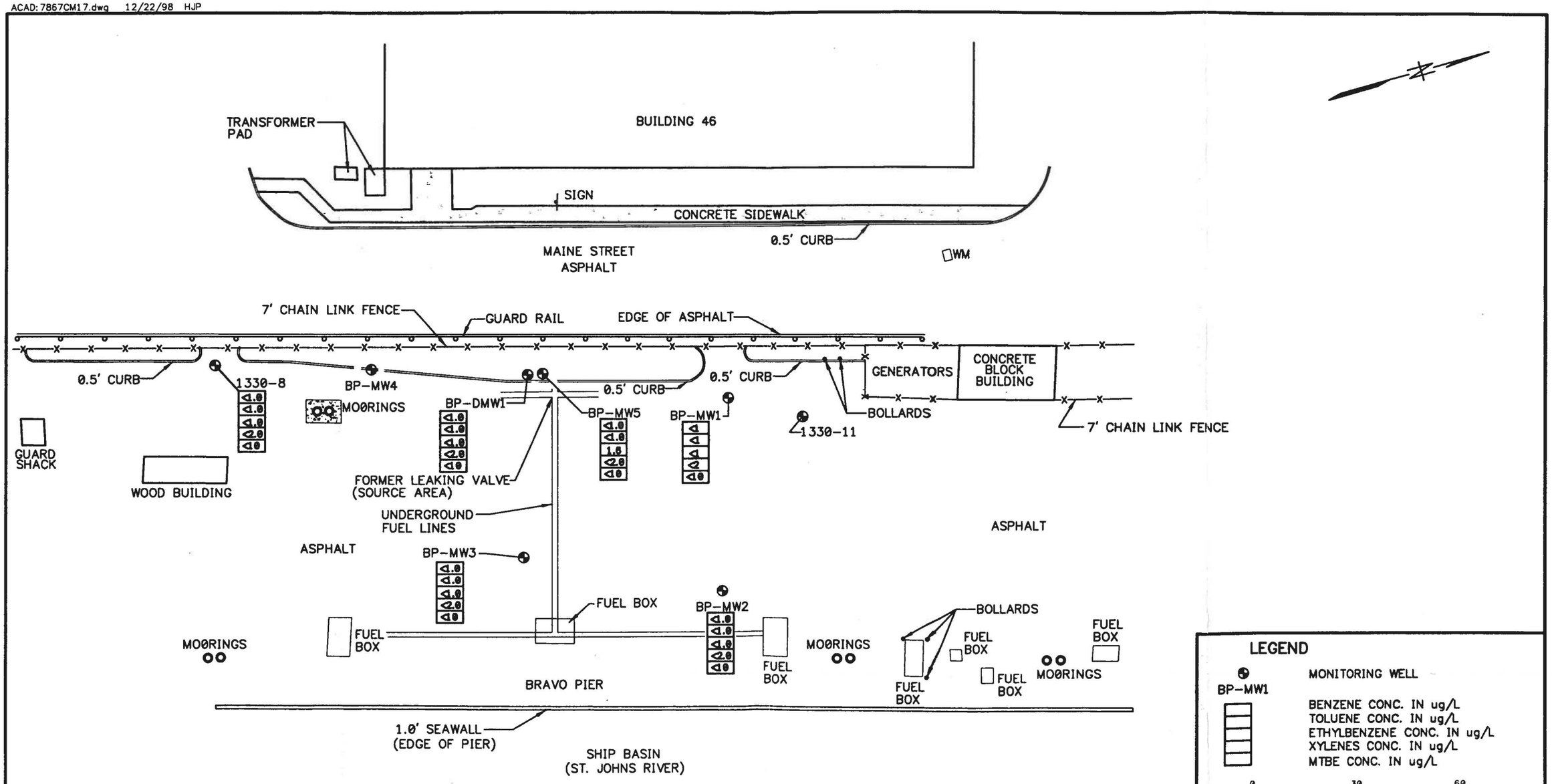

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VOLATILE ORGANIC AROMATICS IN GROUNDWATER
MAYPORT NAVAL AIR STATION
MAYPORT, FLORIDA

CONTRACT NO. 7867
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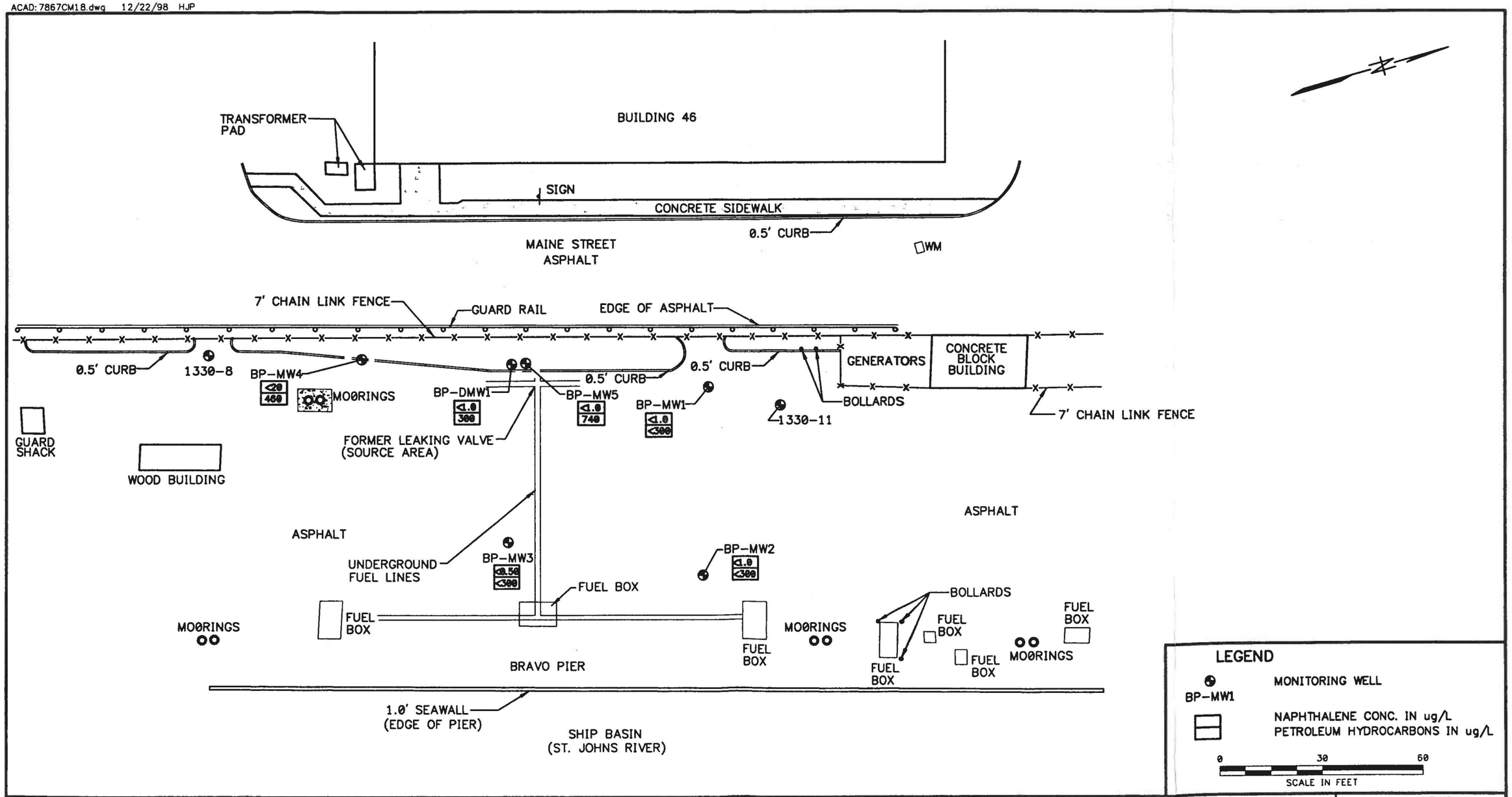
REV. 0

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

ACAD: 7867CM18.dwg 12/22/98 HJP



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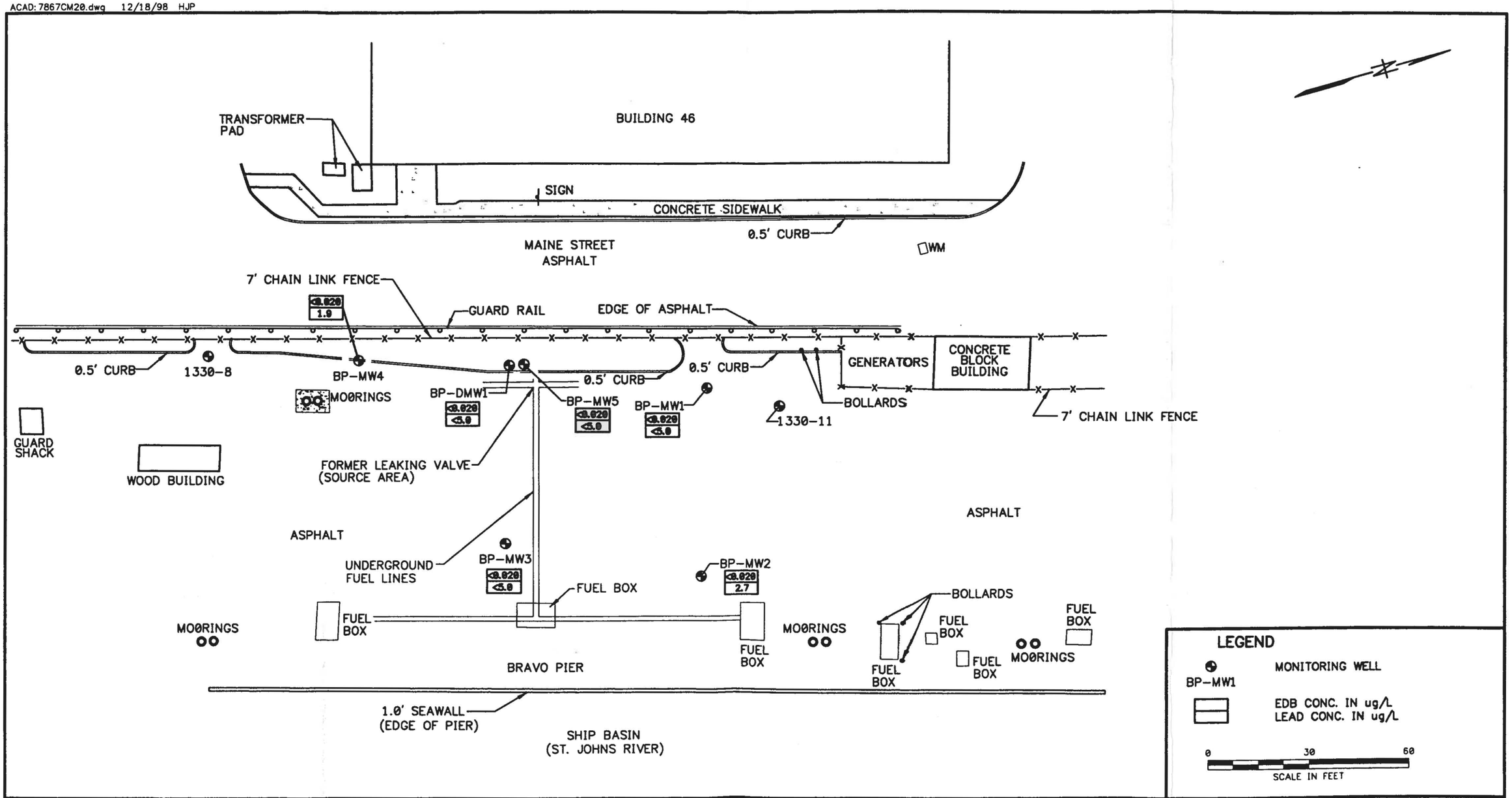
SCALE AS NOTED

POLYNUCLEAR AROMATICS AND PETROLEUM RANGE ORANICS IN GROUNDWATER
MAYPORT NAVAL AIR STATION
MAYPORT, FLORIDA

CONTRACT NO. 7867
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3-8
REV. 0

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

ACAD: 7867CM20.dwg 12/18/98 HJP



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DRAWN BY HJP DATE 12/18/98
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COST/SCHED-AREA
SCALE AS NOTED

ETHYLENE DIBROMIDE AND LEAD IN GROUNDWATER
MAYPORT NAVAL AIR STATION
MAYPORT, FLORIDA

CONTRACT NO. 7867
APPROVED BY DATE
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DRAWING NO. FIGURE 3-9
REV. 0

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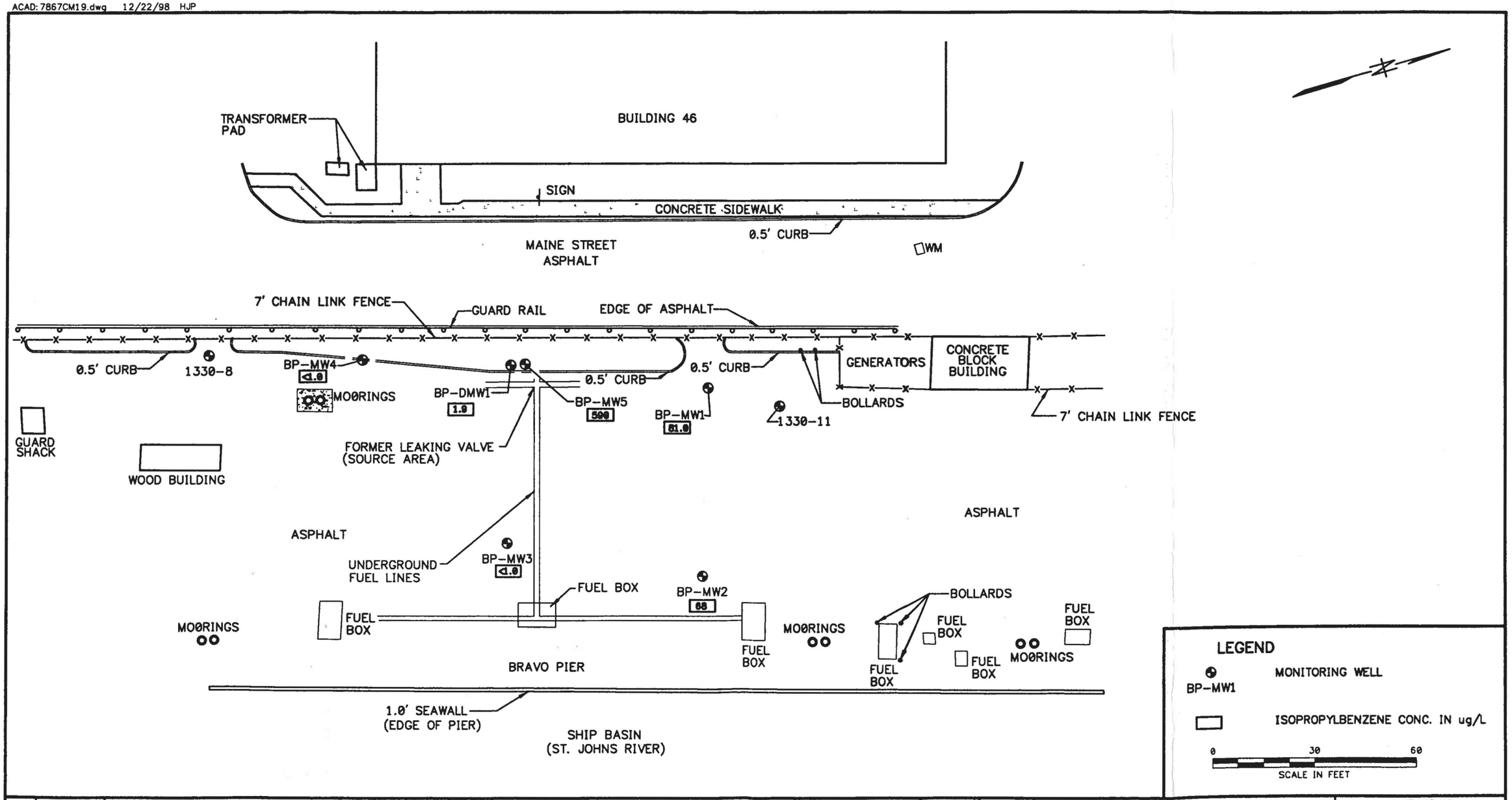

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJP DATE 12/18/98
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

ISOPROPYLBENZENE IN GROUNDWATER
MAYPORT NAVAL AIR STATION
MAYPORT, FLORIDA

CONTRACT NO. 7867
APPROVED BY DATE
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REV. 0

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

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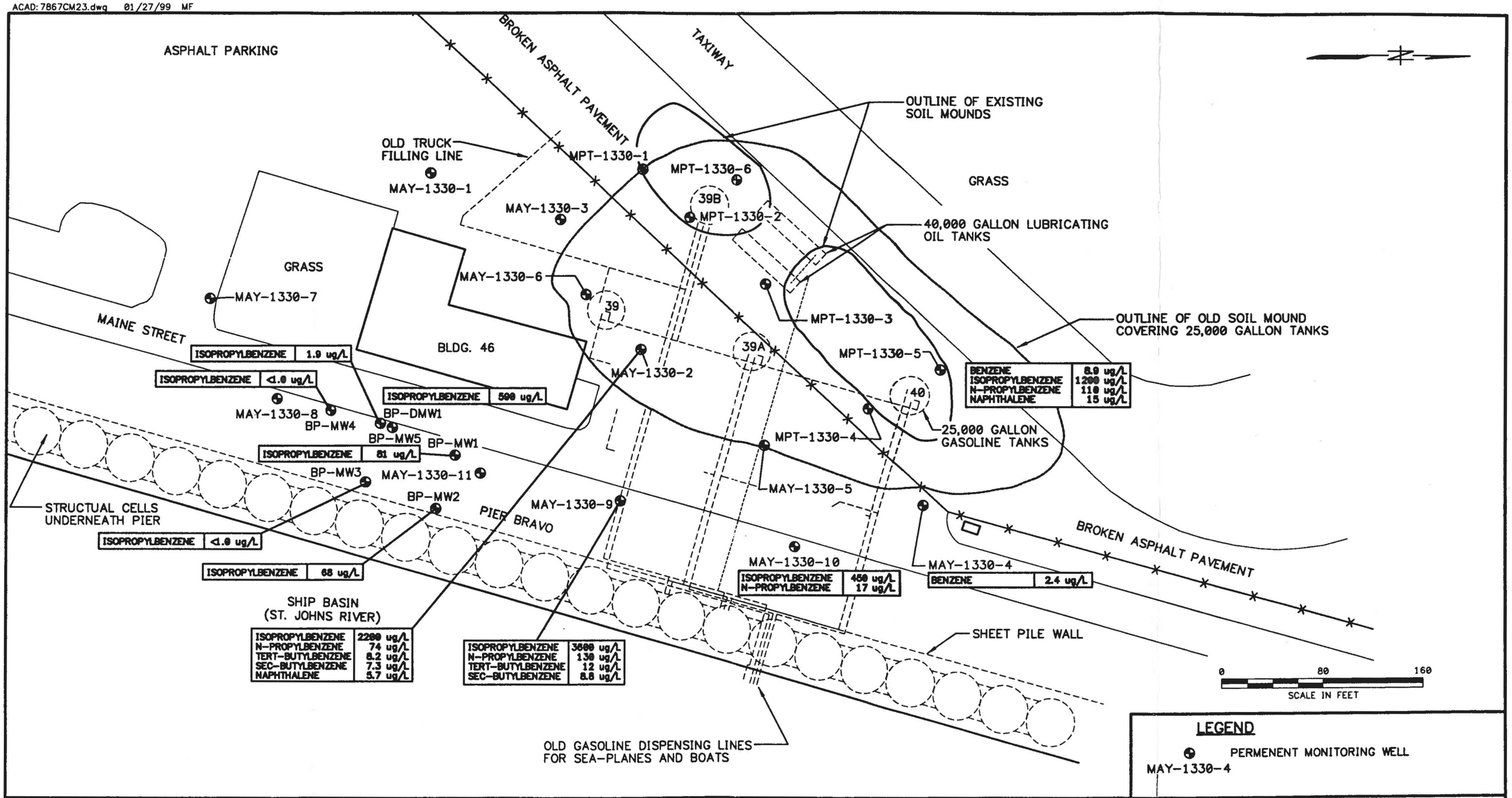

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

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SCALE AS NOTED

GROUNDWATER DATA SUMMARY MAP
MAYPORT NAVAL AIR STATION
MAYPORT, FLORIDA

CONTRACT NO. 7867
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3-11
REV. 0

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

4.0 DISCUSSION

The source of the dissolved hydrocarbons at this site was identified as being a leak from a valve of the fuel transfer pipeline running underneath Bravo Pier. The leak was repaired and the surrounding soil excavated during an IRA. "Excessively contaminated" soil, as defined by Chapter 62-770.200 FAC, was not detected within the vadose zone during the Site. The mobile laboratory results from the DPT investigation were utilized for determining placement of the permanent monitoring wells. Five shallow monitoring wells and one deep monitoring well were installed and sampled in September 1998. These sample results indicated that only one monitoring well (BP-MW01) contained groundwater with benzene above FDEP target cleanup levels. Consequently, groundwater from the well was resampled and laboratory results indicated that benzene was below the target concentration (1 μg/L). No free product was encountered during any of the groundwater sampling events.

Laboratory analysis of groundwater samples collected during the SA indicate dissolved hydrocarbon concentrations below FDEP target levels for benzene, toluene, ethylbenzene, total xylenes, naphthalene, TRPH, lead, and EDB in all six newly installed monitoring wells. Isopropylbenzene, a target volatile organic compound that has been encountered in groundwater collected during the monitoring of Site 1330, has been detected in the groundwater collected from four of the six newly installed wells at Bravo Pier. The isopropylbenzene target level of 0.80 μg/L was exceeded in monitoring wells BP-MW01 (84 μg/L), BP-MW02 (68 μg/L), BP-MW05 (590 μg/L), and BP-DMW01 (1.9 μg/L). The source of isopropylbenzene encountered at Bravo Pier is believed to be the historical fuel release at Site 1330.

Depth to water in the surficial aquifer was determined to be approximately 6 feet bls. The groundwater appears to flow to the east-northeast. The groundwater flow velocity was calculated at 0.48 ft/day. The total dissolved solids content in the surficial aquifer in the area of Bravo Pier qualifies the aquifer for classification as a G-II aquifer (Chapter 62-3.403 FAC).

No local area water supply wells were located within a 0.50-mile radius of the site. No domestic water wells were identified within 0.25-mile radius of the site.

5.0 CONCLUSION AND RECOMMENDATION

The results of TtNUS's SA at the NS Mayport Bravo Pier site suggest the following:

- Groundwater in the surficial aquifer at the site has a G-II classification.
- No private potable water wells were identified within a 0.25-mile radius of the site. No municipal well fields and surface water intakes were identified within a 0.50-mile radius of the site.
- The source for the petroleum release identified during the IRA has been repaired.
- Excessively contaminated soil identified during IRA activities in 1995 was removed.
- Excessively contaminated soil was not encountered during the SA.
- Free product was not encountered in the newly installed monitoring wells at Bravo Pier.
- Isopropylbenzene was detected in four monitoring wells at concentrations that exceed FDEP target cleanup levels. The source of isopropylbenzene has been attributed to Site 1330.
- Dissolved BTEX compounds were detected in the groundwater samples, but not at concentrations which exceed FDEP No Further Action (NFA) criteria for a G-II aquifer, without wells (FDEP, 1990).

The SA determined that the subject site does not contain "excessively contaminated" soils, as defined by Chapter 62-770.200. FDEP SCTLs were not exceeded in any of the soil samples collected for mobile laboratory analysis. Confirmatory fixed-based laboratory analysis indicated that most VOA and all PAH compounds were not present above laboratory detection limits. Benzo [a] pyrene and Dibenzo (a,h) anthracene were detected in two of the samples at concentrations above STCLs.

The SA also revealed that groundwater in the source area has been impacted by isopropylbenzene, but GCTLs are not exceeded by other VOA compounds, PAH compounds, MTBE, Lead, EDB, and TRPH. Free product was not encountered in any of the six monitoring wells. Based on the results of the SA, TtNUS recommends that the impact of dissolved isopropylbenzene be monitored in the area of Site 1330 and Bravo Pier. TtNUS does not recommend additional measures to assess or remediate the Bravo Pier JP-5 fuel leak.

6.0 REFERENCES

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APPENDIX A

SAR SUMMARY SHEET

Site Assessment Summary and Worksheet

This form should be completed by FDEP Site Managers for all sites.
(Petroleum Cleanup Guidance Document #2).

Site Name	Bravo Pier	Prepared By	Rick Ofsanko
FACID=	168626008	Site Manager	Jim Cason
Location	Naval Station Mayport	FDEP Geologist Reviewer	Jim Cason
Contractor	Tetra Tech NUS, Inc.	Date Assessment Approved	___ / ___ / ___

[N] Cluster Site? Other Facility ID#'s: (1) ___ (2) ___ (3) ___

REPORT SUMMARY:

Date of Report	Type of Report	Date of Review	Reviewer(s)	Comments
___ / ___ / ___		___ / ___ / ___		
___ / ___ / ___		___ / ___ / ___		
___ / ___ / ___		___ / ___ / ___		
___ / ___ / ___		___ / ___ / ___		
___ / ___ / ___		___ / ___ / ___		
___ / ___ / ___		___ / ___ / ___		

Date Last Updated ___ / ___ / ___

DISCOVERY AND SOURCE INFORMATION:

Discovery Date(s): 1st 08 / 11 / 94 2nd ___ / ___ / ___ 3rd ___ / ___ / ___

Program Type(s): [ ] ATRP [ ] EDI [ ] PLRIP [ ] PCPP [X] Non-program

Score ___ Reason for Assessment: JP-5 Fuel line valve leak

Active Site? Yes [X] No [ ] If yes, date of last tightness test: ___ / ___ / ___

If applicable, date when tanks were abandoned/removed: ___ / ___ / ___

Product Types (suspected sources of contamination):

[ ] Leaded Gasoline [ ] Diesel/Kerosene [ ] Bunker C Fuel Oil

[ ] Unleaded Gasoline [ ] Used Oil [X] Other: JP-5 Jet Fuel

Comments: ___

WELL SURVEY (including irrigation, industrial and all potable wells):

Public Supply well(s) within 1/2 mile of site?	Yes [ ]	No [X]	Private well(s) within 1/4 mile of site?	Yes [ ]	No [ ]
Are they downgradient?	Yes [ ]	No [ ]	Are they downgradient	Yes [ ]	No [ ]
Screened deeper than the contamination?	Yes [ ]	No [ ]	Screened deeper than the contamination?	Yes [ ]	No [ ]

Comments: ___

See potable well survey map

SOURCE REMOVAL (including soil removal during tank closures):

[X] Soil removal ___ cubic yds or 23 tons Date Performed: 08 / 28 / 95

Description: ___

Soil remediation option: [X] Incineration [ ] Landfill [ ] Landfarm [ ] Other ___

[ ] Free product removal ___ gals Date Performed: ___ / ___ / ___

Description: ___

[ ] Contaminated water removal ___ gals Date Performed: ___ / ___ / ___

Description: ___

LITHOLOGIC SUMMARY:

Description: Light brown to brown, fine to medium grain sand, with shell fragments

The impacted aquifer can be best characterized by the following description:

[X] Predominantly Sands [ ] Intermingled Sands & Clays [ ] Predominantly Clays [ ] Limestone

See Cross-Sections (if available)

GROUNDWATER ELEVATION DATA:

Depth to groundwater in upper zone water-table wells (ft): _____ to _____ Average (ft) 6

Depth to groundwater in lower zone vertical extent wells (ft): _____ to _____ Average (ft) 6

Observed maximum range of upper zone fluctuation (ft): _____ Tidally Influenced? Yes [ ] No [X]

Suspected Perched Aquifer Conditions? Yes [ ] No [X]

Comments: _____

See graphical and tabular summaries Date Last Updated ___ / ___ / ___

SOIL INVESTIGATIONS:

Is there vadose zone soil contamination Yes [ ] No [X]

Soil Screening Results

[X] FID [ ] PID [ ] Other _____ Highest current OVA concentration (ppm) 1.6

Sample # SB-18 Depth (ft): 3 Date Sampled 08 / 12 / 98

Laboratory Analytical Results (current maximum)	Conc. (ppm)	SPLP TCLP (mg/l) * if applicable *	Sample #	Depth (ft)	Date Sampled
Total Volatile Organic Aromatics	BDL				/ /
Polynuclear Aromatic Hydrocarbons	BDL				/ /
Total Recoverable Petroleum Hydrocarbons	220000			5	09 / 24 / 98
Other [ ]					/ /
Other [ ]					/ /

Comments: _____

See graphical and tabular summaries Date Last Updated ___ / ___ / ___

GROUNDWATER INVESTIGATIONS:

Maximum Contaminant Levels (latest sampling data prior to RA implementation):

Above CTLs	Chemicals of Concern	Conc.(ppb)	Well #	Date Sampled	Applicable CTL
[ ]	Benzene	<1		/ /	1
[ ]	Ethylbenzene	1.6	MW05	09 / 25 / 98	30
[ ]	Toluene	<1		/ /	40
[ ]	Xylenes	<2		/ /	20
	VOA's (BTEX)	1.6	MW05	09 / 25 / 98	n/a
[ ]	MTBE	<10		/ /	35
[ ]	EDB	<0.02		/ /	0.02
[ ]	TRPH (ppm)	0.740	MW05	09 / 25 / 98	5 mg/l
[ ]	Naphthalene	<20		/ /	20
	PAH's			/ /	n/a
[ ]	Lead (total)	2.7	MW02	09 / 25 / 98	15
[X]	Other [Isopropylbenzene]	590	MW05	09 / 25 / 98	0.8
[ ]	Other [ ]			/ /	

Free product present? Yes [ ] No [X] Where? _____

Maximum product thickness (ft) _____ Product recovery ongoing? Yes [ ] No [X]

Estimated depth of contamination (ft) N/A Lower aquifer(s) contaminated? Yes [ ] No [X]

Comments: _____

See graphical and tabular summaries Date Last Updated ___ / ___ / ___

AQUIFER CHARACTERISTICS:

See RAP Design Summary and Worksheet

COMMENTS/RECOMMENDATIONS:

_____

Date Last Updated ___ / ___ / ___

APPENDIX B

SOIL BORING LOGS

SOUTHNAVFAC

LOG OF BORING BRAVO SB01

PROJECT NO: 7867 / BRAVO PIER
PROJECT LOCATION: MAYPORT NS
DRILLING COMPANY: US PROBE
DRILLING METHOD: GEOPROBE
DRILLING RIG: GEOPROBE

PROJECT NAME: BRAVO PIER ASSESSMENT
DATE DRILLED: 9/11/98 / 0755 - 0805
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches 1.5
GEOLOGIST: K. Cf Sanks

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3 ML		0 / NA	0	0	0			fine grained sand / limerock ↓ borehole terminated @ 4 ft bls consolidated limerock, do not want to punch through with geoprobe due to fuel lines in vicinity. No groundwater sample collected. Soil sample collected from 0-3 ft bls for mobile lab.	
5										
10										
15										
20										
25										
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB02

PROJECT NO: 7867 / BRAVO PIER
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-11-98 / 0810 - 0840
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			light brown sand, medium to coarse grained, subangular	
5	6-7 ML		0/NA	0	0	0			↓ borehole terminated @ 8 ft bls groundwater collected from approx. 10 ft. bls.	
10										
15									Soil sample SB02-ML67 collected from 6-7 ft bls for mobile lab	
20									Water sample SB02-MLW collected for mobile lab.	
25										
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB03

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-11-98 / 0845 - 0915
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches 1.5
GEOLOGIST: R. Ofsanka

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			light brown sand medium to coarse grained, subangular	
5	6-7 inc		0/NA	0	0	0				
10									borehole terminated @ 8 ft bls groundwater collected @ approx 10 ft bls	
15									Soil sample SB03-ML67 collected from 6-7 ft bls for mobile lab	
20									Water sample SB03-MLW collected for mobile lab	
25										
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB04

PROJECT NO:	PROJECT NAME:
PROJECT LOCATION:	DATE DRILLED: 8-11-98 / 0920 - 0940
DRILLING COMPANY:	SURFACE ELEVATION: Feet
DRILLING METHOD:	BORING DIAMETER: Inches
DRILLING RIG:	GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3 ML		0/NA	0	0	0			light brown/brown, med grained sand, subangular	
5	4-5		0/NA	0	0	0			TD	
10									borehole terminated @ 5 ft bls	
15									Consolidated material or steel culvert encountered	
20									Soil sample SB04-ML05 collected from 4-5 ft bls for mobile lab.	
25									Groundwater was not collected for mobile lab.	
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB05

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-11-98 / 0945 - 0950
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	2-3 ML								borehole terminated @ 3 ft b/s due to consolidated material	
5										
									Soil sample SB05-ML23 collected from 2-3 ft b/s for mobile lab.	
10										
									Groundwater sample not collected for mobile lab	
15										
20										
25										
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB06

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-11-98 / 0955 - 1015
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST: R. Ofsanko

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			Light brown / brown, medium grained sand, subangular	
5	4-6 ML		0/NA	0	0	0				
10									borehole terminated @ 3 ft. bls groundwater collected from approx 10 ft. bls	
15									Soil sample SB06-ML46 collected from 4-6 ft. bls. for mobile lab	
20									Groundwater sample SB06-MLW collected for mobile lab.	
25										
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB07

PROJECT NO:
PROJECT NAME:
PROJECT LOCATION:
DATE DRILLED: 8-11-98 / 1020-1035
DRILLING COMPANY:
SURFACE ELEVATION: Feet
DRILLING METHOD:
BORING DIAMETER: Inches
DRILLING RIG:
GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
									dark brown fine/med grained Sand (to 2' b/s)	
	0-3 ML		0/NA	0	0	0				
5									borehole terminated @ 5 ft. b/s due to consolidated material	
10									Soil sample SB07-ML03 collected for mobile lab	
15									Groundwater sample not collected for mobile lab.	
20										
25										
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB08

PROJECT NO:	PROJECT NAME:
PROJECT LOCATION:	DATE DRILLED: 8-11-98 / 1050 – 1100
DRILLING COMPANY:	SURFACE ELEVATION: Feet
DRILLING METHOD:	BORING DIAMETER: Inches
DRILLING RIG:	GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	PID (ppm) 6. Zone	PID (ppm) Borehole	PID (ppm) Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			light brown/brown, fine/med grained sand, sub angular	
5	4-6 ML		0/NA	0	0	0			↓	
10									borehole terminated @ 8 ft bls groundwater collected from approx. 10 ft bls.	
15										
20									Soil sample SB08-ML46 collected from 4-6 ft bls for mobile lab.	
25									Groundwater sample SB08-MLW collected for mobile lab.	
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB09

PROJECT NO:	PROJECT NAME:
PROJECT LOCATION:	DATE DRILLED: 8-11-98 / 245 – 1315
DRILLING COMPANY:	SURFACE ELEVATION: Feet
DRILLING METHOD:	BORING DIAMETER: Inches
DRILLING RIG:	GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			light brown fine/med grained sand, subangular	
5	4-6 ML		0/NA	0	0	0			↓ borehole terminated @ 9 ft. bls Groundwater collected from approx. 10 ft. bls.	
10										
15										
20									Soil sample SB09-ML46 collected for mobile lab (from a depth of 4-6 ft.)	
25									Groundwater sample SB09-MLW collected for mobile lab	
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB10

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-11-98 / 1325 - 1355
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			light brown/brown med grained sand, subangular trace of limestone.	
5	4-6 ML		0/NA	0	0	0				
									Boring terminated @ 8 ft. bls Groundwater collected from 10 ft. bls.	
10										
15									Soil sample SB10 - ML46 collected from 4-6 ft bls for mobile lab.	
20									Groundwater sample SB10-MLW collected for mobile lab.	
25										
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB11

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-11-98 / 1400 – 1430
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/ROD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			light brown / brown fn/med grained sand, sub angular	
5	4-6 ML		0/NA	0	0	0			↓	
10									borehole terminated @ 3 ft bls Groundwater collected from 10 ft bls.	
15										
20									Soil sample SB11-ML46 collected from 4-6 ft bls for mobile lab	
25									Groundwater sample SB11-MLW collected for mobile lab.	
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB12

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-11-98 / 1435 — 1455
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA						Lt brown fn/med grained Sand, subangular.	
5	4-6		0/NA							
									Borehole terminated @ 8 ft bls Groundwater collected from 10 ft. bls	
10										
15										
									Soil sample SB12-ML46 collected from 4-6 ft. bls for mobile lab.	
20										
									Groundwater sample SB12-MLW collected for mobile lab.	
25										
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB13

PROJECT NO:
PROJECT NAME:
PROJECT LOCATION:
DATE DRILLED: 8-11-98 / 1500 – 1520
DRILLING COMPANY:
SURFACE ELEVATION: Feet
DRILLING METHOD:
BORING DIAMETER: Inches
DRILLING RIG:
GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			Lt brown med/grain sand subangular w/ trace of limestone	
5									Borehole terminated @ 3 ft. bls due to consolidated material	
10										
15									Soil sample SB13-MLC3 collected from 0-3 ft bls for mobile lab.	
20										
25										
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB14

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-12-98 / 0800 - 0830
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			light brown, fn/med. grain sand, Subangular	
5	4-6 ML		0/NA	0	0	0				
10									borehole terminated @ 8 ft. bls Probe extended to 10' bls for collection of groundwater	
15										
20									Soil Sample SB14-ML46 collected from 4-6 ft. bls for mobile lab	
25									Groundwater Sample SB14-MLW collected for mobile lab.	
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BLAND SB15

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 9-12-98 / 0840 - 0930
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			light brown fn/med grain sand, subangular ↓	
5	4-6 ML		0/NA	0	0	0				
10									borehole terminated @ 8 ft. bls Groundwater collected from 10 ft. bls.	
15										
20									Soil sample SB15-ML46 collected from 4-6 ft. bls for mobile lab.	
25									Groundwater sample SB15-MLW collected for mobile lab.	
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB16

PROJECT NO:	PROJECT NAME:
PROJECT LOCATION:	DATE DRILLED: 8-12-98 / 0935 - 1005
DRILLING COMPANY:	SURFACE ELEVATION: Feet
DRILLING METHOD:	BORING DIAMETER: Inches
DRILLING RIG:	GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/ROD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			light brown / brown fr grained sand, subangular w/ trace of limestone	
5	4-6 ML		0/NA	0	0	0			↓	
10									~~Bot~~ Borehole terminated @ 8 ft bls Groundwater collected from 10 ft. bls.	
15										
20									Soil sample SB16 - ML46 collected from 4-6 ft. bls for mobile lab.	
25									Groundwater sample SB16-MLW collected for mobile lab.	
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB17

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-12-98 / 1010-1030
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			light brown, fn/med. grain. sand, subangular.	
5	4-6		0/NA	0	0	0				
10									Borehole terminated @ 8 ft. bls Groundwater collected from 10 ft bls.	
15										
20									Soil sample SB17-ML46 collected from 4-6 ft. bls for mobile lab	
25									Groundwater sample SB17-MLGW collected for mobile lab.	
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB18

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-12-98 / 1035-1100
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			light brown/brown, fr/med grain sand, subangular.	
5	4-6 ML		1.6/0	0	0	0				
10									Borehole terminated @ 8 ft. bls Groundwater collected from 10 ft. bls.	
15										
20									Soil sample SB18-ML46 collected from 4-6 ft bls for mobile lab.	
25									Groundwater sample SB18-MLW collected for mobile lab.	
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB19

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-12-98 / 1230 – 1310
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		6/NA	0	0	0			light brown, medium grained sand, subangular	
5	4-6 ML		0/NA	0	0	0			↓	
10									Borehole terminated @ 8 ft bls Groundwater collected from 10 ft bls.	
15										
20									Soil sample SB19-ML46 collected from 4-6 ft bls for mobile lab.	
25										
30									Groundwater sample SB19-MLW collected for mobile lab.	
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB20

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-12-98 / 1315 – 1400
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST: R. Ofsanko

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			light brown, fn/med grain sand, subangular	
5	4-6 ML		0/NA	0	0	0			↓	
10									Borehole terminated @ 9 ft bls. Groundwater collected from 10 ft. bls.	
15									Soil sample SB20-ML46 collected from 4-6 ft. bls for mobile lab	
20									Groundwater sample SB20-MLW collected for mobile lab.	
25										
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB21

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-12-98 / 1410 – 1440
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST: R Ofsak

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3								Light brown, fn/med grain sand subangular w/ trace of limestone	
5	4-6								↓	
10									Borehole terminated @ 8 ft bls Groundwater collected from 10 ft bls.	
15										
20									Soil sample SB21-ML46 collected from 4-6 ft. bls for mobile lab.	
25									Groundwater sample SB21-MLW collected for mobile lab.	
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB22

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-12-98 / 1445 - 1570
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			Light brown, fn/med grain. sand, subangular.	
5	4-6		0/NA	0	0	0			↓	
10									borehole terminated @ 8 ft bls. groundwater collected from 10 ft bls.	
15										
20									Soil Sample SB22-ML46 collected from 4-6 ft. bls for mobile lab.	
25									Groundwater sample SB22-MLW collected for mobile lab.	
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB23

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-12-98 / 1515 - 1545
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			Light brown / brown, fn/med. grain. Sand, subangular.	
5	4-6 ML		0/NA	0	0	0			↓	
10									Borehole terminated @ 8 ft bls Groundwater collected @ 10 ft. bls.	
15										
20									Soil sample SB23-ML46 collected from 4-6 ft. bls for mobile lab.	
25									Groundwater sample SB23-MLW for mobile lab.	
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB24

PROJECT NO:	PROJECT NAME:
PROJECT LOCATION:	DATE DRILLED: 8-13-98 / 0700 - 0730
DRILLING COMPANY:	SURFACE ELEVATION: Feet
DRILLING METHOD:	BORING DIAMETER: Inches
DRILLING RIG:	GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			Light brown/brown, fn/med grained sand, subangular	
5	4-6 ML		0/NA	0	0	0				
10									~~Bot~~ RO Borehole terminated @ 8 ft bls Groundwater collected @ 10 ft bls.	
15										
20									Soil sample SB24-ML46 collected from 4-6 ft bls for mobile lab.	
25									Groundwater sample SB24-MLW collected for mobile lab.	
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB25

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-13-98 / 0735 - 0810
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			Light brown/brown, fn/med. grain. Sand, subangular.	
5	4-6 ML		0/NA	0	0	0				
10									Borehole terminated @ 8 ft. bls Groundwater collected @ 10 ft bls	
15										
20									Soil sample SB25-ML46 collected from 4-6 ft bls for mobile lab.	
25									Groundwater sample SB25-MLW Collected for mobile lab.	
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING

BRAVO SB26

Page 1 of

PROJECT NO:	PROJECT NAME:
PROJECT LOCATION:	DATE DRILLED: 8-13-98 / 0815 - 0845
DRILLING COMPANY:	SURFACE ELEVATION: Feet
DRILLING METHOD:	BORING DIAMETER: Inches
DRILLING RIG:	GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0 / NA	0	0	0			Light brown/brown, fn./med grain subangular	
5	4-6								↓	
10									Borehole terminated @ 8 ft. bls Groundwater collected @ 10 ft bls	
15										
20										
25										
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB27

PROJECT NO:
PROJECT LOCATION:
DRILLING COMPANY:
DRILLING METHOD:
DRILLING RIG:

PROJECT NAME:
DATE DRILLED: 8-13-98 / 0905 - 0945
SURFACE ELEVATION: Feet
BORING DIAMETER: Inches
GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			Light brown fn/med grain. Sand w/ trace of limestone fragments, subangular	
5	4-6		0/NA	0	0	0			↓	
10									Borehole terminated @ 8 ft bls Groundwater collected @ 10 ft bls	
15										
20									Soil sample SB27-ML46 collected from 4-6 ft. bls for mobile lab.	
25									Groundwater sample SB27-MLW collected for mobile lab.	
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB28

PROJECT NO:	PROJECT NAME:
PROJECT LOCATION:	DATE DRILLED: 8-13-98 / 0950 – 1025
DRILLING COMPANY:	SURFACE ELEVATION: Feet
DRILLING METHOD:	BORING DIAMETER: Inches
DRILLING RIG:	GEOLOGIST:

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		NS	0	0	0			Lt brown, fn/med grain. Sand, Subangular	
5	4-6		NS	0	0	0			↓	
10									Borehole terminated @ 10 ft bls Soil samples not collected from boring.	
15									Groundwater collected from 10 ft bls (sample ID# SB28-MLW)	
20										
25										
30										
35										
40										

SOUTHNAVFAC

LOG OF BORING BRAVO SB29

PROJECT NO:	7967 / BRAVO PIER	PROJECT NAME:	BRAVO PIER ASSESSMENT
PROJECT LOCATION:	MAYPORT NS	DATE DRILLED:	9-13-99 / 1030 - 1105
DRILLING COMPANY:	USPROBE	SURFACE ELEVATION:	Feet
DRILLING METHOD:	GEOPROBE	BORING DIAMETER:	Inches 1.5
DRILLING RIG:	GEOPROBE	GEOLOGIST:	R. OFSanko

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
	0-3		0/NA	0	0	0			Fine/med grained brown sand Subangular	
5	4-6 ML		0/NA	0	0	0				
10									Borehole terminated @ 8ft bls Rode advanced to 10 ft bls for collection of groundwater.	
15										
20										
25									Soil sample SB29-ML46 collected from 4-6 ft bls for mobile lab.	
30									Groundwater sample SB29-MLW collected for mobile lab.	
35										
40										

APPENDIX C
WELL COMPLETION LOGS

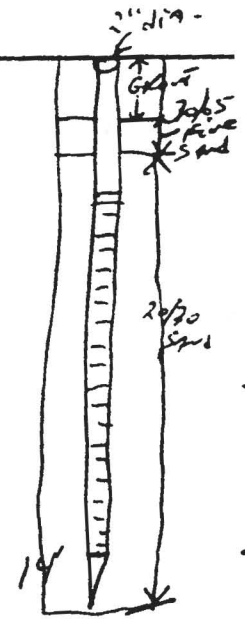
LOG OF BORING BP-MW01

Page 1 of

PROJECT NO: CT064 / 7967	PROJECT NAME:
PROJECT LOCATION: BRAVO PIER	DATE DRILLED: 4-24-98
DRILLING COMPANY: Gulf Atlantic	SURFACE ELEVATION: Feet
DRILLING METHOD: Hollow Stem	BORING DIAMETER: Inches 2"
DRILLING RIG: Failing F-2	GEOLOGIST: Tom Nicoters

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color
									WellID - BRPR - MW-01
									DARK Brown Fine To med. Grain Sand with white Gravel + Shell fragments.
5									▼ Water Table @ 6' BLS.
									7' GRAY Fine To med Grain Sand with Shell Fragments.
10									
									14'
15									14' BLS End of Boring
20									
25									
30									
35									
40									

WELL DIAGRAM



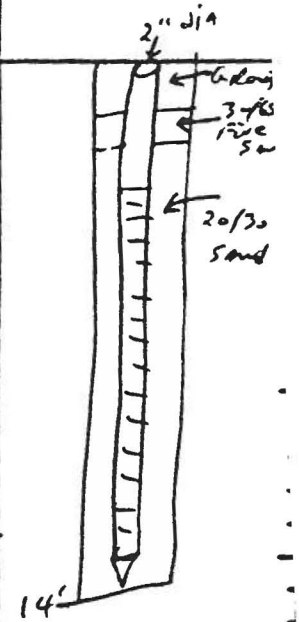
LOG OF BORING BP MW02

Page 1 0

PROJECT NO:	CT064 17867	PROJECT NAME:	
PROJECT LOCATION:	BLAND PIER	DATE DRILLED:	9-24-98
DRILLING COMPANY:	Gulf Atlantic	SURFACE ELEVATION:	Feet
DRILLING METHOD:	Hollow Stem	BORING DIAMETER:	Inches 2"
DRILLING RIG:	Failing F-2	GEOLOGIST:	Tom Nicotera

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color
									Well ID - BRPR - MW-02
									dark brown med. to fine grain sand with shell frag
5									▼ waterTable @ 6' BLS.
									GRAY fine grain sand 7' with some shell fragments
10									
									14' BLS. End of Borehole 14'
15									
20									
25									
30									
35									
40									

WELL DIAGRAM

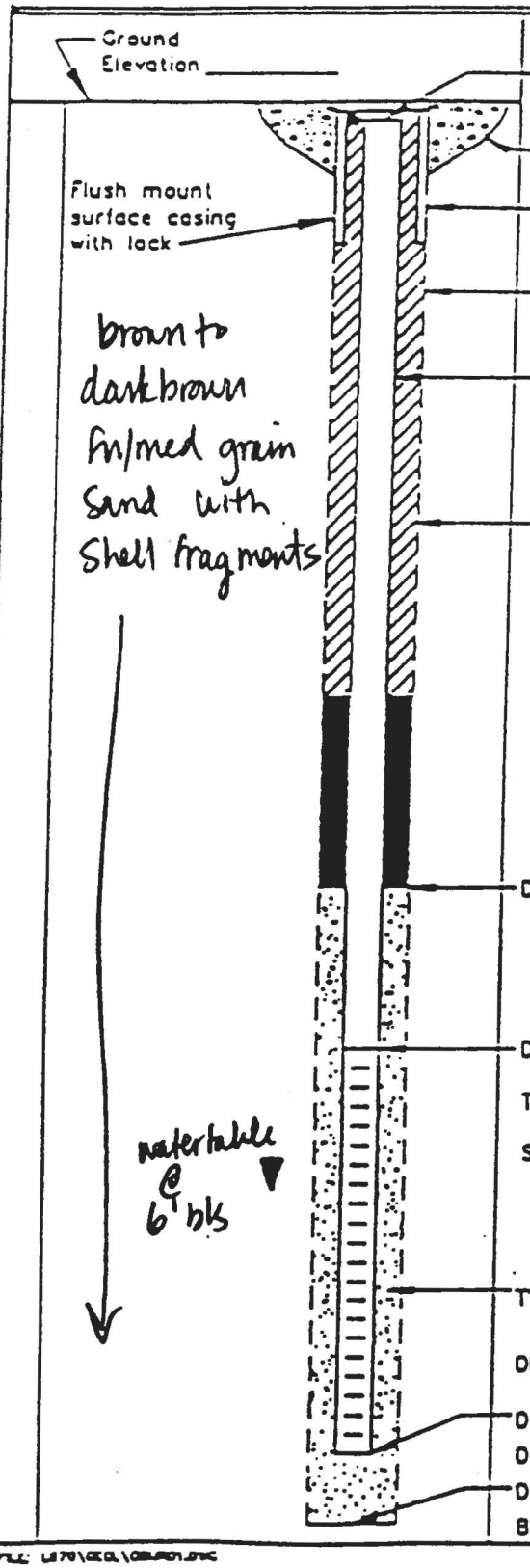


MONITORING WELL SHEET

PROJECT: CTO 64
PROJECT NO.: 7867
ELEVATION:
FIELD GEOLOGIST: R. UPSANKO

LOCATION: BLAND PIER
BORING: BP - MW3
DATE: 9/23/98

DRILLER: MARK MURRAY
DRILLING METHOD: HSA
DEVELOPMENT METHOD: PURGE PUMP UNTIL C



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: GROUT CEMENT

TYPE OF PROTECTIVE CASING: 8" dia manhole

I.D. OF PROTECTIVE CASING:

DIAMETER OF HOLE: 10"

TYPE OF RISER PIPE: 2 inch PVC

RISER PIPE I.D.:

TYPE OF BACKFILL/SEAL: ~~20/30 SAND~~ FINE SAND SEAL

DEPTH/ELEVATION TOP OF SAND: 3' b/s

DEPTH/ELEVATION TOP OF SCREEN: 4' b/s

TYPE OF SCREEN: 2-inch PVC

SLOT SIZE x LENGTH: 0.001

TYPE OF SAND PACK: 20/30 SAND

DIAMETER OF HOLE IN BEDROCK: N/A

DEPTH/ELEVATION BOTTOM OF SCREEN: 14' b/s

DEPTH/ELEVATION BOTTOM OF SAND: /

DEPTH/ELEVATION BOTTOM OF HOLE: /

BACKFILL MATERIAL BELOW SAND: N/A

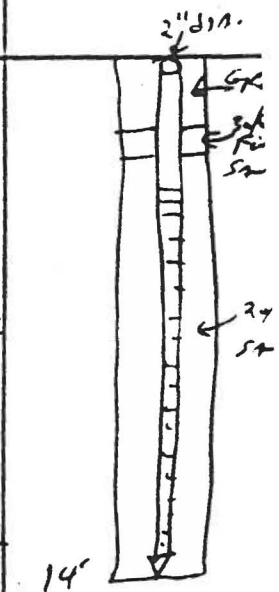
LOG OF BORING BP-MW04

Page 1

PROJECT NO:	CTD64 / 7867	PROJECT NAME:	
PROJECT LOCATION:	BRAND PIER	DATE DRILLED:	9-24-98
DRILLING COMPANY:	GULFATLANTIC	SURFACE ELEVATION:	Feet
DRILLING METHOD:	Hollow Stem	BORING DIAMETER:	Inches 2"
DRILLING RIG:	Failing F-2	GEOLOGIST:	Tom Nicotera

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	B. Zone	Borehole	Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color
									Well ID - BRPR - MW-04
									Dark Brown Fine Grain Sand with white gravel + Shell Fragments
5									▼ Water Table @ 6' BIS.
									Gray Fine Sand with some Shell Fragments 8'
10									
									14' BIS End of Boring 14'
15									
20									
25									
30									
35									
40									

WELL DIAGRAM

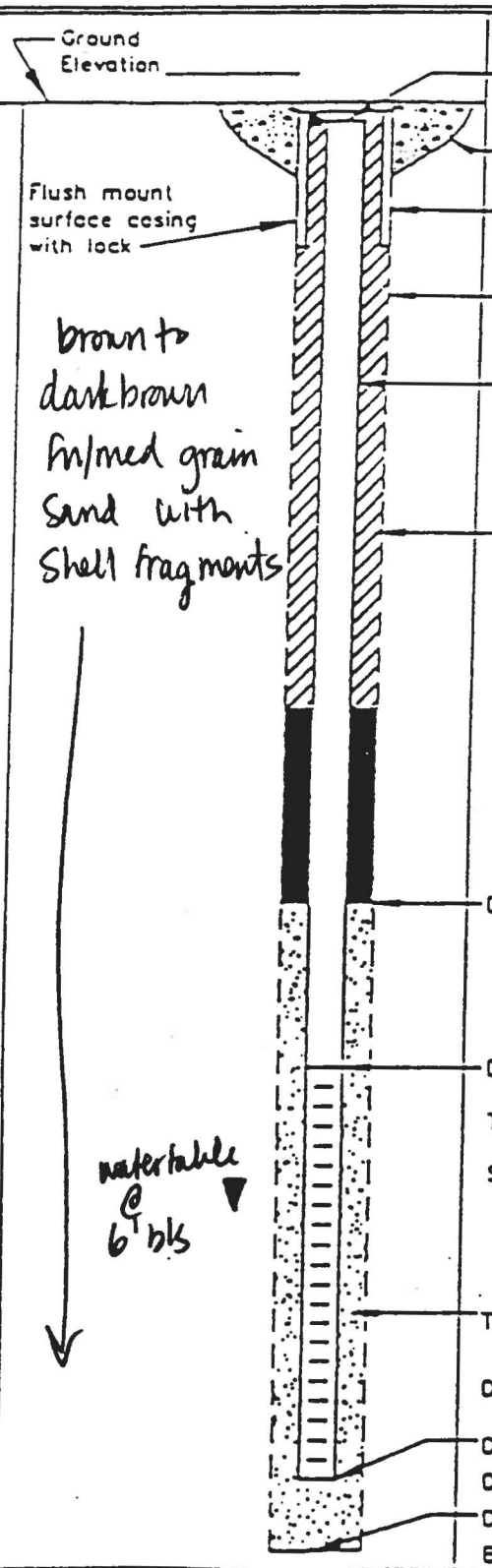


MONITORING WELL SHEET

PROJECT: CTO 64
PROJECT NO.: 7867
ELEVATION:
FIELD GEOLOGIST: R. UPSANKO

LOCATION: BEAVO PIER
BORING: BP-MW5
DATE: 9/23/98

DRILLER: MARK MURRAY
DRILLING METHOD: HSA
DEVELOPMENT METHOD: PURGE PUMP UNTIL CL



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: GROUT CEMENT

TYPE OF PROTECTIVE CASING: 8" dia manhole

I.D. OF PROTECTIVE CASING:

DIAMETER OF HOLE: 10"

TYPE OF RISER PIPE: 2 inch PVC

RISER PIPE I.D.:

TYPE OF BACKFILL/SEAL: ~~20/30 SAND~~ FINE SAND SEAL

DEPTH/ELEVATION TOP OF SAND: 3' b/s

DEPTH/ELEVATION TOP OF SCREEN: 4' b/s

TYPE OF SCREEN: 2-inch PVC

SLOT SIZE x LENGTH: 0.001

TYPE OF SAND PACK: 20/30 SAND

DIAMETER OF HOLE IN BEDROCK: N/A

DEPTH/ELEVATION BOTTOM OF SCREEN: 14' b/s

DEPTH/ELEVATION BOTTOM OF SAND: /

DEPTH/ELEVATION BOTTOM OF HOLE: /

BACKFILL MATERIAL BELOW SAND: N/A

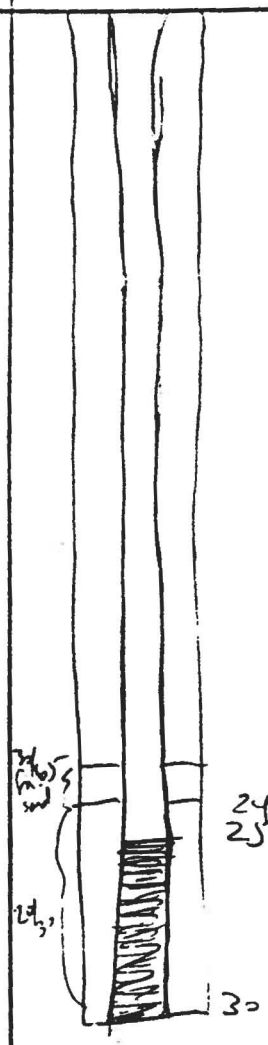
LOG OF BORING

Page

PROJECT NO:	CTO64 / 7267	PROJECT NAME:	
PROJECT LOCATION:	BRAVO PIER	DATE DRILLED:	9/16/98 - 0900 - 1130
DRILLING COMPANY:	GULF ATLANTIC	SURFACE ELEVATION:	Feet
DRILLING METHOD:	HSA	BORING DIAMETER:	Inches
DRILLING RIG:	F2	GEOLOGIST:	Tom Nicotera

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm) Sample	PID (ppm) B. Zone	PID (ppm) Borehole	PID (ppm) Drill B. Z.	GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color
									WELL ID - BRAVO-DMW1
									dark brown, medium grained sand w/ white gravel. dry
5									
									7 Gray, medium grained sand w/white gravel, moist, petroleum odor
10									9 gray, medium grained sand w/white gravel, saturated, petroleum odor
15									
20									
25									
30									30 End of Boring 30 ft
35									
40									

WELL DIAGRAM



APPENDIX D

HEADSPACE METHODOLOGY FOR DETERMINING SOIL ORGANIC VAPOR CONCENTRATIONS

Soil headspace readings where obtained utilizing the following method which conforms to the requirements of Rule 62-770.200(2), FAC.

Two 16-ounce glass soil jars were half-filled with soil sample (duplicate samples). The soil jars were then sealed utilizing "mason jar" type open top screw on caps with foil in place of the conventional solid jar tops. The soil samples were allowed to equilibrate to ambient temperatures that were within the FDEP temperature range.

The samples were tested with a Foxboro Century 128, an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID). Prior to each day's activities, the OVA was field calibrated with 109 ppm methane in air, in accordance with the manufacturers specifications. Sample testing was performed by inserting the OVA probe through the foil sample cover and recording the highest OVA reading. Following collection of this OVA reading, the OVA was fitted with a granular activated carbon filter probe. The OVA was then used to test the headspace above the duplicate sample. Carbon absorbs petroleum hydrocarbons and thus the filtered reading is assumed to represent naturally occurring organic vapors.

Upon completion of the screening exercise, the carbon-filtered result was subtracted from the un-filtered result, to obtain a net petroleum vapor value. In accordance with Rule (62) 770.200(2), F.A.C., and Guidelines for Assessment and Remediation of Petroleum Contaminated Soil corrected headspace levels in excess of 50 ppm is defined as excessively contaminated soil for the kerosene analytical group. Corrected headspace levels in excess of 10 ppm but less than 500 ppm are considered as contaminated, though not excessively contaminated.

APPENDIX E

FIELD MEASUREMENT AND SAMPLING FORMS

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: CT064 | BRAVO PIER
Project No.: 7867

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

Sample ID No.: BRPR-GW-MW01-01
Sample Location:
Sampled By:
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 9-25-98 / Time: 15:15	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO (mg/L) Meter	DO (mg/L) Titration	CO_2	H_2S	Fe +2
Method:	CLEAR	6.93	.390	48.7	0	0.49				

PURGE DATA

Date: 9-25-98	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity			
Method: Peristaltic Pump	Initial	7.11	.442	45.5	21	0.86	0.01			
Monitor Reading (ppm): 0 ppm	1	6.91	.429	48.2	0	0.51	0.01			
Well Casing Diameter: 2"	2	6.93	.405	48.0	0	0.48	0.01			
Well Casing Material: PVC	3	6.93	.390	48.7	0	0.49	0.01			
Total Well Depth (TD): 13.90'										
Static Water Level (WL): 5.62'										
One Casing Volume(gal/L): 1.35										
Start Purge (hrs): 14.25										
End Purge (hrs): 15:00										
Total Purge Time (min):										
Total Vol. Purged (gal/L): 4.05										

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected

OBSERVATIONS / NOTES

Circle If Applicable:

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

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: CTO 64 / 7867
Project No.: BRAND PIER

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

Sample ID No.: BRPR-GW-MW02-01
Sample Location:
Sampled By:
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 9-25-98 / Time: 16:00	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO (mg/L) Meter	DO (mg/L) Titration	CO_2	H_2S	Fe +2
Method: peristaltic pump	clear	7.08	.579	29.3	0	0.44	0.62	—	—	1.0

PURGE DATA

Date: 9-25-98	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity
Method: peristaltic pump	Initial	7.05	.562	29.9	0	0.35	0.02
Monitor Reading (ppm): 0 ppm	1	7.07	.563	29.4	0	0.44	0.02
Well Casing Diameter: 2"	2	7.09	.562	29.1	0	0.43	0.02
Well Casing Material: PVC	3	7.08	.579	29.3	0	0.44	0.02
Total Well Depth (TD): 13.09							
Static Water Level (WL): 6.35							
One Casing Volume(gal/L): 1.09							
Start Purge (hrs): 15:30							
End Purge (hrs): 15:55							
Total Purge Time (min): 25							
Total Vol. Purged (gal/L): 3.5							

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected

OBSERVATIONS / NOTES

Circle If Applicable:

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

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NAVAL STATION MAYPORT
Project No.: 7867

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

Sample ID No.: BRPR-OWMW-5-01
Sample Location:
Sampled By:
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 9-25-98 / Time: 13:00	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO (mg/L) Meter	DO (mg/L) Titration	CO_2	H_2S	Fe +2
Method: Peristaltic pump	Clear	6.96	1.50	28.9	0	0.81	0.40	—	—	0.6

PURGE DATA

Date: 9-25-98	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity
Method: Peristaltic pump	Initial	6.75	1.54	29.2	0	0.88	0.07
Monitor Reading (ppm):	1	6.91	1.54	29.1	0	0.79	0.07
Well Casing Diameter: 2"	2	7.05	1.51	29.2	0	0.83	0.07
Well Casing Material: PVC	3	6.96	1.50	28.9	0	0.81	0.07
Total Well Depth (TD): 13.92							
Static Water Level (WL): 6.44							
One Casing Volume(gal/L): 1.22							
Start Purge (hrs): 10:25							
End Purge (hrs): 11:00							
Total Purge Time (min):							
Total Vol. Purged (gal/L): 4.0							

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected

OBSERVATIONS / NOTES

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Bravo Pier
Project No.: 7867 / CTD 64

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

Sample ID No.: SRPR-GW-MW04-01
Sample Location: Limnpy
Sampled By: A Wilcox
C.O.C. No.:
Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 9/25	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO (mg/L) Meter	DO (mg/L) Titration	CO_2	H_2S	Fe +2
Time: 1500										
Method:	clear	7.3	0.362	32.9	-2	0.03	0.82			0.2

PURGE DATA

Date: 9/25	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity			
Method:	Initial	7.33	0.359	33.2	6	-0.06	0.01			
Monitor Reading (ppm):	1	7.30	0.361	33.2	7	-0.24	0.01			
Well Casing Diameter: 2"	2	7.31	0.364	32.6	1	0.27	0.01			
Well Casing Material: PVC	3	7.30	~~0.470~~	32.9	~~0.0~~ -2	0.03	0.01			
Total Well Depth (TD): 13.74			0.362	(h)						
Static Water Level (WL): 6.42										
One Casing Volume(gal/L): 1.19										
Start Purge (hrs): 1520										
End Purge (hrs): 1545										
Total Purge Time (min): 25										
Total Vol. Purged (gal/L): 4.5										

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected

OBSERVATIONS / NOTES

Suspected problem w/ DO meter

Circle if Applicable:

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

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Mayport Brown Pier
Project No.: 7867 / CTO 64

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

Sample ID No.: BRPR-GW-MW05-0
Sample Location: BRPR MW05
Sampled By: A. Wilkox
C.O.C. No.:
Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA

	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO (mg/L) Meter	DO (mg/L) Titration	CO_2	H_2S	Fe +2
Date: 9/26/98										
Time: ~~1230~~ 1230										
Method: Peristaltic	clear	7.15	0.376	30.6	-3	—	1.3			0.4

PURGE DATA

	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity
Date:							
Method:	Initial	6.96	0.410	31.2	2	0.17	0.01
Monitor Reading (ppm):	1	7.19	0.382	30.9	0	0.07	0.01
Well Casing Diameter:	2	7.16	0.373	30.9	-2	-0.62	0.01
Well Casing Material:	3	7.15	0.376	30.6	-3	—	0.01
Total Well Depth (TD): 13.88							
Static Water Level (WL): ~~6.39~~ 6.35							
One Casing Volume(gal/L): ~~4.94~~ 1.22							
Start Purge (hrs): 1132							
End Purge (hrs): 1215							
Total Purge Time (min): 45							
Total Vol. Purged (gal/L): 4							

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected

OBSERVATIONS / NOTES

Suspect problem w/pump

Circle If Applicable:

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

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Mayport Bravo Pier
Project No.: 7867 / CT064

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

Sample ID No.: BRPR-GWDMW01-01
Sample Location: DMW-01
Sampled By: A. Willox
C.O.C. No.:
Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: DMW01	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO (mg/L) Meter	DO (mg/L) Titration	CO_2	H_2S	Fe +2
Time: 1430										
Method:	clear	7.54	0.441	26.6	-4	-1.25	~~0.01~~			—

PURGE DATA

Date:	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity			
Method:	Initial	7.44	0.440	27.8	4	-1.24	0.02			
Monitor Reading (ppm):	1	7.54	0.438	27.1	-4	-.60	0.01			
Well Casing Diameter:	2	7.48	0.440	26.8	-4	-0.97	0.01			
Well Casing Material:	3	7.54	0.441	26.6	-4	-1.25	0.01			
Total Well Depth (TD): 29.76										
Static Water Level (WL): 6.27										
One Casing Volume(gal/L): 3.83										
Start Purge (hrs): 1341										
End Purge (hrs):										
Total Purge Time (min):										
Total Vol. Purged (gal/L):										

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected

OBSERVATIONS / NOTES

Circle if Applicable:

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

FLORIDA

DEP Form # 62-770.900(3)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 23, 1997

Petroleum or Petroleum Products
Water Sampling Log

FDEP FACILITY NO.:	WELL NO.:	SAMPLE ID: BP-MW1	DATE: 12/5/98
SITE NAME: BRAVO PIER @ NS MAYPORT		SITE LOCATION: NS MAYPORT, FLORIDA	

PURGE DATA

WELL DIAMETER (in): 2	TOTAL WELL DEPTH (ft): 13.8	DEPTH TO WATER (ft): 6.17	WELL CAPACITY (gal/ft): .16

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

1.2 = (13.8 - 6.2) x .16 = 1.2

PURGE METHOD: QUIESCENT LOW FLOW	PURGING INITIATED AT:	PURGING ENDED AT:
	PURGE RATE (gpm):	TOTAL VOLUME PURGED (gal):

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
1 ~~5~~	~~6~~ 1.2	6.9	29.1	.432	clear	none	clear	
2	2.4	6.9	29.2	.532	↓	↓	↓	
3	3.6	6.9	29.3	.540	↓	↓	↓	
4	4.8	6.9	29.2	.541	↓	↓	↓	
5	6.0	6.9	29.2	.542	↓	↓	↓	

SAMPLING DATA

SAMPLED BY / AFFILIATION: ~~GSPAUL GALLIGAN~~ ~~GEOFF~~ BEARDALL	SAMPLER(S) SIGNATURE(S): G Beardall	
SAMPLING METHOD(S): TEFLON BAILER	SAMPLING INITIATED AT:	SAMPLING ENDED AT:

FIELD DECONTAMINATION: (Y) N | FIELD-FILTERED: Y (N) | DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	CG	40ml	HCl	NONE		EPA 8260

REMARKS: WATER IN GROUND HEATED BY STEAM CONDUIT NEXT TO MW-1

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

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

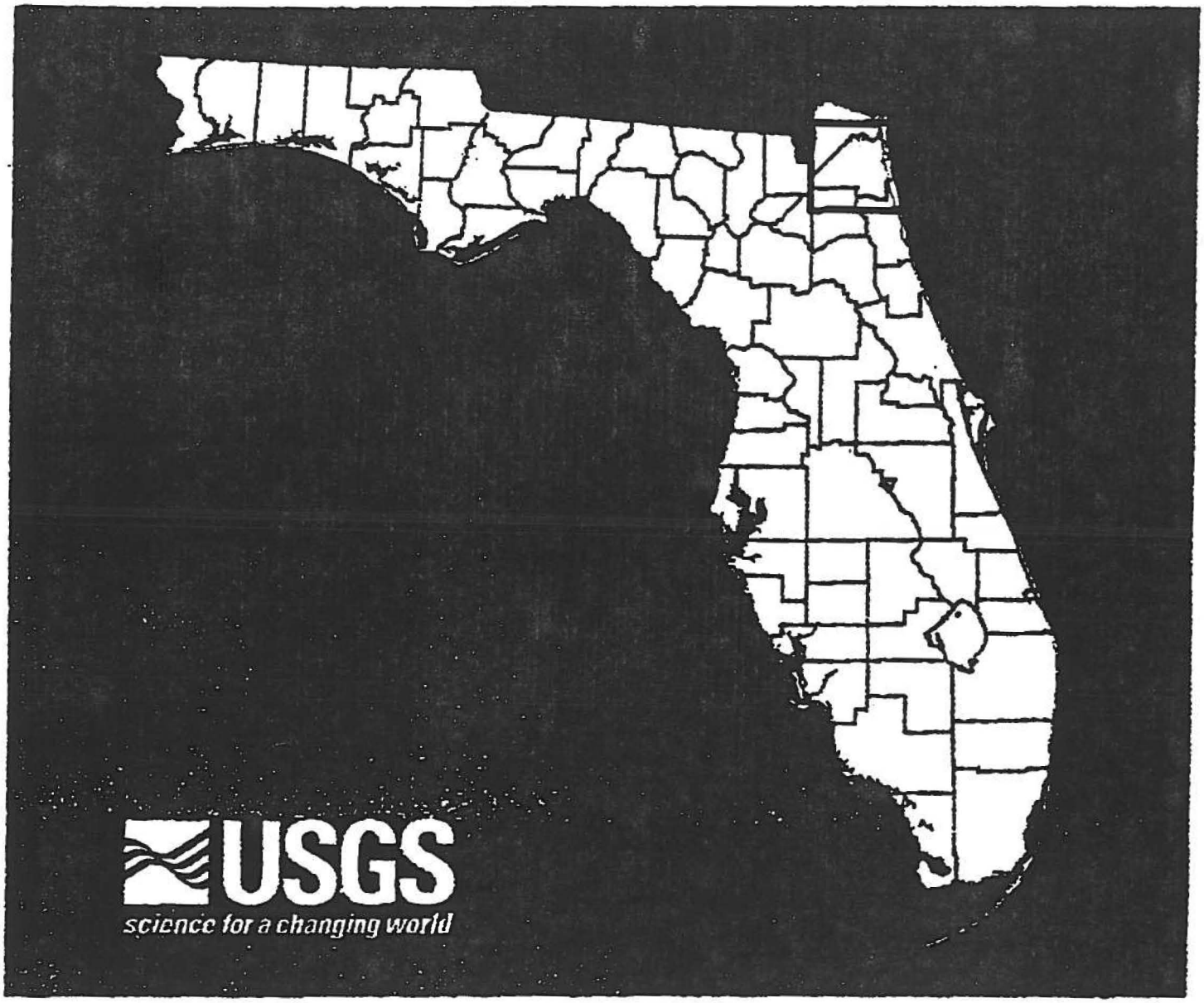
APPENDIX F

SLUG TEST INFORMATION AND CALCULATIONS

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

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

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



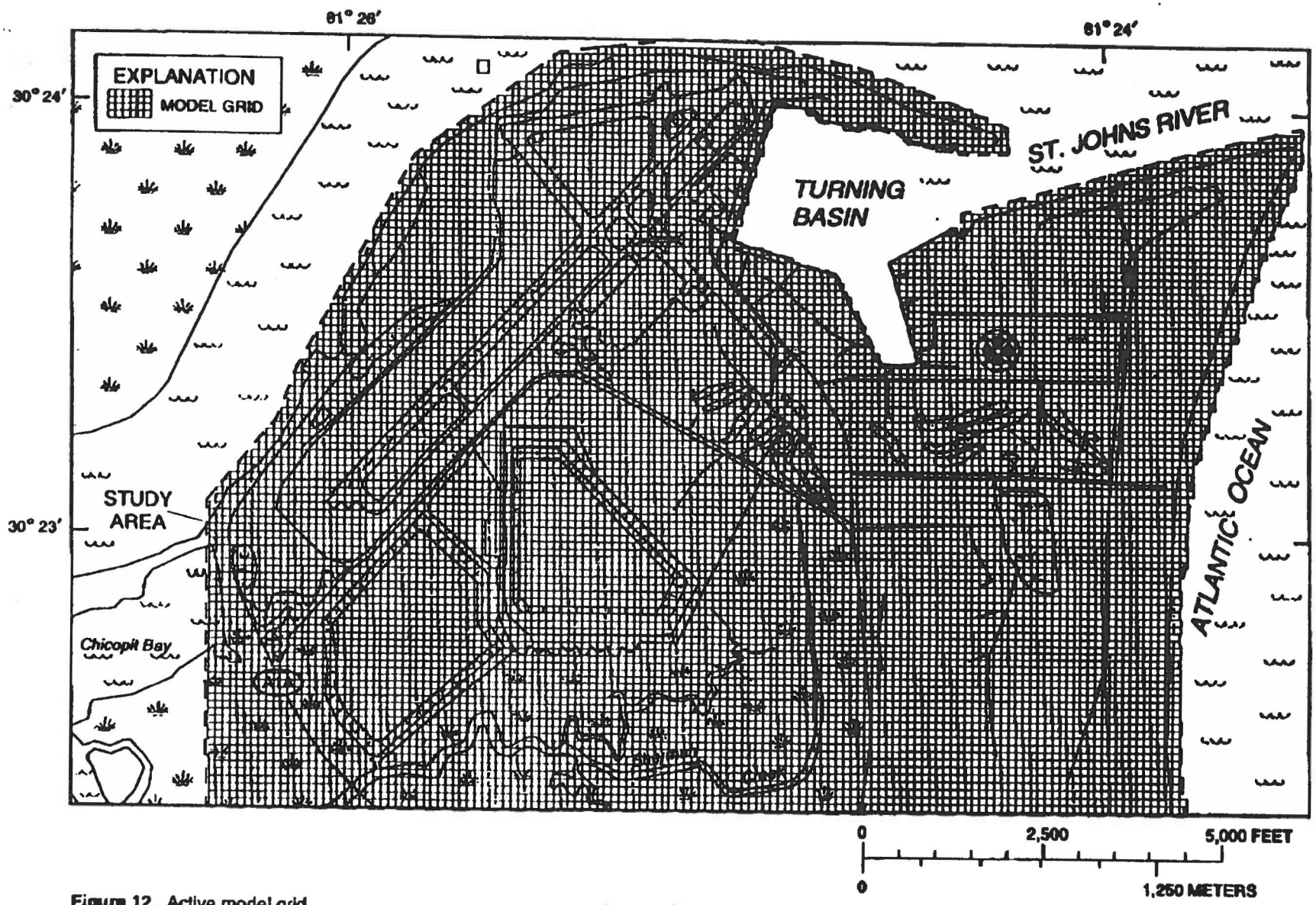


Figure 12. Active model grid.

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

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

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

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

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

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

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

[a] Suffix denotes zone tested.

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

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

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

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

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

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

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

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

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

where

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

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

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

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

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

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

[Well locations are shown in figure 3; gpm, gallons per minute; ft, feet; –, not applica

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

[a] Suffix denotes zone tested.

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

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

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

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

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

$$K_{Multi} = 0.53 K_{Single}^{1.03}.$$

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

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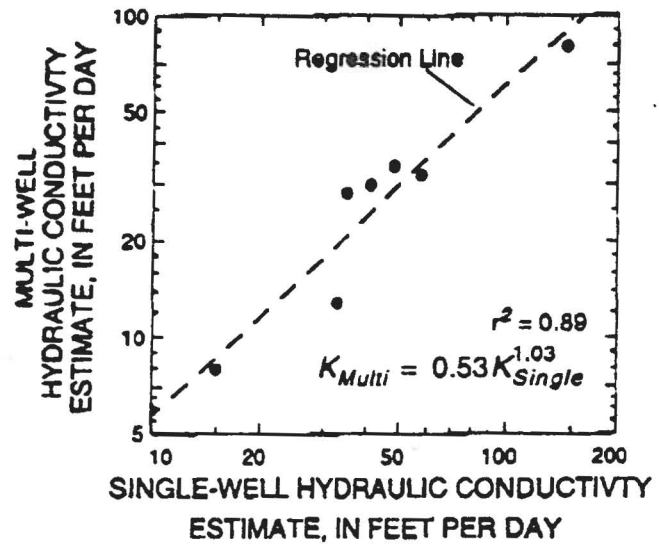

Figure 13. Relation between lateral hydraulic conductivity values estimated by single-well tests and multi-well tests.

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

Table 4. Lateral hydraulic conductivity estimates determined from slug tests

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

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

[a] Suffix denotes zone tested.

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

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

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

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

[a] Suffix denotes zone tested.

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

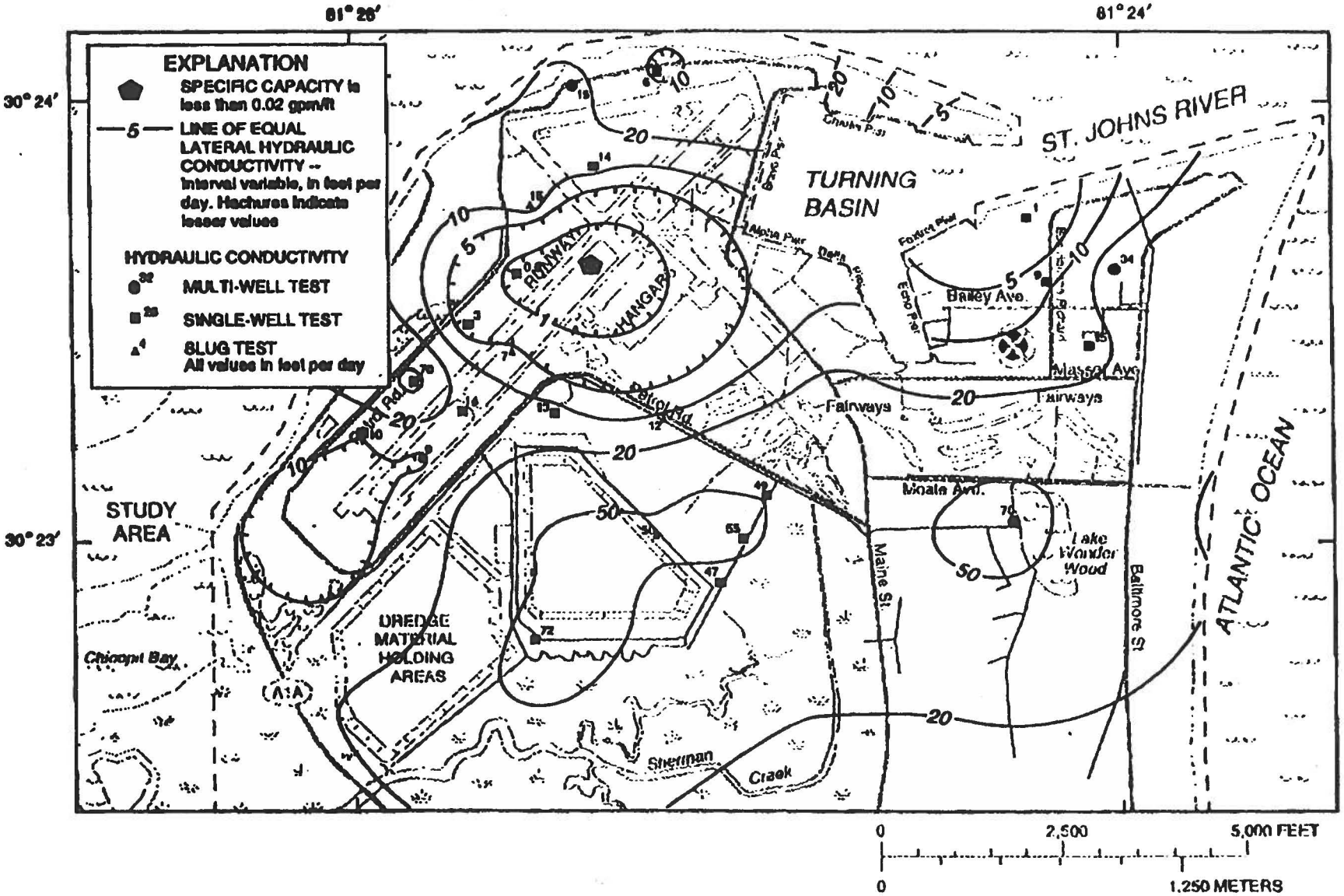

Figure 16. Lateral hydraulic conductivity of the I-zone (layer 2).

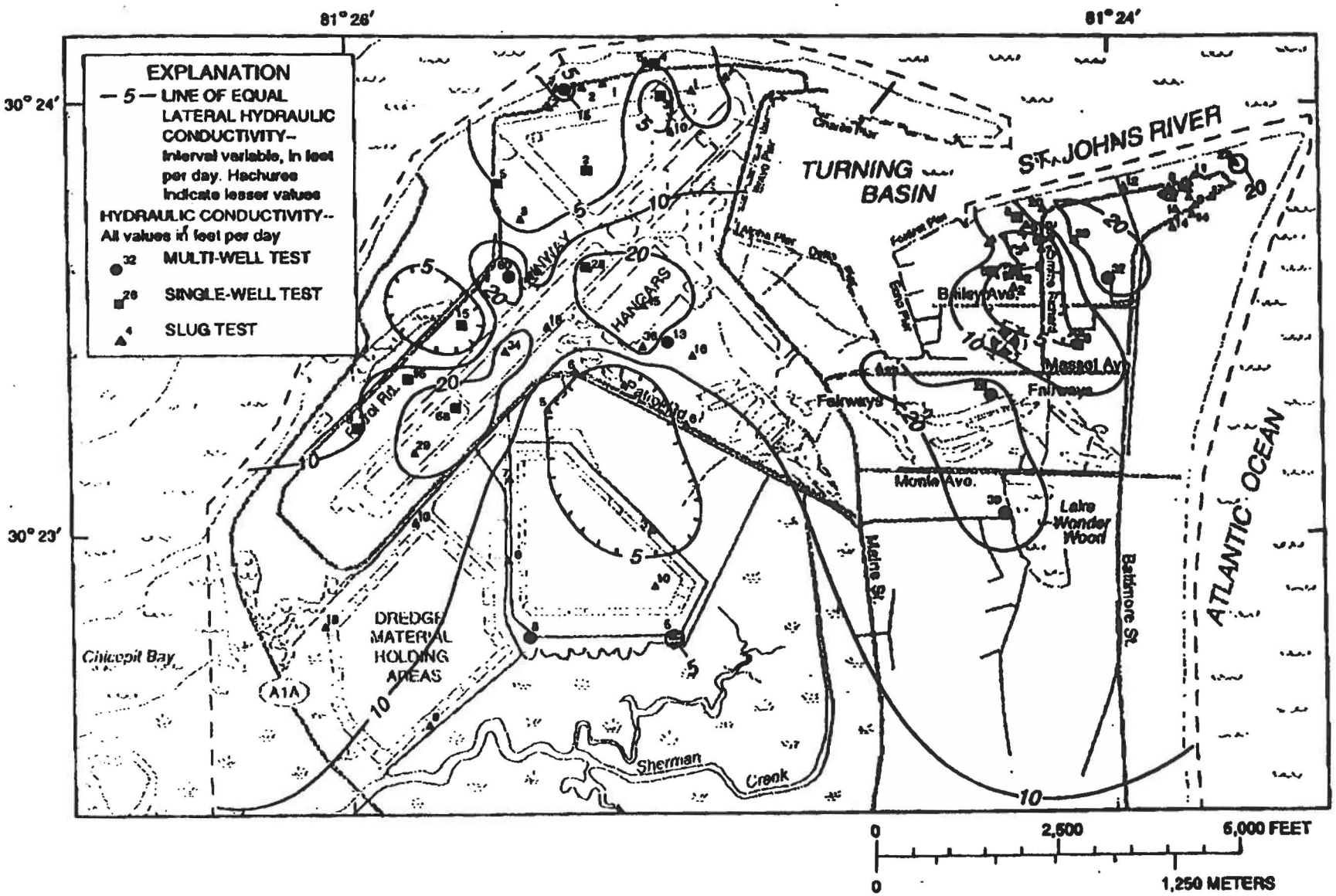

Figure 15. Lateral hydraulic conductivity of the S-zone (layer 1).

APPENDIX G

MOBILE LABORATORY SOIL AND GROUNDWATER ANALYTICAL RESULTS

GATHERS ANALYTICAL LABORATORY, INC.
REPORT OF ANALYSIS

Client Name: U. S. Probe, Inc.
Project Name: Mayport Naval Station; Mayport, FL
Project Number: TTFL 9807026
Purchase Order Number: -

Laboratory ID: EL00000
CompQAP: 890410G
Date Sample(s) Analyzed: 08-11-98
Date Reported: 08-17-98

Parameter	Unit	Sample Identification					
Laboratory Sample ID:		6973	6974	6975	6976	6977	6978
Client Sample ID:		SB02-MLW	SB03-MLW	SB06-MLW	SB08-MLW	SB09-MLW	SB10-MLW
Sample Matrix: Groundwater							
Methyl-tert-butyl ether	ug/l	31.1	18.2	15.3	151	<25	31.6
Benzene	ug/l	7.19	<2	8.36	51.6	<5	<2
Toluene	ug/l	20.7	80.9	<1	255	<5	27.8
Ethylbenzene	ug/l	<1	<2	3.88	227	<5	<2
Xylenes	ug/l	2.64	2.56	<1	<20	<5	2.74
Total BTEX	ug/l	30.5	83.5	12.2	534	<5	30.5
Naphthalene	ug/l	22.7	<10	<5	<100	<25	<10
1-methyl-Naphthalene	ug/l	<5	<10	<5	<100	<25	<10
2-methyl-Naphthalene	ug/l	13.4	32.1	<5	<100	<25	<10
Total Naphthalenes	ug/l	13.4	32.1	<5	<100	<25	<10

Joel J. Gathers, B. S.
Gathers Analytical Laboratory, Inc.

GATHERS ANALYTICAL LABORATORY, INC.
REPORT OF ANALYSIS

Client Name: U. S. Probe, Inc.
Project Name: Mayport Naval Station, Mayport, FL
Project Number: TTFL 9807026
Purchase Order Number:

Laboratory ID: EL00000
CompQAP: 890410G
Date Sample(s) Analyzed: 08-11-98
Date Reported: 08-17-98

Parameter	Unit	Sample Identification					
Laboratory Sample ID:		6979	6980	6981	6982	6983	6984
Client Sample ID:		SB11-MLW	SB12-MLW	SB14-MLW	SB15-MLW	SB16-MLW	SB17-MLW
Sample Matrix: Groundwater							
Methyl-tert-butyl ether	ug/l	26.6	35.5	15.8	13.8	<10	<10
Benzene	ug/l	7.07	9.23	4.52	<2.5	<2	<2
Toluene	ug/l	20.4	37.2	23.1	<2.5	<2	11.5
Ethylbenzene	ug/l	<2	19.5	<2	<2.5	<2	<2
Xylenes	ug/l	10.0	99.6	5.29	<2.5	<2	20.7
Total BTEX	ug/l	37.5	166	32.9	<2.5	<2	32.2
Naphthalene	ug/l	<10	<10	<5	<12.5	<10	<10
1-methyl-Naphthalene	ug/l	<10	<10	<5	<12.5	<10	<10
2-methyl-Naphthalene	ug/l	<10	<10	22.5	<12.5	<10	<10
Total Naphthalenes	ug/l	<10	<10	22.5	<12.5	<10	<10

Joel J. Gathers, B. S.
Gathers Analytical Laboratory, Inc.

GATHERS ANALYTICAL LABORATORY, INC.
REPORT OF ANALYSIS

Client Name: U. S. Probe, Inc.
Project Name: Mayport Naval Station; Mayport, FL
Project Number: TTFL- 9807026
Purchase Order Number: -

Laboratory ID: EL00000
CompQAP: 890410G
Date Sample(s) Analyzed: 08-11-98
Date Reported: 08-17-98

Parameter	Unit	Sample Identification					
Laboratory Sample ID:		6985	6986	6987	6988	6989	6990
Client Sample ID;		SB18-MLW	SB19-MLW	SB20-MLW	SB21-MLW	SB22-MLW	SB23-MLW
Sample Matrix: Groundwater							
Methyl-tert-butyl ether	ug/l	<10	<10	15	<5	<10	20.0
Benzene	ug/l	<2	<2	2.99	<1	<2	9.60
Toluene	ug/l	20.1	<2	<2	<1	<2	57.3
Ethylbenzene	ug/l	<1	<2	<2	<1	<2	<2
Xylenes	ug/l	13.2	2.40	<2	1.43	<2	2.04
Total BTEX	ug/l	33.3	2.40	2.99	1.43	<2	68.9
Naphthalene	ug/l	<10	<10	<10	<5	<10	<10
1-methyl-Naphthalene	ug/l	<10	<10	<10	<5	<10	<10
2-methyl-Naphthalene	ug/l	<10	<10	<10	<5	<10	<10
Total Naphthalenes	ug/l	<10	<10	<10	<5	<10	<10

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REPORT OF ANALYSIS

Client Name: U. S. Probe, Inc.
Project Name: Mayport Naval Station; Mayport, FL
Project Number: TTFL 9807026
Purchase Order Number: -

Laboratory ID: EL00000
CompQAP: 890410G
Date Sample(s) Analyzed: 08-11-98
Date Reported: 08-17-98

Parameter	Unit	Sample Identification					
Laboratory Sample ID:		6991	6992	6993	6994	6995	6996
Client Sample ID:		SB24-MLW	SB25-MLW	SB26-MLW	SB27-MLW	SB28-MLW	SB29-MLW
Sample Matrix: Groundwater							
Methyl-tert-butyl ether	ug/l	28.2	10.3	24.3	<10	<10	12.5
Benzene	ug/l	<2	4.63	6.41	<2	<2	4.29
Toluene	ug/l	14.9	<2	7.80	12.7	<2	<2
Ethylbenzene	ug/l	<2	<2	2.07	<2	<2	<2
Xylenes	ug/l	2.80	<2	3.47	<2	<2	<2
Total BTEX	ug/l	17.7	4.63	19.8	12.7	<2	4.29
Naphthalene	ug/l	<10	<10	<10	<10	<10	<10
1-methyl-Naphthalene	ug/l	<10	<10	<10	<10	24.3	<10
2-methyl-Naphthalene	ug/l	<10	<10	<10	<10	17.6	<10
Total Naphthalenes	ug/l	<10	<10	<10	<10	41.9	<10

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GATHERS ANALYTICAL LABORATORY, INC.
REPORT OF ANALYSIS

Client Name: U. S. Probe, Inc.
Project Name: Mayport Naval Station, Mayport, FL
Project Number: TTFL 9807026
Purchase Order Number:

Laboratory ID: EL00000
CompQAP: 890410G
Date Sample(s) Analyzed: 08-11-98
Date Reported: 08-17-98

Parameter	Unit	Sample Identification
Laboratory Sample ID:		6997
Client Sample ID:		MAY1330-11
Sample Matrix: Groundwater		MLW
Methyl-tert-butyl ether	ug/l	31.2
Benzene	ug/l	17.8
Toluene	ug/l	112
Ethylbenzene	ug/l	5.37
Xylenes	ug/l	4.20
Total BTEX	ug/l	139
Naphthalene	ug/l	12.9
1-methyl-Naphthalene	ug/l	<10
2-methyl-Naphthalene	ug/l	<10
Total Naphthalenes	ug/l	12.9

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REPORT OF ANALYSIS

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Project Name: Mayport Naval Station; Mayport, FL
Project Number: TTFL 9807026
Purchase Order Number: -

Laboratory ID: EL00000
CompQAP: 890410G
Date Sample(s) Analyzed: 08-11-98
Date Reported: 08-17-98

Parameter	Unit	Sample Identification					
Laboratory Sample ID:		6998	6999	7000	7001	7002	7003
Client Sample ID:		SB01-ML03	SB02-ML67	SB03-ML67	SB04-ML45	SB05-ML23	SB06-ML46
Sample Matrix: Soil							
Methyl-tert-butyl ether	ug/kg	<10	<10	<10	<10	<10	<10
Benzene	ug/kg	<2	<2	<2	<2	<2	<2
Toluene	ug/kg	<2	<2	<2	<2	<2	<2
Ethylbenzene	ug/kg	<2	<2	<2	<2	<2	<2
Xylenes	ug/kg	<2	<2	<2	<2	<2	<2
Total BTEX	ug/kg	<2	<2	<2	<2	<2	<2
Naphthalene	ug/kg	<10	<10	<10	<10	<10	<10
1-methyl-Naphthalene	ug/kg	<10	<10	<10	<10	<10	<10
2-methyl-Naphthalene	ug/kg	<10	<10	<10	<10	<10	<10
Total Naphthalenes	ug/kg	<10	<10	<10	<10	<10	<10

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GATHERS ANALYTICAL LABORATORY, INC.
REPORT OF ANALYSIS

Client Name: U. S. Probe, Inc.
Project Name: Mayport Naval Station; Mayport, FL
Project Number: TTFL 9807026
Purchase Order Number: -

Laboratory ID: EL00000
CompQAP: 890410G
Date Sample(s) Analyzed: 08-11-98
Date Reported: 08-17-98

Parameter	Unit	Sample Identification					
Laboratory Sample ID:		7004	7005	7006	7007	7008	7009
Client Sample ID:		SB07-ML03	SB08-ML46	SB09-ML46	SB10-ML46	SB11-ML46	SB12-ML46
Sample Matrix: Soil							
Methyl-tert-butyl ether	ug/kg	<10	<10	<10	<10	<10	<10
Benzene	ug/kg	<2	<2	<2	<2	<2	<2
Toluene	ug/kg	<2	<2	<2	<2	<2	<2
Ethylbenzene	ug/kg	<2	<2	<2	<2	<2	<2
Xylenes	ug/kg	<2	<2	<2	<2	<2	<2
Total BTEX	ug/kg	<2	<2	<2	<2	<2	<2
Naphthalene	ug/kg	<10	<10	<10	<10	<10	<10
1-methyl-Naphthalene	ug/kg	<10	<10	<10	<10	<10	<10
2-methyl-Naphthalene	ug/kg	<10	<10	<10	<10	<10	<10
Total Naphthalenes	ug/kg	<10	<10	<10	<10	<10	<10

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Client Name: U. S. Probe, Inc.
Project Name: Mayport Naval Station; Mayport, FL
Project Number: TTFL 9807026
Purchase Order Number:

Laboratory ID: EL00000
CompQAP: 890410G
Date Sample(s) Analyzed: 08-11-98
Date Reported: 08-17-98

Parameter	Unit	Sample Identification	
Laboratory Sample ID:		7010	7011
Client Sample ID:		SB13-	SB23-
Sample Matrix: Soil		ML03	ML46
Methyl-tert-butyl ether	ug/kg	<10	<10
Benzene	ug/kg	<2	3.83
Toluene	ug/kg	<2	<2
Ethylbenzene	ug/kg	<2	<2
Xylenes	ug/kg	<2	<2
Total BTEX	ug/kg	<2	3.83
Naphthalene	ug/kg	<10	<10
1-methyl-Naphthalene	ug/kg	<10	<10
2-methyl-Naphthalene	ug/kg	<10	<10
Total Naphthalenes	ug/kg	<10	<10

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Project Name: Mayport Naval Station; Mayport, FL
Project Number: TTFL 9807026
Purchase Order Number:

Laboratory ID: EL00000
CompQAP: 890410G
Date Sample(s) Analyzed: 08-11-98
Date Reported: 08-17-98

Parameter	Unit	Sample Identification	
Laboratory Sample ID:		7012	7013
Client Sample ID:		QCCS-05	QCCS-03
Sample Matrix: Replicate			
Methyl-tert-butyl ether	%RSD	6.85	4.97
Benzene		2.89	2.56
Toluene		0.75	4.85
Ethylbenzene		1.16	6.05
m,p-Xylene		1.89	6.17
o-Xylene		1.11	8.01
Total BTEX			
Naphthalene		6.35	7.78
1-methyl-Naphthalene		0.53	11.9
2-methyl-Naphthalene		4.29	9.04
Total Naphthalenes			

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REPORT OF ANALYSIS

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Project Name: Mayport Naval Station; Mayport, FL
Project Number: TTFL 9807026
Purchase Order Number:

Laboratory ID: EL00000
CompQAP: 890410G
Date Sample(s) Analyzed: 08-11-98
Date Reported: 08-17-98

Parameter	Unit	Sample Identification	
Laboratory Sample ID:		7014	7015
Client Sample ID:		QCCS-02	QCCS-04
Sample Matrix: Matrix Spike			
Methyl-tert-butyl ether	%Recovery	97.1	97.6
Benzene		98.2	101
Toluene		99.0	99.7
Ethylbenzene		98.7	97.4
m,p-Xylene		99.4	101
o-Xylene		98.0	99.7
Total BTEX			
Naphthalene		94.8	109
1-methyl-Naphthalene		80.4	110
2-methyl-Naphthalene		85.4	109
Total Naphthalenes			

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APPENDIX H

GROUNDWATER AND SOIL SAMPLING ANALYTICAL RESULTS

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2846 Industrial Plaza Drive (32301) • P.O. Box 13056 • Tallahassee, FL 32317-3056 • (850) 878-3994 • Fax (850) 878-9504

LOG NO: T8-13238
Received: 26 SEP 98
Reported: 13 OCT 98

Mr. Rick Ofsanko
Tetra Tech NUS, Inc.
794 South Military Drive
Deerfield Beach, FL 33442

Client PO. No.: 7867/P98645

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 154781014

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-1	BRPR-GW-DMW1-01	09-25-98/1430
13238-2	BRPR-GW-MW03-01	09-25-98/1300
13238-3	BRPR-GW-MW01-01	09-25-98/1515
13238-4	BRPR-GW-DUP01-01	09-25-98
13238-5	BRPR-DI-RB01-01	09-25-98/1230

PARAMETER	13238-1	13238-2	13238-3	13238-4	13238-5
Volatiles by GC/MS (8260)					
Bromodichloromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon tetrachloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chloroethylvinyl ether, ug/l	<10	<10	<10	<10	<10
Chloroform, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethylene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethylene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene, ug/l	<0.36*J	<0.36*J	<0.36*J	<0.36*J	<0.36*J

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13238-2	BRPR-GW-MW03-01	09-25-98/1300
13238-3	BRPR-GW-MW01-01	09-25-98/1515
13238-4	BRPR-GW-DUP01-01	09-25-98
13238-5	BRPR-DI-RB01-01	09-25-98/1230

PARAMETER	13238-1	13238-2	13238-3	13238-4	13238-5
trans-1,3-Dichloropropene, ug/l	<0.36*J	<0.36*J	<0.36*J	<0.36*J	<0.36*J
Methylene chloride (Dichloromethane), ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane, ug/l	<0.52*J	<0.52*J	<0.52*J	<0.52*J	<0.52*J
Tetrachloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethylene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl chloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene, ug/l	<1.0	<1.0	1.8	<1.0	<1.0
Toluene, ug/l	<1.0	<1.0	1.1	<1.0	<1.0
Ethylbenzene, ug/l	<1.0	<1.0	1.9	<1.0	<1.0
Total Xylenes, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0
Methyl tert-butyl ether (MTBE), ug/l	<10	<10	<10	<10	<10
Surrogate - Dibromofluoromethane	109 %	104 %	108 %	102 %	111 %
Surrogate - Toluene-d8	103 %	96 %	105 %	101 %	108 %
Surrogate - 4-Bromofluorobenzene	93 %	92 %	95 %	90 %	96 %
Analyst	MTM	MTM	MTM	MTM	MTM
Analysis Date	10.06.98	10.09.98	10.08.98	10.06.98	10.06.98
Batch ID	1001M	1001M	1001M	1001M	1001M
Dilution Factor	1.0	1.0	1.0	1.0	1.0

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794 South Military Drive
Deerfield Beach, FL 33442

Client PO No.: 7867/P98645

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 154781014

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-1	BRPR-GW-DMW1-01	09-25-98/1430
13238-2	BRPR-GW-MW03-01	09-25-98/1300
13238-3	BRPR-GW-MW01-01	09-25-98/1515
13238-4	BRPR-GW-DUP01-01	09-25-98
13238-5	BRPR-DI-RB01-01	09-25-98/1230

PARAMETER	13238-1	13238-2	13238-3	13238-4	13238-5
Ethylene dibromide (504)					
1,2-Dibromoethane (EDB) , ug/l	<0.020	<0.020	<0.020	<0.020	<0.020
Prep Date	09.30.98	09.30.98	09.30.98	09.30.98	09.30.98
Analyst	CA	CA	CA	CA	CA
Analysis Date	10.01.98	10.01.98	10.01.98	10.01.98	10.01.98
Batch ID	0930FF	0930FF	0930FF	0930FF	0930FF
Dilution Factor	1.0	1.0	1.0	1.0	1.0

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13238-2	BRPR-GW-MW03-01	09-25-98/1300
13238-3	BRPR-GW-MW01-01	09-25-98/1515
13238-4	BRPR-GW-DUP01-01	09-25-98
13238-5	BRPR-DI-RB01-01	09-25-98/1230

PARAMETER	13238-1	13238-2	13238-3	13238-4	13238-5
Polynuclear Aromatics (8310)					
Acenaphthene, ug/l	<1.0	12	0.58*J	<1.0	<1.0
Acenaphthylene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene, ug/l	<0.20	0.20	0.64	<0.20	<0.20
Benzo(a)anthracene, ug/l	<0.013*J	<0.013*J	0.11*J	<0.013*J	<0.013*J
Benzo(a)pyrene, ug/l	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(b)fluoranthene, ug/l	<0.0046*J	<0.0046*J	<0.0046*J	<0.0046*J	<0.0046*J
Benzo(g,h,i)perylene, ug/l	<0.50	<0.50	<0.50	<0.50	<0.50
Benzo(k)fluoranthene, ug/l	<0.20	<0.20	<0.20	<0.20	<0.20
Chrysene, ug/l	<0.20	<0.20	0.11*J	<0.20	<0.20
Dibenzo(a,h)anthracene, ug/l	<0.043*J	<0.043*J	<0.043*J	<0.043*J	<0.043*J
Fluoranthene, ug/l	<0.50	0.019*J	2.1	<0.50	<0.50
Fluorene, ug/l	<0.50	<0.050	0.58	<0.50	<0.50
Indeno(1,2,3-cd)pyrene, ug/l	<0.019*J	0.019*J	<0.019*J	<0.019*J	<0.019*J
Naphthalene, ug/l	<1.0	<0.50	<1.0	<1.0	<1.0
Phenanthrene, ug/l	<0.20	0.13*J	1.4	<0.20	<0.20
Pyrene, ug/l	<0.50	0.040*J	1.7	<0.50	<0.50
2-Methylnaphthalene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1-Methylnaphthalene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate - Terphenyl - d14	28 %	89 %	101 %	81 %	77 %
Prep Date	09.30.98	09.30.98	09.30.98	09.30.98	09.30.98
Analyst	RD	RD	RD	RD	RD
Analysis Date	10.05.98	10.09.98	10.05.98	10.06.98	10.03.98
Batch ID	0930B	0930B	0930B	0930B	0930B
Dilution Factor	1.0	1.0	1.0	1.0	1.0

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Deerfield Beach, FL 33442

Client PO. No.: 7867/P98645

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 154781014

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-6	BRPR-GW-IDW1-01	09-25-98/1825

PARAMETER	13238-6
Volatiles by GC/MS (8260)	
Bromodichloromethane, ug/l	<1.0
Bromoform, ug/l	<1.0
Bromomethane, ug/l	<1.0
Carbon tetrachloride, ug/l	<1.0
Chlorobenzene, ug/l	<1.0
Chloroethane, ug/l	<1.0
2-Chloroethylvinyl ether, ug/l	<10
Chloroform, ug/l	<1.0
Chloromethane, ug/l	<1.0
Dibromochloromethane, ug/l	<1.0
1,2-Dichlorobenzene, ug/l	<1.0
1,3-Dichlorobenzene, ug/l	<1.0
1,4-Dichlorobenzene, ug/l	<1.0
Dichlorodifluoromethane, ug/l	<1.0
1,1-Dichloroethane, ug/l	<1.0
1,2-Dichloroethane, ug/l	<1.0
1,1-Dichloroethene, ug/l	<1.0
cis-1,2-Dichloroethylene, ug/l	<1.0
trans-1,2-Dichloroethylene, ug/l	<1.0
1,2-Dichloropropane, ug/l	<1.0
cis-1,3-Dichloropropene, ug/l	<0.36*J
trans-1,3-Dichloropropene, ug/l	<0.36*J
Methylene chloride (Dichloromethane), ug/l	<5.0
1,1,2,2-Tetrachloroethane, ug/l	<0.52*J
Tetrachloroethene, ug/l	<1.0

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2846 Industrial Plaza Drive (32301) • P.O. Box 13056 • Tallahassee, FL 32317-3056 • (850) 878-3994 • Fax (850) 878-9504

LOG NO: T8-13238
Received: 26 SEP 98
Reported: 13 OCT 98

Mr. Rick Ofsanko
Tetra Tech NUS, Inc.
794 South Military Drive
Deerfield Beach, FL 33442

Client PO. No.: 7867/P98645

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 154781014

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-6	BRPR-GW-IDW1-01	09-25-98/1825

PARAMETER	13238-6
1,1,1-Trichloroethane, ug/l	<1.0
1,1,2-Trichloroethane, ug/l	<1.0
Trichloroethylene, ug/l	<1.0
Trichlorofluoromethane, ug/l	<1.0
Vinyl chloride, ug/l	<1.0
Benzene, ug/l	<1.0
Toluene, ug/l	12
Ethylbenzene, ug/l	<1.0
Total Xylenes, ug/l	<2.0
Methyl tert-butyl ether (MTBE), ug/l	<10
Surrogate - Dibromofluoromethane	106 %
Surrogate - Toluene-d8	104 %
Surrogate - 4-Bromofluorobenzene	95 %
Analyst	MTM
Analysis Date	10.06.98
Batch ID	1001M
Dilution Factor	1.0
Ethylene dibromide (504)	
1,2-Dibromoethane (EDB) , ug/l	<0.020
Prep Date	09.30.98
Analyst	CA
Analysis Date	10.01.98
Batch ID	0930FF
Dilution Factor	1.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-6	BRPR-GW-IDW1-01	09-25-98/1825

PARAMETER	13238-6
Polynuclear Aromatics (8310)	
Acenaphthene, ug/l	3.6
Acenaphthylene, ug/l	<2.0
Anthracene, ug/l	0.64
Benzo(a)anthracene, ug/l	<0.026*J
Benzo(a)pyrene, ug/l	<0.40
Benzo(b)fluoranthene, ug/l	<0.0092*J
Benzo(g,h,i)perylene, ug/l	<1.0
Benzo(k)fluoranthene, ug/l	<0.40
Chrysene, ug/l	<0.040
Dibenzo(a,h)anthracene, ug/l	<0.086*J
Fluoranthene, ug/l	3.7
Fluorene, ug/l	1.3
Indeno(1,2,3-cd)pyrene, ug/l	<0.038*J
Naphthalene, ug/l	<2.0
Phenanthrene, ug/l	2.4
Pyrene, ug/l	2.6
2-Methylnaphthalene, ug/l	0.27*J
1-Methylnaphthalene, ug/l	1.3*J
Surrogate - Terphenyl - d14	95 %
Prep Date	09.30.98
Analyst	RD
Analysis Date	10.06.98
Batch ID	0930B
Dilution Factor	2.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-6	BRPR-GW-IDW1-01	09-25-98/1825

PARAMETER	13238-6
Petroleum Range Organics (FL-PRO)	
Petroleum Hydrocarbons , mg/l	<0.30
Surrogate, o-Terphenyl	71 %
Surrogate-C39	61 %
Prep Date	10.01.98
Analyst	BH
Analysis Date	10.05.98
Batch ID	1001A
Dilution Factor	1.0
Lead (6010)	
Lead, mg/l	0.0013*J
Prep Date	10.02.98
Analyst	CLD
Analysis Date	10.05.98
Batch ID	1002I
Dilution Factor	1.0

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Client PO. No.: 7867/P98645

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 154781014

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-7	BRPR-GW-MW05-01	09-25-98/1230
13238-8	BRPR-GW-MW04-01	09-25-98/1500
13238-9	BRPR-GW-MW02-01	09-25-98/1600

PARAMETER	13238-7	13238-8	13238-9
Volatiles by GC/MS (8260)			
Bromodichloromethane, ug/l	<1.0	<1.0	<1.0
Bromoform, ug/l	<1.0	<1.0	<1.0
Bromomethane, ug/l	<1.0	<1.0	<1.0
Carbon tetrachloride, ug/l	<1.0	<1.0	<1.0
Chlorobenzene, ug/l	<1.0	<1.0	<1.0
Chloroethane, ug/l	<1.0	<1.0	<1.0
2-Chloroethylvinyl ether, ug/l	<10	<10	<10
Chloroform, ug/l	<1.0	1.4	<1.0
Chloromethane, ug/l	<1.0	<1.0	<1.0
Dibromochloromethane, ug/l	<1.0	<1.0	<1.0
1,2-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0
1,3-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0
1,4-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0
Dichlorodifluoromethane, ug/l	<1.0	<1.0	<1.0
1,1-Dichloroethane, ug/l	<1.0	<1.0	<1.0
1,2-Dichloroethane, ug/l	<1.0	<1.0	<1.0
1,1-Dichloroethene, ug/l	<1.0	<1.0	<1.0
cis-1,2-Dichloroethylene, ug/l	<1.0	<1.0	<1.0
trans-1,2-Dichloroethylene, ug/l	<1.0	<1.0	<1.0
1,2-Dichloropropane, ug/l	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene, ug/l	<0.36*J	<0.36*J	<0.36*J
trans-1,3-Dichloropropene, ug/l	<0.36*J	<0.36*J	<0.36*J
Methylene chloride (Dichloromethane), ug/l	<5.0	<5.0	<5.0

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LOG NO: T8-13238
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Mr. Rick Ofsanko
Tetra Tech NUS, Inc.
794 South Military Drive
Deerfield Beach, FL 33442

Client PO. No.: 7867/P98645

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 091281015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-7	BRPR-GW-MW05-01	09-25-98/1230
13238-8	BRPR-GW-MW04-01	09-25-98/1500
13238-9	BRPR-GW-MW02-01	09-25-98/1600

PARAMETER	13238-7	13238-8	13238-9
1,1,2,2-Tetrachloroethane, ug/l	<0.52*J	<0.52*J	<0.52*J
Tetrachloroethene, ug/l	<1.0	<1.0	<1.0
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0
Trichloroethylene, ug/l	<1.0	<1.0	<1.0
Trichlorofluoromethane, ug/l	<1.0	<1.0	<1.0
Vinyl chloride, ug/l	<1.0	<1.0	<1.0
Benzene, ug/l	<1.0	<1.0	<1.0
Toluene, ug/l	<1.0	<1.0	<1.0
Ethylbenzene, ug/l	1.6	<1.0	<1.0
Total Xylenes, ug/l	<2.0	<2.0	<2.0
Methyl tert-butyl ether (MTBE), ug/l	<10	<10	<10
Surrogate - Dibromofluoromethane	104 %	109 %	111 %
Surrogate - Toluene-d8	102 %	108 %	104 %
Surrogate - 4-Bromofluorobenzene	117 %	100 %	92 %
Analyst	MTM	MTM	MTM
Analysis Date	10.08.98	10.06.98	10.08.98
Batch ID	1001M	1001M	1001M
Dilution Factor	1.0	1.0	1.0

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Deerfield Beach, FL 33442

Client PO. No.: 7867/P98645

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 154781014

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-7	BRPR-GW-MW05-01	09-25-98/1230
13238-8	BRPR-GW-MW04-01	09-25-98/1500
13238-9	BRPR-GW-MW02-01	09-25-98/1600

PARAMETER	13238-7	13238-8	13238-9
Petroleum Range Organics (FL-PRO)			
Petroleum Hydrocarbons , mg/l	0.74	0.46	<0.30
Surrogate, o-Terphenyl	75 %	69 %	72 %
Surrogate-C39	61 %	49 %	60 %
Prep Date	10.01.98	10.01.98	10.01.98
Analyst	BH	BH	BH
Analysis Date	10.06.98	10.05.98	10.05.98
Batch ID	1001A	1001A	1001A
Dilution Factor	1.0	1.0	1.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-7	BRPR-GW-MW05-01	09-25-98/1230
13238-8	BRPR-GW-MW04-01	09-25-98/1500
13238-9	BRPR-GW-MW02-01	09-25-98/1600

PARAMETER	13238-7	13238-8	13238-9
Polynuclear Aromatics (8310)			
Acenaphthene, ug/l	1.6	<25	17
Acenaphthylene, ug/l	<1.0	<25	<1.0
Anthracene, ug/l	<0.20	11	<0.20
Benzo(a)anthracene, ug/l	<0.013*J	<0.352*J	0.016*J
Benzo(a)pyrene, ug/l	<0.20	<5.0	<0.20
Benzo(b)fluoranthene, ug/l	<0.0046*J	<0.115*J	<0.0046*J
Benzo(g,h,i)perylene, ug/l	<0.50	<12	<0.50
Benzo(k)fluoranthene, ug/l	<0.20	<5.0	<0.20
Chrysene, ug/l	<0.20	<5.0	<0.20
Dibenzo(a,h)anthracene, ug/l	<0.043*J	<1.075*J	<0.043*J
Fluoranthene, ug/l	0.24*J	32	<0.50
Fluorene, ug/l	0.35*J	<12	4.5
Indeno(1,2,3-cd)pyrene, ug/l	<0.019*J	<0.475*J	<0.019*J
Naphthalene, ug/l	<1.0	120 ~~<25~~	<1.0
Phenanthrene, ug/l	<0.20	54	0.32
Pyrene, ug/l	0.17*J	23	0.16*J
2-Methylnaphthalene, ug/l	0.82*J	<25	<1.0
1-Methylnaphthalene, ug/l	1.7	<25	<1.0
Surrogate - Terphenyl - d14	78 %	*F33	94 %
Prep Date	09.30.98	09.30.98	09.30.98
Analyst	RD	RD	RD
Analysis Date	10.03.98	10.05.98	10.05.98
Batch ID	0930B	0930B	0930B
Dilution Factor	1.0	25	1.0

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794 South Military Drive
Deerfield Beach, FL 33442

Client PO. No.: 7867/P98645

Project: 7867/Mayport Naval Station
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-7	BRPR-GW-MW05-01	09-25-98/1230
13238-8	BRPR-GW-MW04-01	09-25-98/1500
13238-9	BRPR-GW-MW02-01	09-25-98/1600

PARAMETER	13238-7	13238-8	13238-9
Ethylene dibromide (504)			
1,2-Dibromoethane (EDB) , ug/l	<0.020	<0.020	<0.020
Prep Date	09.30.98	09.30.98	09.30.98
Analyst	CA	CA	CA
Analysis Date	10.01.98	10.01.98	10.01.98
Batch ID	0930FF	0930FF	0930FF
Dilution Factor	1.0	1.0	1.0
Nitrate-N (353.2)			
Nitrate-N, mg/l	<0.050	0.16	<0.050
Analyst	EDB	EDB	EDB
Analysis Date	09.26.98	09.26.98	09.26.98
Analysis Time	1645	1645	1645
Batch ID	0928Q	0928Q	0928Q
Dilution Factor	1.0	1.0	1.0
Sulfate as SO4 (375.4)			
Sulfate as SO4, mg/l	<5.0	20	<5.0
Analyst	NR	CB	NR
Analysis Date	09.28.98	10.08.98	09.28.98
Batch ID	0928S	1008S	0928S
Dilution Factor	1.0	1.0	1.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
13238-10	BRPR-SS-MW01-01	09-24-98/1230
13238-11	BRPR-SS-MW04-01	09-24-98/1030
13238-12	BRPR-SS-MW02-01	09-24-98/1500

PARAMETER	13238-10	13238-11	13238-12
Volatiles by GC/MS (8260)			
Bromodichloromethane, ug/kg dw	<5.7	<6.0	<5.8
Bromoform, ug/kg dw	<5.7	<6.0	<5.8
Bromomethane, ug/kg dw	<11	<12	<12
Carbon tetrachloride, ug/kg dw	<5.7	<6.0	<5.8
Chlorobenzene, ug/kg dw	<5.7	<6.0	<5.8
Chloroethane, ug/kg dw	<11	<12	<12
2-Chloroethylvinyl ether, ug/kg dw	<5.7	<6.0	<58
Chloroform, ug/kg dw	<5.7	<6.0	<5.8
Chloromethane, ug/kg dw	<11	<12	<12
Dibromochloromethane, ug/kg dw	<5.7	<6.0	<5.8
1,2-Dichlorobenzene, ug/kg dw	<5.7	<6.0	<5.8
1,3-Dichlorobenzene, ug/kg dw	<5.7	<6.0	<5.8
1,4-Dichlorobenzene, ug/kg dw	<5.7	<6.0	<5.8
Dichlorodifluoromethane, ug/kg dw	<5.7	<6.0	<5.8
1,1-Dichloroethane, ug/kg dw	<5.7	<6.0	<5.8
1,2-Dichloroethane, ug/kg dw	<5.7	<6.0	<5.8
1,1-Dichloroethene, ug/kg dw	<5.7	<6.0	<5.8
cis-1,2-Dichloroethylene, ug/kg dw	<5.7	<6.0	<5.8
trans-1,2-Dichloroethylene, ug/kg dw	<5.7	<6.0	<5.8
1,2-Dichloropropane, ug/kg dw	<5.7	<6.0	<5.8
cis-1,3-Dichloropropene, ug/kg dw	<5.7	<6.0	<5.8
trans-1,3-Dichloropropene, ug/kg dw	<5.7	<6.0	<5.8
Methylene chloride (Dichloromethane), ug/kg dw	<5.7	<6.0	<5.8

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
13238-10	BRPR-SS-MW01-01	09-24-98/1230
13238-11	BRPR-SS-MW04-01	09-24-98/1030
13238-12	BRPR-SS-MW02-01	09-24-98/1500

PARAMETER	13238-10	13238-11	13238-12
1,1,2,2-Tetrachloroethane, ug/kg dw	<5.7	<6.0	<5.8
Tetrachloroethene, ug/kg dw	<5.7	<6.0	<5.8
1,1,1-Trichloroethane, ug/kg dw	<5.7	<6.0	<5.8
1,1,2-Trichloroethane, ug/kg dw	<5.7	<6.0	<5.8
Trichloroethylene, ug/kg dw	<5.7	<6.0	<5.8
Trichlorofluoromethane, ug/kg dw	<5.7	<6.0	<5.8
Vinyl chloride, ug/kg dw	<1.1*J	<1.0*J	<1.0*J
Benzene, ug/kg dw	<5.7	<6.0	<5.8
Toluene, ug/kg dw	<5.7	<6.0	<5.8
Ethylbenzene, ug/kg dw	<5.7	<6.0	<5.8
Total Xylenes, ug/kg dw	<11	<12	<12
Methyl tert-butyl ether (MTBE), ug/kg dw	<3.5*J	<3.3*J	<3.2*J
Surrogate - Dibromofluoromethane	94 %	95 %	97 %
Surrogate - Toluene-d8	101 %	101 %	102 %
Surrogate - 4-Bromofluorobenzene	92 %	94 %	93 %
Analyst	WHE	WHE	WHE
Analysis Date	10.07.98	10.07.98	10.07.98
Batch ID	0921S	0921S	0921S
Dilution Factor	1.0	1.0	1.0

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REPORT OF RESULTS

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13238-10	BRPR-SS-MW01-01	09-24-98/1230
13238-11	BRPR-SS-MW04-01	09-24-98/1030
13238-12	BRPR-SS-MW02-01	09-24-98/1500

PARAMETER	13238-10	13238-11	13238-12
Polynuclear Aromatics (8310)			
Acenaphthene, ug/kg dw	<1400	<1400	<52
Acenaphthylene ug/kg dw	<560	<560	<21
Anthracene, ug/kg dw	240*J	240*J	0.47*J
Benzo(a)anthracene, ug/kg dw	470*J	470*J	5.4
Benzo(a)pyrene, ug/kg dw	430*J	430*J	9.1
Benzo(b)fluoranthene, ug/kg dw	540*J	540*J	11
Benzo(g,h,i)perylene, ug/kg dw	500	500	5.9*J
Benzo(k)fluoranthene, ug/kg dw	230*J	230*J	4.6
Chrysene, ug/kg dw	470*J	470*J	4.7
Dibenzo(a,h)anthracene, ug/kg dw	160*J	160*J	<10
Fluoranthene, ug/kg dw	1400	1400	10
Fluorene, ug/kg dw	110*J	110*J	<10
Indeno(1,2,3-cd)pyrene, ug/kg dw	370	370	3.2*J
Naphthalene, ug/kg dw	<560	<560	<21
Phenanthrene, ug/kg dw	1200	1200	4.8
Pyrene, ug/kg dw	1200	1200	11
2-Methylnaphthalene, ug/kg dw	<560	<560	<21
1-Methylnaphthalene, ug/kg dw	<560	<560	<21
Surrogate - Terphenyl - d14	*F33	*F33	76 %
Prep Date	09.28.98	09.28.98	09.28.98
Analyst	RD	RD	RD
Analysis Date	10.09.98	10.09.98	10.05.98
Batch ID	0928J	0928J	0928J
Dilution Factor	25	25	1.0

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LOG NO: T8-13238
Received: 26 SEP 98
Reported: 13 OCT 98

Mr. Rick Ofsanko
Tetra Tech NUS, Inc.
794 South Military Drive
Deerfield Beach, FL 33442

Client PO. No.: 7867/P98645

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 154781014

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
13238-10	BRPR-SS-MW01-01	09-24-98/1230
13238-11	BRPR-SS-MW04-01	09-24-98/1030
13238-12	BRPR-SS-MW02-01	09-24-98/1500

PARAMETER	13238-10	13238-11	13238-12
Petroleum Range Organics (FL-PRO)			
Petroleum Hydrocarbons , mg/kg dw	220	84	12
Surrogate, o-Terphenyl	54 %	59 %	64 %
Surrogate-C39	107 %	74 %	71 %
Prep Date	09.28.98	09.28.98	09.28.98
Analyst	BH	BH	BH
Analysis Date	10.01.98	10.01.98	10.01.98
Batch ID	0928H	0928H	0928H
Dilution Factor	1.0	1.0	1.0
Organic Matter (% Loss on Ignition @ 550C)			
% Organic Matter, %	2.1	0.48	0.50
Analyst	XS	XS	XS
Analysis Date	09.29.98	09.29.98	09.29.98
Batch ID	0929V	0929V	0929V
Lead (6010)			
Lead, mg/kg dw	7.8	2.3	2.0
Prep Date	10.06.98	10.06.98	10.06.98
Analyst	CLD	CLD	CLD
Analysis Date	10.07.98	10.07.98	10.07.98
Batch ID	1006C	1006C	1006C
Dilution Factor	1.0	1.0	1.0
Percent Solids	89	95	97

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
13238-13	BRPR-SS-IDW-01	09-25-98/1700

PARAMETER	13238-13
Volatiles by GC/MS (8260)	
Bromodichloromethane, ug/kg dw	<6.0
Bromoform, ug/kg dw	<6.0
Bromomethane, ug/kg dw	<12
Carbon tetrachloride, ug/kg dw	<6.0
Chlorobenzene, ug/kg dw	<6.0
Chloroethane, ug/kg dw	<12
2-Chloroethylvinyl ether, ug/kg dw	<60
Chloroform, ug/kg dw	<6.0
Chloromethane, ug/kg dw	<12
Dibromochloromethane, ug/kg dw	<6.0
1,2-Dichlorobenzene, ug/kg dw	<6.0
1,3-Dichlorobenzene, ug/kg dw	<6.0
1,4-Dichlorobenzene, ug/kg dw	<6.0
Dichlorodifluoromethane, ug/kg dw	<6.0
1,1-Dichloroethane, ug/kg dw	<6.0
1,2-Dichloroethane, ug/kg dw	<6.0
1,1-Dichloroethene, ug/kg dw	<6.0
cis-1,2-Dichloroethylene, ug/kg dw	<6.0
trans-1,2-Dichloroethylene, ug/kg dw	<6.0
1,2-Dichloropropane, ug/kg dw	<6.0
cis-1,3-Dichloropropene, ug/kg dw	<6.0
trans-1,3-Dichloropropene, ug/kg dw	<6.0
Methylene chloride (Dichloromethane), ug/kg dw	<6.0
1,1,2,2-Tetrachloroethane, ug/kg dw	<6.0
Tetrachloroethene, ug/kg dw	<6.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
13238-13	BRPR-SS-IDW-01	09-25-98/1700

PARAMETER	13238-13
1,1,1-Trichloroethane, ug/kg dw	<6.0
1,1,2-Trichloroethane, ug/kg dw	<6.0
Trichloroethylene, ug/kg dw	<6.0
Trichlorofluoromethane, ug/kg dw	<6.0
Vinyl chloride, ug/kg dw	<1.2*J
Benzene, ug/kg dw	<6.0
Toluene, ug/kg dw	<6.0
Ethylbenzene, ug/kg dw	<6.0
Total Xylenes, ug/kg dw	<12
Methyl tert-butyl ether (MTBE), ug/kg dw	<3.7*J
Surrogate - Dibromofluoromethane	95 %
Surrogate - Toluene-d8	98 %
Surrogate - 4-Bromofluorobenzene	87 %
Analyst	**WHE**
Analysis Date	**10.07.98**
Batch ID	**0921S**
Dilution Factor	**1.0**

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
13238-13	BRPR-SS-IDW-01	09-25-98/1700

PARAMETER	13238-13
Polynuclear Aromatics (8310)	
Acenaphthene, ug/kg dw	<170*J
Acenaphthylene, ug/kg dw	<61*J
Anthracene, ug/kg dw	9.8*J
Benzo(a)anthracene, ug/kg dw	25*J
Benzo(a)pyrene, ug/kg dw	<48
Benzo(b)fluoranthene, ug/kg dw	37*J
Benzo(g,h,i)perylene, ug/kg dw	<120
Benzo(k)fluoranthene, ug/kg dw	11*J
Chrysene, ug/kg dw	48*J
Dibenzo(a,h)anthracene, ug/kg dw	<10*J
Fluoranthene, ug/kg dw	79*J
Fluorene, ug/kg dw	<120
Indeno(1,2,3-cd)pyrene, ug/kg dw	<120
Naphthalene, ug/kg dw	<240
Phenanthrene, ug/kg dw	25*J
Pyrene, ug/kg dw	69*J
2-Methylnaphthalene, ug/kg dw	<240
1-Methylnaphthalene, ug/kg dw	<240
Surrogate - Terphenyl - d14	104 %
Prep Date	09.28.98
Analyst	RD
Analysis Date	10.09.98
Batch ID	0928J
Dilution Factor	10

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
13238-13	BRPR-SS-IDW-01	09-25-98/1700

PARAMETER	13238-13
Petroleum Range Organics (FL-PRO)	
Petroleum Hydrocarbons , mg/kg dw	92
Surrogate, o-Terphenyl	50 %
Surrogate-C39	77 %
Prep Date	09.28.98
Analyst	BH
Analysis Date	10.01.98
Batch ID	0928H
Dilution Factor	1.0
Organic Matter (% Loss on Ignition @ 550C)	
% Organic Matter, %	0.80
Analyst	XS
Analysis Date	09.29.98
Batch ID	0929V
RCRA Metals (6010)	
Arsenic, mg/kg dw	1.6
Barium, mg/kg dw	7.4
Cadmium, mg/kg dw	0.063*J
Chromium, mg/kg dw	3.8
Lead, mg/kg dw	6.6
Selenium, mg/kg dw	<0.46
Silver, mg/kg dw	<0.17*J
Prep Date	10.06.98
Analyst	CLD
Analysis Date	10.07.98
Batch ID	1006C
Dilution Factor	1.0

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13238-13	BRPR-SS-IDW-01	09-25-98/1700

PARAMETER	13238-13
Mercury (7471)	
Mercury, mg/kg dw	0.012
Prep Date	10.07.98
Analyst	KW
Analysis Date	10.08.98
Batch ID	1007R
Dilution Factor	1.0
Total Halogens	
Total Halogens, mg/kg dw	240
Prep Date	10.05.98
Analyst	HL
Analysis Date	10.06.98
Batch ID	1006B
Dilution Factor	1.0
Percent Solids	**84**

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
13238-14	BRPR-SS-MW01-01 (SPLP)	09-24-98/1230
13238-15	BRPR-SS-MW04-01 (SPLP)	09-24-98/1030
13238-16	BRPR-SS-MW02-01 (SPLP)	09-24-98/1500
13238-17	BRPR-SS-IDW-01 (SPLP)	09-24-98/1700

PARAMETER	13238-14	13238-15	13238-16	13238-17
SPLP volatiles - ZHE				
Phases	1	1	1	1
% Solids	100 %	100 %	100 %	100 %
Prep Date	09.28.98	09.28.98	09.28.98	09.28.98
Analyst	WHE	WHE	WHE	WHE

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13238-15	BRPR-SS-MW04-01 (SPLP)	09-24-98/1030
13238-16	BRPR-SS-MW02-01 (SPLP)	09-24-98/1500
13238-17	BRPR-SS-IDW-01 (SPLP)	09-24-98/1700

PARAMETER	13238-14	13238-15	13238-16	13238-17
Volatiles by GC/MS (8260)				
Bromodichloromethane, ug/l	<1.0	<1.0	<1.0	<1.0
Bromoform, ug/l	<1.0	<1.0	<1.0	<1.0
Bromomethane, ug/l	<1.0	<1.0	<1.0	<1.0
Carbon tetrachloride, ug/l	<1.0	<1.0	<1.0	<1.0
Chlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0
Chloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
2-Chloroethylvinyl ether, ug/l	<10	<10	<10	<10
Chloroform, ug/l	<1.0	<1.0	<1.0	<1.0
Chloromethane, ug/l	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane, ug/l	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane, ug/l	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene, ug/l	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethylene, ug/l	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethylene, ug/l	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane, ug/l	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	<1.0

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LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
13238-14	BRPR-SS-MW01-01 (SPLP)	09-24-98/1230
13238-15	BRPR-SS-MW04-01 (SPLP)	09-24-98/1030
13238-16	BRPR-SS-MW02-01 (SPLP)	09-24-98/1500
13238-17	BRPR-SS-IDW-01 (SPLP)	09-24-98/1700

PARAMETER	13238-14	13238-15	13238-16	13238-17
Methylene chloride (Dichloromethane), ug/l	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene, ug/l	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
Trichloroethylene, ug/l	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane, ug/l	<1.0	<1.0	<1.0	<1.0
Vinyl chloride, ug/l	<1.0	<1.0	<1.0	<1.0
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0
Toluene, ug/l	<1.0	42	62	<1.0
Ethylbenzene, ug/l	<1.0	800	52	<1.0
Total Xylenes, ug/l	<2.0	3300	260	<2.0
Methyl tert-butyl ether (MTBE), ug/l	<10	<10	<10	<10
Surrogate - Dibromofluoromethane	110 %	108 %	107 %	109 %
Surrogate - Toluene-d8	105 %	102 %	106 %	105 %
Surrogate - 4-Bromofluorobenzene	140 %	92 %	96 %	94 %
Analyst	MTM	MTM	MTM	MTM
Analysis Date	10.08.98	10.08.98	10.08.98	10.08.98
Batch ID	1001M	1001M	1001M	1001M
Dilution Factor	20	20	20	20

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
13238-14	BRPR-SS-MWO1-01 (SPLP)	09-24-98/1230
13238-15	BRPR-SS-MW04-01 (SPLP)	09-24-98/1030
13238-16	BRPR-SS-MW02-01 (SPLP)	09-24-98/1500
13238-17	BRPR-SS-IDW-01 (SPLP)	09-24-98/1700

PARAMETER	13238-14	13238-15	13238-16	13238-17
SPLP non-volatile -				
Phases	1	1	1	1
% Solids	100 %	100 %	100 %	100 %
Prep Date	10.05.98	10.05.98	10.05.98	10.05.98
Analyst	BP	BP	BP	BP
Petroleum Range Organics (FL-PRO)				
Petroleum Hydrocarbons , mg/l	0.38	0.58	0.35	0.30
Surrogate, o-Terphenyl	68 %	73 %	64 %	84 %
Surrogate-C39	61 %	68 %	72 %	73 %
Prep Date	10.05.98	10.05.98	10.05.98	10.05.98
Analyst	BH	BH	BH	BH
Analysis Date	10.06.98	10.06.98	10.06.98	10.06.98
Batch ID	1005A	1005A	1005A	1005A
Dilution Factor	1.0	1.0	1.0	1.0

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13238-15	BRPR-SS-MW04-01 (SPLP)	09-24-98/1030
13238-16	BRPR-SS-MW02-01 (SPLP)	09-24-98/1500
13238-17	BRPR-SS-IDW-01 (SPLP)	09-24-98/1700

PARAMETER	13238-14	13238-15	13238-16	13238-17
Polynuclear Aromatics (8310)				
Acenaphthene, ug/l	<1.0	<10	<1.0	<1.0
Acenaphthylene, ug/l	<1.0	<10	<1.0	<1.0
Anthracene, ug/l	<0.20	1.6*J	<0.20	0.061*J
Benzo(a)anthracene, ug/l	<0.013*J	0.86*J	<0.013*J	0.033*J
Benzo(a)pyrene, ug/l	<0.20	<5.0	<0.20	<0.20
Benzo(b)fluoranthene, ug/l	<0.0046*J	0.26*J	<0.0046*J	<0.0046*J
Benzo(g,h,i)perylene, ug/l	<0.50	<5.0	<0.50	<0.50
Benzo(k)fluoranthene, ug/l	<0.20	0.15*J	<0.20	<0.20
Chrysene, ug/l	0.023*J	0.56*J	0.024*J	0.043*J
Dibenzo(a,h)anthracene, ug/l	<0.043*J	<0.43*J	<0.043*J	<0.043*J
Fluoranthene, ug/l	<0.50	22	<0.50	<0.043*J
Fluorene, ug/l	<0.50	<5.0	0.075*J	<0.50
Indeno(1,2,3-cd)pyrene, ug/l	<0.019*J	0.19*J	<0.019*J	<0.019*J
Naphthalene, ug/l	<1.0	<10	<1.0	<1.0
Phenanthrene, ug/l	<0.20	0.23*J	<0.20	0.085*J
Pyrene, ug/l	<0.50	18	0.076*J	0.52
2-Methylnaphthalene, ug/l	<1.0	2.6*J	<1.0	<1.0
1-Methylnaphthalene, ug/l	<1.0	2.9*J	<1.0	<1.0
Surrogate - Terphenyl - d14	109 %	181 %*F36	115 %	121 %
Prep Date	10.05.98	10.05.98	10.05.98	10.05.98
Analyst	RD	RD	DA	DA
Analysis Date	10.07.98	10.09.98	10.07.98	10.07.98
Batch ID	1005C	1005C	1005C	1005C
Dilution Factor	1.0	10	1.0	1.0

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Mr. Rick Ofsanko
Tetra Tech NUS, Inc.
794 South Military Drive
Deerfield Beach, FL 33442

Client PO. No.: 7867/P98645

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 154781014

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
13238-14	BRPR-SS-MW01-01 (SPLP)	09-24-98/1230
13238-15	BRPR-SS-MW04-01 (SPLP)	09-24-98/1030
13238-16	BRPR-SS-MW02-01 (SPLP)	09-24-98/1500
13238-17	BRPR-SS-IDW-01 (SPLP)	09-24-98/1700

PARAMETER	13238-14	13238-15	13238-16	13238-17
RCRA Metals (6010)				
Arsenic, mg/l	0.0026*J	<0.010	<0.010	0.0040*J
Barium, mg/l	0.0043*J	0.0024*J	0.0038*J	0.0025*J
Cadmium, mg/l	<0.0050	<0.0050	<0.0050	<0.0050
Chromium, mg/l	0.0035*J	0.0011*J	<0.010	<0.010
Lead, mg/l	0.0023*J	0.0029*J	0.0028*J	<0.0050
Selenium, mg/l	<0.010	<0.10	<0.010	<0.10
Silver, mg/l	<0.0016*J	<0.0016*J	<0.0016*J	<0.0016*J
Prep Date	10.07.98	10.07.98	10.07.98	10.07.98
Analyst	CLD	CLD	CLD	CLD
Analysis Date	10.08.98	10.08.98	10.08.98	10.08.98
Batch ID	1007I	1007I	1007I	1007I
Dilution Factor	1.0	1.0	1.0	1.0
Mercury (7471)				
Mercury, mg/l	<0.00020	0.0011	<0.00020	<0.00020
Prep Date	10.07.98	10.07.98	10.07.98	10.07.98
Analyst	KW	KW	KW	KW
Analysis Date	10.08.98	10.08.98	10.08.98	10.08.98
Batch ID	1007T	1007T	1007T	1007T
Dilution Factor	1.0	1.0	1.0	1.0

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LOG NO: T8-13238
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-18	Method Blank	
13238-19	Lab Control Standard Result	
13238-20	Lab Control Standard Duplicate Result	
13238-21	Expected Value, LCS/LCSD	
13238-22	Lab Control Standard % Recovery	

PARAMETER	13238-18	13238-19	13238-20	13238-21	13238-22
Volatiles by GC/MS (8260)					
Bromodichloromethane, ug/l	<1.0	---	---	---	---
Bromoform, ug/l	<1.0	---	---	---	---
Bromomethane, ug/l	<1.0	---	---	---	---
Carbon tetrachloride, ug/l	<1.0	---	---	---	---
Chlorobenzene, ug/l	<1.0	9.36	9.80	10	99 %
Chloroethane, ug/l	<1.0	---	---	---	---
2-Chloroethylvinyl ether, ug/l	<10	---	---	---	---
Chloroform, ug/l	<1.0	---	---	---	---
Chloromethane, ug/l	<1.0	---	---	---	---
Dibromochloromethane, ug/l	<1.0	---	---	---	---
1,2-Dichlorobenzene, ug/l	<1.0	---	---	---	---
1,3-Dichlorobenzene, ug/l	<1.0	---	---	---	---
1,4-Dichlorobenzene, ug/l	<1.0	---	---	---	---
Dichlorodifluoromethane, ug/l	<1.0	---	---	---	---
1,1-Dichloroethane, ug/l	<1.0	---	---	---	---
1,2-Dichloroethane, ug/l	<1.0	---	---	---	---
1,1-Dichloroethene, ug/l	<1.0	7.71	7.99	10	77 %
cis-1,2-Dichloroethylene, ug/l	<1.0	---	---	---	---
trans-1,2-Dichloroethylene, ug/l	<1.0	---	---	---	---
1,2-Dichloropropane, ug/l	<1.0	---	---	---	---
cis-1,3-Dichloropropene, ug/l	<0.36*J	---	---	---	---

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13238-19	Lab Control Standard Result	
13238-20	Lab Control Standard Duplicate Result	
13238-21	Expected Value, LCS/LCSD	
13238-22	Lab Control Standard % Recovery	

PARAMETER	13238-18	13238-19	13238-20	13238-21	13238-22
trans-1,3-Dichloropropene, ug/l	<0.36*J	---	---	---	---
Methylene chloride (Dichloromethane), ug/l	<5.0	---	---	---	---
1,1,2,2-Tetrachloroethane, ug/l	<0.52*J	---	---	---	---
Tetrachloroethene, ug/l	<1.0	---	---	---	---
1,1,1-Trichloroethane, ug/l	<1.0	---	---	---	---
1,1,2-Trichloroethane, ug/l	<1.0	---	---	---	---
Trichloroethylene, ug/l	<1.0	10.03	10.2	10	103 %
Trichlorofluoromethane, ug/l	<1.0	---	---	---	---
Vinyl chloride, ug/l	<1.0	---	---	---	---
Benzene, ug/l	<1.0	9.35	9.58	10	94 %
Toluene, ug/l	<1.0	9.67	9.97	10	97 %
Surrogate - Dibromofluoromethane	106 %	98 %	99 %	---	---
Surrogate - Toluene-d8	101 %	97 %	100 %	---	---
Surrogate - 4-Bromofluorobenzene	93 %	98 %	97 %	---	---
Analyst	MTM	MTM	MTM	---	MTM
Analysis Date	10.06.98	10.06.98	10.06.98	---	10.06.98
Batch ID	1001M	1001M	1001M	---	1001M
Dilution Factor	1.0	1.0	1.0	---	1.0

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13238-18	Method Blank	
13238-19	Lab Control Standard Result	
13238-20	Lab Control Standard Duplicate Result	
13238-21	Expected Value, LCS/LCSD	
13238-22	Lab Control Standard % Recovery	

PARAMETER	13238-18	13238-19	13238-20	13238-21	13238-22
Petroleum Range Organics (FL-PRO)					
Petroleum Hydrocarbons , mg/l	<0.30	1.8	1.7	2.7	67 %
Surrogate, o-Terphenyl	72 %	70 %	60 %	---	---
Surrogate-C39	45 %	45 %	55 %	---	---
Prep Date	10.01.98	10.01.98	10.01.98	---	10.01.98
Analyst	BH	BH	BH	---	BH
Analysis Date	10.05.98	10.05.98	10.05.98	---	10.05.98
Batch ID	1001A	1001A	1001A	---	1001A
Dilution Factor	1.0	1.0	1.0	---	1.0

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13238-19	Lab Control Standard Result	
13238-20	Lab Control Standard Duplicate Result	
13238-21	Expected Value, LCS/LCSD	
13238-22	Lab Control Standard % Recovery	

PARAMETER	13238-18	13238-19	13238-20	13238-21	13238-22
Polynuclear Aromatics (8310)					
Acenaphthene, ug/l	<1.0	3.85	4.28	5.00	77 %
Acenaphthylene, ug/l	<1.0	---	---	---	---
Anthracene, ug/l	<0.20	---	---	---	---
Benzo(a)anthracene, ug/l	<0.013*J	---	---	---	---
Benzo(a)pyrene, ug/l	<0.20	---	---	---	---
Benzo(b)fluoranthene, ug/l	<0.0046*J	---	---	---	---
Benzo(g,h,i)perylene, ug/l	<0.50	---	---	---	---
Benzo(k)fluoranthene, ug/l	<0.20	---	---	---	---
Chrysene, ug/l	<0.20	0.620	0.709	1.00	62 %
Dibenzo(a,h)anthracene, ug/l	<0.043*J	---	---	---	---
Fluoranthene, ug/l	<0.50	---	---	---	---
Fluorene, ug/l	<0.50	2.03	2.28	2.80	72 %
Indeno(1,2,3-cd)pyrene, ug/l	<0.019*J	---	---	---	---
Naphthalene, ug/l	<1.0	3.35	3.76	5.10	66 %
Phenanthrene, ug/l	<0.20	---	---	---	---
Pyrene, ug/l	<0.50	2.12	2.43	2.50	85 %
2-Methylnaphthalene, ug/l	<1.0	---	---	---	---
1-Methylnaphthalene, ug/l	<1.0	---	---	---	---
Surrogate - Terphenyl - d14	83 %	84 %	95 %	---	---
Prep Date	09.30.98	09.30.98	09.30.98	---	09.30.98
Analyst	RD	RD	RD	---	RD
Analysis Date	10.02.98	10.02.98	10.02.98	---	10.02.98
Batch ID	0930B	0930B	0930B	---	0930B

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REPORT OF RESULTS

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13238-19	Lab Control Standard Result	
13238-20	Lab Control Standard Duplicate Result	
13238-21	Expected Value, LCS/LCSD	
13238-22	Lab Control Standard % Recovery	

PARAMETER	13238-18	13238-19	13238-20	13238-21	13238-22
Ethylene dibromide (504)					
1,2-Dibromoethane (EDB) , ug/l	<0.020	0.284	0.310	0.250	114 %
Prep Date	09.30.98	09.30.98	09.30.98	---	09.30.98
Analyst	CA	CA	CA	---	CA
Analysis Date	09.30.98	09.30.98	09.30.98	---	09.30.98
Batch ID	0930FF	0930FF	0930FF	---	0930FF
Dilution Factor	1.0	1.0	1.0	---	1.0
Nitrate-N (353.2)					
Nitrate-N, mg/l	<0.050	0.43	0.43	0.50	86 %
Analyst	EDB	EDB	EDB	---	EDB
Analysis Date	09.28.98	09.28.98	09.28.98	---	09.28.98
Analysis Time	1645	1645	1645	---	1645
Batch ID	0928Q	0928Q	0928Q	---	0928Q
Dilution Factor	1.0	1.0	1.0	---	1.0
Sulfate as SO4 (375.4)					
Sulfate as SO4, mg/l	<5.0	28.9	29.9	30.0	96 %
Analyst	NR	NR	NR	---	NR
Analysis Date	09.28.98	09.28.98	09.28.98	---	09.28.98
Batch ID	0928S	0928S	0928S	---	0928S
Dilution Factor	1.0	1.0	1.0	---	1.0

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13238-19	Lab Control Standard Result	
13238-20	Lab Control Standard Duplicate Result	
13238-21	Expected Value, LCS/LCSD	
13238-22	Lab Control Standard % Recovery	

PARAMETER	13238-18	13238-19	13238-20	13238-21	13238-22
Lead (6010)					
Lead, mg/l	<0.0050	1.95	1.95	2.00	98 %
Prep Date	10.02.98	10.02.98	10.02.98	---	10.02.98
Analyst	CLD	CLD	CLD	---	CLD
Analysis Date	10.05.98	10.05.98	10.05.98	---	10.05.98
Batch ID	1002I	1002I	1002I	---	1002I
Dilution Factor	1.0	1.0	1.0	---	1.0
Dissolved Gases in Water					
Methane, mg/l	<47	260	280	230	113 %
Analyst	WS	WS	WS	---	WS
Analysis Date	10.04.98	10.04.98	10.04.98	---	10.04.98
Batch ID	1C1004	1C1004	1C1004	---	1C1004
Dilution Factor	1.0	1.0	1.0	---	1.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-23	Lab Control Standard Duplicate % Recovery	
13238-24	Precision (%RPD) of LCS/LCSD	
13238-25	LCS Accuracy Control Limit (%R)	
13238-26	LCS Precision Control Limit (Advisory) %RPD	
13238-27	Control Limit Source	

PARAMETER	13238-23	13238-24	13238-25	13238-26	13238-27
Volatiles by GC/MS (8260)					
Chlorobenzene, ug/l	98 %	4.2 %	60-127 %	<25 %	SL
1,1-Dichloroethene, ug/l	79 %	2.6 %	38-155 %	<25 %	SL
Trichloroethylene, ug/l	102 %	0.98 %	10-213 %	<40 %	SL
Benzene, ug/l	96 %	2.1 %	52-143 %	<31 %	SL
Toluene, ug/l	100 %	3.1 %	76-128 %	<25 %	SL
Surrogate - Dibromofluoromethane	---	---	64-142 %	---	---
Surrogate - Toluene-d8	---	---	67-134 %	---	---
Surrogate - 4-Bromofluorobenzene	---	---	67-132 %	---	---
Analyst	MTM	---	---	---	---
Analysis Date	10.06.98	---	---	---	---
Batch ID	1001M	---	---	---	---
Dilution Factor	1.0	---	---	---	---
Petroleum Range Organics (FL-PRO)					
Petroleum Hydrocarbons , mg/l	63 %	6.2 %	62-204 %	<25 %	SL
Prep Date	10.01.98	---	---	---	---
Analyst	BH	---	---	---	---
Analysis Date	10.05.98	---	---	---	---
Batch ID	1001A	---	---	---	---
Dilution Factor	1.0	---	---	---	---

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13238-23	Lab Control Standard Duplicate % Recovery	
13238-24	Precision (%RPD) of LCS/LCSD	
13238-25	LCS Accuracy Control Limit (%R)	
13238-26	LCS Precision Control Limit (Advisory) %RPD	
13238-27	Control Limit Source	

PARAMETER	13238-23	13238-24	13238-25	13238-26	13238-27
Polynuclear Aromatics (8310)					
Acenaphthene, %	86 %	11 %	44-162 %	<52 %	SL
Chrysene, %	71 %	14 %	10-199 %	<40 %	SL
Fluorene, %	81 %	12 %	10-142 %	<40 %	SL
Naphthalene, %	74 %	11 %	27-112 %	<40 %	SL
Pyrene, %	97 %	13 %	50-158 %	<43 %	SL
Surrogate - Terphenyl - d14	---	---	24-152 %	---	---
Prep Date	09.30.98	---	---	---	---
Analyst	RD	---	---	---	---
Analysis Date	10.02.98	---	---	---	---
Batch ID	0930B	---	---	---	---
Dilution Factor	1.0	---	---	---	---
Ethylene dibromide (504)					
1,2-Dibromoethane (EDB) , %	124 %	8.4 %	60-140 %	<40 %	SL
Prep Date	09.30.98	---	---	---	---
Analyst	CA	---	---	---	---
Analysis Date	09.30.98	---	---	---	---
Batch ID	0930FF	---	---	---	---
Dilution Factor	1.0	---	---	---	---

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13238-23	Lab Control Standard Duplicate % Recovery	
13238-24	Precision (%RPD) of LCS/LCSD	
13238-25	LCS Accuracy Control Limit (%R)	
13238-26	LCS Precision Control Limit (Advisory) %RPD	
13238-27	Control Limit Source	

PARAMETER	13238-23	13238-24	13238-25	13238-26	13238-27
Nitrate-N (353.2)					
Nitrate-N, %	85 %	1.2 %	80-120 %	<30 %	SL
Analyst	EDB	---	---	---	---
Analysis Date	09.28.98	---	---	---	---
Analysis Time	1645	---	---	---	---
Batch ID	0928Q	---	---	---	---
Dilution Factor	1.0	---	---	---	---
Sulfate as SO4 (375.4)					
Sulfate as SO4, %	100 %	4.1 %	75-125 %	<30 %	SL
Analyst	NR	---	---	---	---
Analysis Date	09.28.98	---	---	---	---
Batch ID	0928S	---	---	---	---
Dilution Factor	1.0	---	---	---	---
Lead (6010)					
Lead, mg/l	98 %	0 %	75-125 %	<20 %	SL
Prep Date	10.02.98	---	---	---	---
Analyst	CLD	---	---	---	---
Analysis Date	10.05.98	---	---	---	---
Batch ID	1002I	---	---	---	---
Dilution Factor	1.0	---	---	---	---

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13238-23	**Lab Control Standard Duplicate % Recovery**	
13238-24	**Precision (%RPD) of LCS/LCSD**	
13238-25	LCS Accuracy Control Limit (%R)	
13238-26	LCS Precision Control Limit (Advisory) %RPD	
13238-27	Control Limit Source	

PARAMETER	13238-23	13238-24	13238-25	13238-26	13238-27
Dissolved Gases in Water					
Methane, %	122 %	7.7 %	75-125 %	<30 %	SL
Analyst	WS	---	---	---	---
Analysis Date	10.04.98	---	---	---	---
Batch ID	1C1004	---	---	---	---
Dilution Factor	1.0	---	---	---	---

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
13238-28	Method Blank	
13238-29	Lab Control Standard Result	
13238-30	Lab Control Standard Duplicate Result	
13238-31	Expected Value, LCS/LCSD	
13238-32	Lab Control Standard % Recovery	

PARAMETER	13238-28	13238-29	13238-30	13238-31	13238-32
Volatiles by GC/MS (8260)					
Bromodichloromethane, ug/kg dw	<5.0	---	---	---	---
Bromoform, ug/kg dw	<5.0	---	---	---	---
Bromomethane, ug/kg dw	<10	---	---	---	---
Carbon tetrachloride, ug/kg dw	<5.0	---	---	---	---
Chlorobenzene, ug/kg dw	<5.0	62.4	53.2	50	125 %
Chloroethane, ug/kg dw	<10	---	---	---	---
2-Chloroethylvinyl ether, ug/kg dw	<50	---	---	---	---
Chloroform, ug/kg dw	<5.0	---	---	---	---
Chloromethane, ug/kg dw	<10	---	---	---	---
Dibromochloromethane, ug/kg dw	<5.0	---	---	---	---
1,2-Dichlorobenzene, ug/kg dw	<5.0	---	---	---	---
1,3-Dichlorobenzene, ug/kg dw	<5.0	---	---	---	---
1,4-Dichlorobenzene, ug/kg dw	<5.0	---	---	---	---
Dichlorodifluoromethane, ug/kg dw	<5.0	---	---	---	---
1,1-Dichloroethane, ug/kg dw	<5.0	---	---	---	---
1,2-Dichloroethane, ug/kg dw	<5.0	---	---	---	---
1,1-Dichloroethene, ug/kg dw	<5.0	73.8	64.6	50	148 %
cis-1,2-Dichloroethylene, ug/kg dw	<5.0	---	---	---	---
trans-1,2-Dichloroethylene, ug/kg dw	<5.0	---	---	---	---
1,2-Dichloropropane, ug/kg dw	<5.0	---	---	---	---

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Mr. Rick Ofsanko
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794 South Military Drive
Deerfield Beach, FL 33442

Client PO. No.: 7867/P98645

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 154781014

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
13238-28	Method Blank	
13238-29	Lab Control Standard Result	
13238-30	Lab Control Standard Duplicate Result	
13238-31	Expected Value, LCS/LCSD	
13238-32	Lab Control Standard % Recovery	

PARAMETER	13238-28	13238-29	13238-30	13238-31	13238-32
cis-1,3-Dichloropropene, ug/kg dw	<5.0	---	---	---	---
trans-1,3-Dichloropropene, ug/kg dw	<5.0	---	---	---	---
Methylene chloride (Dichloromethane), ug/kg dw	<5.0	---	---	---	---
1,1,2,2-Tetrachloroethane, ug/kg dw	<5.0	---	---	---	---
Tetrachloroethene, ug/kg dw	<5.0	---	---	---	---
1,1,1-Trichloroethane, ug/kg dw	<5.0	---	---	---	---
1,1,2-Trichloroethane, ug/kg dw	<5.0	---	---	---	---
Trichloroethylene, ug/kg dw	<5.0	67.1	54.6	50	134 %
Trichlorofluoromethane, ug/kg dw	<5.0	---	---	---	---
Vinyl chloride, ug/kg dw	<0.98*J	---	---	---	---
Benzene, ug/kg dw	<5.0	56.9	46.3	50	114 %
Toluene, ug/kg dw	<5.0	53.9	44.4	50	108 %
Ethylbenzene, ug/kg dw	<5.0	---	---	---	---
Total Xylenes, ug/kg dw	<10	---	---	---	---
Methyl tert-butyl ether (MTBE), ug/kg dw	<3.1*J	---	---	---	---
Surrogate - Dibromofluoromethane	103 %	104 %	111 %	---	---
Surrogate - Toluene-d8	104 %	99 %	104 %	---	---
Surrogate - 4-Bromofluorobenzene	95 %	96 %	108 %	---	---
Analyst	WHE	WHE	WHE	---	WHE
Analysis Date	10.07.98	10.01.98	10.01.98	---	10.01.98
Batch ID	0921S	0921S	0921S	---	0921S
Dilution Factor	1.0	1.0	1.0	---	1.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
13238-28	**Method Blank**	
13238-29	**Lab Control Standard Result**	
13238-30	Lab Control Standard Duplicate Result	
13238-31	Expected Value, LCS/LCSD	
13238-32	Lab Control Standard % Recovery	

PARAMETER	13238-28	13238-29	13238-30	13238-31	13238-32
Petroleum Range Organics (FL-PRO)					
Petroleum Hydrocarbons , mg/kg dw	<10	140	130	95	147 %
Surrogate, o-Terphenyl	60 %	110 %	66 %	---	---
Surrogate-C39	56 %	97 %	84 %	---	---
Prep Date	09.28.98	09.28.98	09.28.98	---	09.28.98
Analyst	BH	BH	BH	---	BH
Analysis Date	10.01.98	10.01.98	10.02.98	---	10.02.98
Batch ID	0928H	0928H	0928H	---	0928H
Dilution Factor	1.0	1.0	1.0	---	1.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
13238-28	Method Blank	
13238-29	Lab Control Standard Result	
13238-30	Lab Control Standard Duplicate Result	
13238-31	Expected Value, LCS/LCSD	
13238-32	Lab Control Standard % Recovery	

PARAMETER	13238-28	13238-29	13238-30	13238-31	13238-32
Polynuclear Aromatics (8310)					
Acenaphthene, ug/kg dw	<14*J	85.7	82.4	167	51 %
Acenaphthylene, ug/kg dw	<5.1*J	---	---	---	---
Anthracene, ug/kg dw	<4.0	---	---	---	---
Benzo(a)anthracene, ug/kg dw	<4.0	---	---	---	---
Benzo(a)pyrene, ug/kg dw	<4.0	---	---	---	---
Benzo(b)fluoranthene, ug/kg dw	<4.0	---	---	---	---
Benzo(g,h,i)perylene, ug/kg dw	<10	---	---	---	---
Benzo(k)fluoranthene, ug/kg dw	<4.0	---	---	---	---
Chrysene, ug/kg dw	<4.0	19.6	19.8	33.3	59 %
Dibenzo(a,h)anthracene, ug/kg dw	<0.87*J	---	---	---	---
Fluoranthene, ug/kg dw	<10	---	---	---	---
Fluorene, ug/kg dw	<10	50.1	49.1	93.3	54 %
Indeno(1,2,3-cd)pyrene, ug/kg dw	<10	---	---	---	---
Naphthalene, ug/kg dw	<20	84.0	80.4	170	49 %
Phenanthrene, ug/kg dw	<4.0	---	---	---	---
Pyrene, ug/kg dw	<10	66.3	68.6	83.3	80 %
2-Methylnaphthalene, ug/kg dw	<20	---	---	---	---
1-Methylnaphthalene, ug/kg dw	<20	---	---	---	---
Surrogate - Terphenyl - d14	74 %	69 %	73 %	---	---
Prep Date	09.29.98	09.29.98	09.29.98	---	09.29.98
Analyst	DA	DA	DA	---	DA
Analysis Date	10.05.98	10.05.98	10.05.98	---	10.05.98
Batch ID	0928J	0928J	0928J	---	0928J
Dilution Factor	1.0	1.0	1.0	---	1.0

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Code: 154781014

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
13238-28	Method Blank	
13238-29	Lab Control Standard Result	
13238-30	Lab Control Standard Duplicate Result	
13238-31	Expected Value, LCS/LCSD	
13238-32	Lab Control Standard % Recovery	

PARAMETER	13238-28	13238-29	13238-30	13238-31	13238-32
RCRA Metals (6010)					
Arsenic, mg/kg dw	<0.39	188	190	200	94 %
Barium, mg/kg dw	<0.42	199	202	200	100 %
Cadmium, mg/kg dw	0.087*J	209	211	200	104 %
Chromium, mg/kg dw	<0.18	210	210	200	105 %
Lead, mg/kg dw	0.36*J	195	196	200	98 %
Selenium, mg/kg dw	<0.46	152	154	200	76 %
Silver, mg/kg dw	<0.14	196	197	200	98 %
Prep Date	10.06.98	10.06.98	10.06.98	---	10.06.98
Analyst	CLD	CLD	CLD	---	CLD
Analysis Date	10.08.98	10.07.98	10.07.98	---	10.07.98
Batch ID	1006C	1006C	1006C	---	1006C
Dilution Factor	1.0	1.0	1.0	---	1.0
Mercury (7471)					
Mercury, mg/kg dw	<0.020	0.0550	0.0570	0.050	110 %
Prep Date	10.07.98	10.07.98	10.07.98	---	10.07.98
Analyst	KW	KW	KW	---	KW
Analysis Date	10.08.98	10.08.98	10.08.98	---	10.08.98
Batch ID	1007R	1007R	1007R		1007R
Dilution Factor	1.0	1.0	1.0	---	1.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
13238-28	Method Blank	
13238-29	Lab Control Standard Result	
13238-30	Lab Control Standard Duplicate Result	
13238-31	Expected Value, LCS/LCSD	
13238-32	Lab Control Standard % Recovery	

PARAMETER	13238-28	13238-29	13238-30	13238-31	13238-32
Total Halogens					
Total Halogens, mg/kg dw	<200	7000	7200	9989	70 %
Prep Date	10.05.98	10.05.98	10.05.98	---	10.05.98
Analyst	HL	HL	HL	---	HL
Analysis Date	10.06.98	10.06.98	10.07.98	---	10.07.98
Batch ID	1006B	1006B	1006B	---	1006B
Dilution Factor	1.0	1.0	1.0	---	1.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
13238-33	Lab Control Standard Duplicate % Recovery	
13238-34	Precision (%RPD) of LCS/LCSD	
13238-35	LCS Accuracy Control Limit (%R)	
13238-36	LCS Precision Control Limit (Advisory) %RPD	
13238-37	Control Limit Source	

PARAMETER	13238-33	13238-34	13238-35	13238-36	13238-37
Volatiles by GC/MS (8260)					
Chlorobenzene, ug/kg dw	106 %	16 %	56-152 %	<25 %	SL
1,1-Dichloroethene, ug/kg dw	129 %	13 %	44-157 %	<23 %	SL
Trichloroethylene, ug/kg dw	109 %	21 %	41-134 %	<25 %	SL
Benzene, ug/kg dw	93 %	20 %	64-144 %	<25 %	SL
Toluene, ug/kg dw	89 %	19 %	67-142 %	<25 %	SL
Surrogate - Dibromofluoromethane	---	---	66-148 %	---	---
Surrogate - Toluene-d8	---	---	58-148 %	---	---
Surrogate - 4-Bromofluorobenzene	---	---	70-136 %	---	---
Analyst	WHE	---	---	---	---
Analysis Date	10.01.98	---	---	---	---
Batch ID	0921S	---	---	---	---
Dilution Factor	1.0	---	---	---	---
Petroleum Range Organics (FL-PRO)					
Petroleum Hydrocarbons , %	137 %	6.9 %	62-204 %	<25 %	SL
Prep Date	09.28.98	---	---	---	---
Analyst	BH	---	---	---	---
Analysis Date	10.02.98	---	---	---	---
Batch ID	0928H	---	---	---	---
Dilution Factor	1.0	---	---	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
13238-33	Lab Control Standard Duplicate % Recovery	
13238-34	Precision (%RPD) of LCS/LCSD	
13238-35	LCS Accuracy Control Limit (%R)	
13238-36	LCS Precision Control Limit (Advisory) %RPD	
13238-37	Control Limit Source	

PARAMETER	13238-33	13238-34	13238-35	13238-36	13238-37
Polynuclear Aromatics (8310)					
Acenaphthene, ug/kg dw	49 %	4.0 %	11-144 %	<35 %	SL
Chrysene, ug/kg dw	59 %	0 %	10-199 %	<40 %	SL
Fluorene, ug/kg dw	53 %	1.9 %	10-142 %	<40 %	SL
Naphthalene, ug/kg dw	47 %	4.2 %	31-159 %	<34 %	SL
Pyrene, ug/kg dw	82 %	2.5 %	49-156 %	<28 %	SL
Prep Date	09.29.98	---	---	---	---
Analyst	DA	---	---	---	---
Analysis Date	10.05.98	---	---	---	---
Batch ID	0928J	---	---	---	---
Dilution Factor	1.0	---	---	---	---
RCRA Metals (6010)					
Arsenic, mg/kg dw	95 %	1.1 %	75-125 %	<20 %	SL
Barium, mg/kg dw	101 %	1.0 %	75-125 %	<20 %	SL
Cadmium, mg/kg dw	106 %	1.9 %	75-125 %	<20 %	SL
Chromium, mg/kg dw	105 %	0 %	75-125 %	<20 %	SL
Lead, mg/kg dw	98 %	0 %	75-125 %	<20 %	SL
Selenium, mg/kg dw	77 %	1.3 %	75-125 %	<20 %	SL
Silver, mg/kg dw	98 %	0 %	75-125 %	<20 %	SL
Prep Date	10.06.98	---	---	---	---
Analyst	CLD	---		---	---
Analysis Date	10.07.98	---	---	---	---
Batch ID	1006C	---	---	---	---
Dilution Factor	1.0	---	---	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
13238-33	Lab Control Standard Duplicate % Recovery	
13238-34	Precision (%RPD) of LCS/LCSD	
13238-35	LCS Accuracy Control Limit (%R)	
13238-36	LCS Precision Control Limit (Advisory) %RPD	
13238-37	Control Limit Source	

PARAMETER	13238-33	13238-34	13238-35	13238-36	13238-37
Mercury (7471)					
Mercury, mg/kg dw	114 %	3.6 %	80-120 %	<20 %	SL
Prep Date	10.07.98	---	---	---	---
Analyst	KW	---	---	---	---
Analysis Date	10.08.98	---	---	---	---
Batch ID	1007R	---	---	---	---
Dilution Factor	1.0	---	---	---	---
Total Halogens					
Total Halogens, %	72 %	2.8 %	70-130 %	<40 %	SL
Prep Date	10.05.98	---	---	---	---
Analyst	HL	---	---	---	---
Analysis Date	10.07.98	---	---	---	---
Batch ID	1006B	---	---	---	---
Dilution Factor	1.0	---	---	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
13238-38	Method Blank #2
13238-39	Lab Control Standard #2 Result
13238-40	Lab Control Standard Duplicate #2 Result
13238-41	Expected Value, LCS/LCSD
13238-42	Lab Control Standard #2 % Recovery

PARAMETER	13238-38	13238-39	13238-40	13238-41	13238-42
Dissolved Gases in Water					
Methane, mg/l	<0.19	0.83	1.1	0.93	89 %
Analyst	WS	WS	WS	---	WS
Analysis Date	10.01.98	10.01.98	10.01.98	---	10.01.98
Batch ID	1C1001	1C1001	1C1001	---	1C1001
Dilution Factor	1.0	1.0	1.0	---	1.0
Sulfate as SO4 (375.4)					
Sulfate as SO4, mg/l	<5.0	33.7	34.5	30	112 %
Analyst	CB	CB	CB	---	CB
Analysis Date	10.08.98	10.08.98	10.08.98	---	10.08.98
Batch ID	1008S	1008S	1008S	---	1008S
Dilution Factor	1.0	1.0	1.0	---	1.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
13238-43	Lab Control Standard Duplicate % Recovery
13238-44	Precision (%RPD) of LCS/LCSD

PARAMETER	13238-43	13238-44
Dissolved Gases in Water		
Methane, %	118 %	28 %
Analyst	WS	---
Analysis Date	10.01.98	---
Batch ID	1C1001	---
Dilution Factor	1.0	---
Sulfate as SO4 (375.4)		
Sulfate as SO4, %	115 %	2.6 %
Analyst	CB	---
Analysis Date	10.08.98	---
Batch ID	1008S	---
Dilution Factor	1.0	---

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Client PO. No.: 7867-P98645

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 114181015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
TTN01-1	Method Detection Limit (MDL)	
TTN01-2	Reporting Limit (RL)	

PARAMETER	TTN01-1	TTN01-2
Volatiles by GC/MS (8260)		
Bromodichloromethane, ug/l	0.33	1.0
Bromoform, ug/l	0.38	5.0
Bromomethane, ug/l	0.62	1.0
Carbon tetrachloride, ug/l	0.31	1.0
Chlorobenzene, ug/l	0.36	1.0
Chloroethane, ug/l	0.42	1.0
2-Chloroethylvinyl ether, ug/l	1.8	10
Chloroform, ug/l	0.39	1.0
Chloromethane, ug/l	0.47	1.0
Dibromochloromethane, ug/l	0.34	1.0
1,2-Dichlorobenzene, ug/l	0.35	1.0
1,3-Dichlorobenzene, ug/l	0.38	1.0
1,4-Dichlorobenzene, ug/l	0.34	1.0
Dichlorodifluoromethane, ug/l	0.42	1.0
1,1-Dichloroethane, ug/l	0.43	1.0
1,2-Dichloroethane, ug/l	0.40	1.0
1,1-Dichloroethene, ug/l	0.61	1.0
cis-1,2-Dichloroethylene, ug/l	0.50	1.0
trans-1,2-Dichloroethylene, ug/l	0.63	1.0
1,2-Dichloropropane, ug/l	0.42	1.0
cis-1,3-Dichloropropene, ug/l	0.36	0.36
trans-1,3-Dichloropropene, ug/l	0.36	0.36
Methylene chloride (Dichloromethane), ug/l	0.36	5.0
1,1,2,2-Tetrachloroethane, ug/l	0.52	0.52

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Sampled By: AW/TN
Code: 114181015

REPORT OF RESULTS

; NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
N01-1	Method Detection Limit (MDL)	
~T01-2	Reporting Limit (RL)	

RAMETER				TTN01-1	TTN01-2	
trachloroethene, ug/l				0.46	1.0	
1,1-Trichloroethane, ug/l				0.32	1.0	
1,2-Trichloroethane, ug/l				0.41	1.0	
ıchloroethylene, ug/l				0.38	1.0	
ichlorofluoromethane, ug/l				0.58	1.0	
nyl chloride, ug/l				0.58	1.0	
nzene, ug/l				0.33	1.0	
uene, ug/l				0.33	1.0	
ıylbenzene, ug/l				0.37	1.0	
tal Xylenes, ug/l				0.74	2.0	
hyl tert-butyl ether (MTBE), ug/l				0.85	10	

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LOG NO: T8-TTN01
Received: 26 SEP 98
Reported: 14 OCT 98

Mr. Rick Ofsanko
Tetra Tech NUS, Inc.
794 South Military Drive
Deerfield Beach, FL 33442

Client PO. No.: 7867-P98645

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 114181015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
TTN01-1	Method Detection Limit (MDL)	
TTN01-2	Reporting Limit (RL)	

PARAMETER	TTN01-1	TTN01-2
Polynuclear Aromatics (8310)		
Acenaphthene, ug/l	0.38	1.0
Acenaphthylene, ug/l	0.17	1.0
Anthracene, ug/l	0.0060	0.20
Benzo(a)anthracene, ug/l	0.013	0.013
Benzo(a)pyrene, ug/l	0.062	0.20
Benzo(b)fluoranthene, ug/l	0.0046	0.0046
Benzo(g,h,i)perylene, ug/l	0.035	0.50
Benzo(k)fluoranthene, ug/l	0.0056	0.20
Chrysene, ug/l	0.012	0.20
Dibenzo(a,h)anthracene, ug/l	0.043	0.043
Fluoranthene, ug/l	0.014	0.50
Fluorene, ug/l	0.080	0.50
Indeno(1,2,3-cd)pyrene, ug/l	0.019	0.019
Naphthalene, ug/l	0.15	1.0
Phenanthrene, ug/l	0.015	0.20
Pyrene, ug/l	0.035	0.50
2-Methylnaphthalene, ug/l	0.16	1.0
1-Methylnaphthalene, ug/l	0.15	1.0
Petroleum Range Organics (FL-PRO)		
Petroleum Hydrocarbons , mg/l	0.10	0.30
Ethylene dibromide (504)		
1,2-Dibromoethane (EDB) , ug/l	0.0057	0.020
Nitrate-N (353.2)		
Nitrate-N, mg/l	0.0040	0.050
Sulfate as SO4 (375.4)		
Sulfate as SO4, mg/l	1.4	5.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
TTN01-1	Method Detection Limit (MDL)	
TTN01-2	Reporting Limit (RL)	

PARAMETER	TTN01-1	TTN01-2
RCRA Metals (6010)		
Arsenic, mg/l	0.0024	0.010
Barium, mg/l	0.00041	0.010
Cadmium, mg/l	0.00035	0.0050
Chromium, mg/l	0.00051	0.010
Selenium, mg/l	0.0022	0.0050
Silver, mg/l	0.0016	0.010
Lead (6010)		
Lead, mg/l	0.0012	0.0050
Mercury (7470)		
Mercury, mg/l	0.000056	0.00020
Dissolved Gases in Water		
Methane, mg/l	3.0/0.040	47/0.19

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Code: 114181015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
TTN01-3	Method Detection Limit (MDL)	
TTN01-4	Reporting Limit (RL)	

PARAMETER	TTN01-3	TTN01-4
Volatiles by GC/MS (8260)		
Bromodichloromethane, ug/kg dw	0.34	5.0
Bromoform, ug/kg dw	0.44	5.0
Bromomethane, ug/kg dw	2.0	10
Carbon tetrachloride, ug/kg dw	0.47	5.0
Chlorobenzene, ug/kg dw	0.58	5.0
Chloroethane, ug/kg dw	1.3	10
2-Chloroethylvinyl ether, ug/kg dw	2.9	50
Chloroform, ug/kg dw	0.26	5.0
Chloromethane, ug/kg dw	1.2	10
Dibromochloromethane, ug/kg dw	0.28	5.0
1,2-Dichlorobenzene, ug/kg dw	0.16	5.0
1,3-Dichlorobenzene, ug/kg dw	0.57	5.0
1,4-Dichlorobenzene, ug/kg dw	1.0	5.0
Dichlorodifluoromethane, ug/kg dw	0.96	5.0
1,1-Dichloroethane, ug/kg dw	0.28	5.0
1,2-Dichloroethane, ug/kg dw	1.0	5.0
1,1-Dichloroethene, ug/kg dw	0.77	5.0
cis-1,2-Dichloroethylene, ug/kg dw	0.31	5.0
trans-1,2-Dichloroethylene, ug/kg dw	0.57	5.0
1,2-Dichloropropane, ug/kg dw	1.0	5.0
cis-1,3-Dichloropropene, ug/kg dw	0.49	5.0
trans-1,3-Dichloropropene, ug/kg dw	0.65	5.0
Methylene chloride (Dichloromethane), ug/kg dw	0.63	5.0
1,1,2,2-Tetrachloroethane, ug/kg dw	0.80	5.0

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Code: 114181015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
TTN01-3	Method Detection Limit (MDL)	
TTN01-4	Reporting Limit (RL)	

PARAMETER	TTN01-3	TTN01-4
Tetrachloroethene, ug/kg dw	0.44	5.0
1,1,1-Trichloroethane, ug/kg dw	0.98	5.0
1,1,2-Trichloroethane, ug/kg dw	0.65	5.0
Trichloroethylene, ug/kg dw	0.72	5.0
Trichlorofluoromethane, ug/kg dw	0.40	5.0
Vinyl chloride, ug/kg dw	0.98	0.98
Benzene, ug/kg dw	0.41	5.0
Toluene, ug/kg dw	0.48	5.0
Ethylbenzene, ug/kg dw	0.55	5.0
Total Xylenes, ug/kg dw	1.5	10
Methyl tert-butyl ether (MTBE), ug/kg dw	3.1	3.1

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
TTN01-3	Method Detection Limit (MDL)	
TTN01-4	Reporting Limit (RL)	

PARAMETER	TTN01-3	TTN01-4
Polynuclear Aromatics (8310)		
Acenaphthene, ug/kg dw	14	14
Acenaphthylene, ug/kg dw	5.1	5.1
Anthracene, ug/kg dw	0.23	4.0
Benzo(a)anthracene, ug/kg dw	0.27	4.0
Benzo(a)pyrene, ug/kg dw	0.35	4.0
Benzo(b)fluoranthene, ug/kg dw	0.15	4.0
Benzo(g,h,i)perylene, ug/kg dw	0.68	10
Benzo(k)fluoranthene, ug/kg dw	0.12	4.0
Chrysene, ug/kg dw	0.28	4.0
Dibenzo(a,h)anthracene, ug/kg dw	0.87	0.87
Fluoranthene, ug/kg dw	0.47	10
Fluorene, ug/kg dw	1.4	10
Indeno(1,2,3-cd)pyrene, ug/kg dw	0.25	10
Naphthalene, ug/kg dw	5.3	20
Phenanthrene, ug/kg dw	0.50	4.0
Pyrene, ug/kg dw	0.93	10
2-Methylnaphthalene, ug/kg dw	5.9	20
1-Methylnaphthalene, ug/kg dw	6.2	20
Petroleum Range Organics (FL-PRO)		
Petroleum Hydrocarbons , mg/kg	4	10

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LOG NO: T8-TTN01
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Client PO. No.: 7867-P98645

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 114881015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
TTN01-3	Method Detection Limit (MDL)	
TTN01-4	Reporting Limit (RL)	

PARAMETER	TTN01-3	TTN01-4
RCRA Metals (6010)		
Arsenic, mg/kg dw	0.39	1.0
Barium, mg/kg dw	0.42	1.0
Cadmium, mg/kg dw	0.056	0.50
Chromium, mg/kg dw	0.18	1.0
Lead, mg/kg dw	0.20	0.50
Selenium, mg/kg dw	0.46	1.0
Silver, mg/kg dw	0.14	0.14
Lead (6010)		
Lead, mg/kg dw	0.20	0.50
Mercury (7471)		
Mercury, mg/kg dw	0.0020	0.020
Total Halogens		
Total Halogens, mg/l	---	200

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Client PO. No.: 7867-P98645

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
TTN01-5	Instrument Detection Limit	

PARAMETER	TTN01-5
RCRA Metals (6010)	
Arsenic, mg/l	0.0024
Barium, mg/l	0.00078
Cadmium, mg/l	0.00045
Chromium, mg/l	0.0014
Lead, mg/l	0.0014
Selenium, mg/l	0.0033
Silver, mg/l	0.0012
Lead (6010)	
Lead, mg/l	0.0014
Mercury (7470)	
Mercury, mg/l	0.00010

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Client PO. No.: 7867-P98645

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 114681015

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
TTN01-6	Instrument Detection Limit	

PARAMETER	TTN01-6
RCRA Metals (6010)	
Arsenic, mg/kg dw	0.24
Barium, mg/kg dw	0.078
Cadmium, mg/kg dw	0.045
Chromium, mg/kg dw	0.14
Lead, mg/kg dw	0.14
Selenium, mg/kg dw	0.33
Silver, mg/kg dw	0.12
Lead (6010)	
Lead, mg/kg dw	0.14
Mercury (7471)	
Mercury, mg/kg dw	0.010

Method: EPA 40 CFR Part 136
Method: EPA SW-846
Florida Dept. of Health Certification No.: E81005
FDEP CompQAP No.: 890142G

Laura B. Snead

Laura B. Snead, Project Manager

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2846 Industrial Plaza Drive (32301) • P.O. Box 13056 • Tallahassee, FL 32317-3056 • (850) 878-3994 • Fax (850) 878-9504

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Client PO. No.: 7867/P98645

Mr. Rick Ofsanko
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794 South Military Drive
Deerfield Beach, FL 33442

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 11348129

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-1	BRPR-GW-DMW1-01	09-25-98/1430
13238-2	BRPR-GW-MW03-01	09-25-98/1300
13238-3	BRPR-GW-MW01-01	09-25-98/1515
13238-4	BRPR-GW-DUP01-01	09-25-98
13238-5	BRPR-DI-RB01-01	09-25-98/1230

PARAMETER	13238-1	13238-2	13238-3	13238-4	13238-5
trans-1,3-Dichloropropene, ug/l	<0.36*J	<0.36*J	<0.36*J	<0.36*J	<0.36*J
Isopropylbenzene, ug/l	1.9	<1.0	81	2.2	<1.0
Methylene chloride (Dichloromethane), ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane, ug/l	<0.52*J	<0.52*J	<0.52*J	<0.52*J	<0.52*J
Tetrachloroethene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethylene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl chloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene, ug/l	<1.0	<1.0	1.8	<1.0	<1.0
Toluene, ug/l	<1.0	<1.0	1.1	<1.0	<1.0
Ethylbenzene, ug/l	<1.0	<1.0	1.9	<1.0	<1.0
Total Xylenes, ug/l	<2.0	<2.0	<2.0	<2.0	<2.0
Methyl tert-butyl ether (MTBE), ug/l	<10	<10	<10	<10	<10
Surrogate - Dibromofluoromethane	109 %	104 %	108 %	102 %	111 %
Surrogate - Toluene-d8	103 %	96 %	105 %	101 %	108 %
Surrogate - 4-Bromofluorobenzene	93 %	92 %	95 %	90 %	96 %
Analyst	MTM	MTM	MTM	MTM	MTM
Analysis Date	10.06.98	10.09.98	10.08.98	10.06.98	10.06.98
Batch ID	1001M	1001M	1001M	1001M	1001M
Dilution Factor	1.0	1.0	1.0	1.0	1.0

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Deerfield Beach, FL 33442

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 11348129

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-6	BRPR-GW-IDW1-01	09-25-98/1825

PARAMETER	13238-6
Volatiles by GC/MS (8260)	
Bromodichloromethane, ug/l	<1.0
Bromoform, ug/l	<1.0
Bromomethane, ug/l	<1.0
Carbon tetrachloride, ug/l	<1.0
Chlorobenzene, ug/l	<1.0
Chloroethane, ug/l	<1.0
2-Chloroethylvinyl ether, ug/l	<10
Chloroform, ug/l	<1.0
Chloromethane, ug/l	<1.0
Dibromochloromethane, ug/l	<1.0
1,2-Dichlorobenzene, ug/l	<1.0
1,3-Dichlorobenzene, ug/l	<1.0
1,4-Dichlorobenzene, ug/l	<1.0
Dichlorodifluoromethane, ug/l	<1.0
1,1-Dichloroethane, ug/l	<1.0
1,2-Dichloroethane, ug/l	<1.0
1,1-Dichloroethene, ug/l	<1.0
cis-1,2-Dichloroethylene, ug/l	<1.0
trans-1,2-Dichloroethylene, ug/l	<1.0
1,2-Dichloropropane, ug/l	<1.0
cis-1,3-Dichloropropene, ug/l	<0.36*J
trans-1,3-Dichloropropene, ug/l	<0.36*J
Isopropylbenzene, ug/l	12
Methylene chloride (Dichloromethane), ug/l	<5.0
1,1,2,2-Tetrachloroethane, ug/l	<0.52*J

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-7	BRPR-GW-MW05-01	09-25-98/1230
13238-8	BRPR-GW-MW04-01	09-25-98/1500
13238-9	BRPR-GW-MW02-01	09-25-98/1600

PARAMETER	13238-7	13238-8	13238-9
Volatiles by GC/MS (8260)			
Bromodichloromethane, ug/l	<1.0	<1.0	<1.0
Bromoform, ug/l	<1.0	<1.0	<1.0
Bromomethane, ug/l	<1.0	<1.0	<1.0
Carbon tetrachloride, ug/l	<1.0	<1.0	<1.0
Chlorobenzene, ug/l	<1.0	<1.0	<1.0
Chloroethane, ug/l	<1.0	<1.0	<1.0
2-Chloroethylvinyl ether, ug/l	<10	<10	<10
Chloroform, ug/l	<1.0	1.4	<1.0
Chloromethane, ug/l	<1.0	<1.0	<1.0
Dibromochloromethane, ug/l	<1.0	<1.0	<1.0
1,2-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0
1,3-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0
1,4-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0
Dichlorodifluoromethane, ug/l	<1.0	<1.0	<1.0
1,1-Dichloroethane, ug/l	<1.0	<1.0	<1.0
1,2-Dichloroethane, ug/l	<1.0	<1.0	<1.0
1,1-Dichloroethene, ug/l	<1.0	<1.0	<1.0
cis-1,2-Dichloroethylene, ug/l	<1.0	<1.0	<1.0
trans-1,2-Dichloroethylene, ug/l	<1.0	<1.0	<1.0
1,2-Dichloropropane, ug/l	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene, ug/l	<0.36*J	<0.36*J	<0.36*J
trans-1,3-Dichloropropene, ug/l	<0.36*J	<0.36*J	<0.36*J
Isopropylbenzene, ug/l	590	<1.0	68

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Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 11348129

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
13238-10	BRPR-SS-MW01-01	09-24-98/1230
13238-11	BRPR-SS-MW04-01	09-24-98/1030
13238-12	BRPR-SS-MW02-01	09-24-98/1500

PARAMETER	13238-10	13238-11	13238-12
Volatiles by GC/MS (8260)			
Bromodichloromethane, ug/kg dw	<5.7	<6.0	<5.8
Bromoform, ug/kg dw	<5.7	<6.0	<5.8
Bromomethane, ug/kg dw	<11	<12	<12
Carbon tetrachloride, ug/kg dw	<5.7	<6.0	<5.8
Chlorobenzene, ug/kg dw	<5.7	<6.0	<5.8
Chloroethane, ug/kg dw	<11	<12	<12
2-Chloroethylvinyl ether, ug/kg dw	<5.7	<6.0	<58
Chloroform, ug/kg dw	<5.7	<6.0	<5.8
Chloromethane, ug/kg dw	<11	<12	<12
Dibromochloromethane, ug/kg dw	<5.7	<6.0	<5.8
1,2-Dichlorobenzene, ug/kg dw	<5.7	<6.0	<5.8
1,3-Dichlorobenzene, ug/kg dw	<5.7	<6.0	<5.8
1,4-Dichlorobenzene, ug/kg dw	<5.7	<6.0	<5.8
Dichlorodifluoromethane, ug/kg dw	<5.7	<6.0	<5.8
1,1-Dichloroethane, ug/kg dw	<5.7	<6.0	<5.8
1,2-Dichloroethane, ug/kg dw	<5.7	<6.0	<5.8
1,1-Dichloroethene, ug/kg dw	<5.7	<6.0	<5.8
cis-1,2-Dichloroethylene, ug/kg dw	<5.7	<6.0	<5.8
trans-1,2-Dichloroethylene, ug/kg dw	<5.7	<6.0	<5.8
1,2-Dichloropropane, ug/kg dw	<5.7	<6.0	<5.8
cis-1,3-Dichloropropene, ug/kg dw	<5.7	<6.0	<5.8
trans-1,3-Dichloropropene, ug/kg dw	<5.7	<6.0	<5.8
Isopropylbenzene, ug/kg dw	<5.7	<6.0	<5.8

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2846 Industrial Plaza Drive (32301) • P.O. Box 13056 • Tallahassee, FL 32317-3056 • (850) 878-3994 • Fax (850) 878-9504

LOG NO: T8-13238
Received: 26 SEP 98
Reported: 13 OCT 98
Revised: 09 DEC 98
Client PO. No.: 7867/P98645

Mr. Rick Ofsanko
Tetra Tech NUS, Inc.
794 South Military Drive
Deerfield Beach, FL 33442

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 11348129

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
13238-13	BRPR-SS-IDW-01	09-25-98/1700

PARAMETER	13238-13
Volatiles by GC/MS (8260)	
Bromodichloromethane, ug/kg dw	<6.0
Bromoform, ug/kg dw	<6.0
Bromomethane, ug/kg dw	<12
Carbon tetrachloride, ug/kg dw	<6.0
Chlorobenzene, ug/kg dw	<6.0
Chloroethane, ug/kg dw	<12
2-Chloroethylvinyl ether, ug/kg dw	<60
Chloroform, ug/kg dw	<6.0
Chloromethane, ug/kg dw	<12
Dibromochloromethane, ug/kg dw	<6.0
1,2-Dichlorobenzene, ug/kg dw	<6.0
1,3-Dichlorobenzene, ug/kg dw	<6.0
1,4-Dichlorobenzene, ug/kg dw	<6.0
Dichlorodifluoromethane, ug/kg dw	<6.0
1,1-Dichloroethane, ug/kg dw	<6.0
1,2-Dichloroethane, ug/kg dw	<6.0
1,1-Dichloroethene, ug/kg dw	<6.0
cis-1,2-Dichloroethylene, ug/kg dw	<6.0
trans-1,2-Dichloroethylene, ug/kg dw	<6.0
1,2-Dichloropropane, ug/kg dw	<6.0
cis-1,3-Dichloropropene, ug/kg dw	<6.0
trans-1,3-Dichloropropene, ug/kg dw	<6.0
Isopropylbenzene, ug/kg dw	<6.0
Methylene chloride (Dichloromethane), ug/kg dw	<6.0
1,1,2,2-Tetrachloroethane, ug/kg dw	<6.0

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794 South Military Drive
Deerfield Beach, FL 33442

Project: 7867/Mayport Naval Station
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Code: 11348129

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
13238-14	BRPR-SS-MWO1-01 (SPLP)	09-24-98/1230
13238-15	BRPR-SS-MW04-01 (SPLP)	09-24-98/1030
13238-16	BRPR-SS-MW02-01 (SPLP)	09-24-98/1500
13238-17	BRPR-SS-IDW-01 (SPLP)	09-24-98/1700

PARAMETER	13238-14	13238-15	13238-16	13238-17
Isopropylbenzene, ug/l	<20	22	<20	<20
Methylene chloride (Dichloromethane), ug/l	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene, ug/l	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0
Trichloroethylene, ug/l	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane, ug/l	<1.0	<1.0	<1.0	<1.0
Vinyl chloride, ug/l	<1.0	<1.0	<1.0	<1.0
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0
Toluene, ug/l	<1.0	42	62	<1.0
Ethylbenzene, ug/l	<1.0	800	52	<1.0
Total Xylenes, ug/l	<2.0	3300	260	<2.0
Methyl tert-butyl ether (MTBE), ug/l	<10	<10	<10	<10
Surrogate - Dibromofluoromethane	110 %	108 %	107 %	109 %
Surrogate - Toluene-d8	105 %	102 %	106 %	105 %
Surrogate - 4-Bromofluorobenzene	140 %	92 %	96 %	94 %
Analyst	MTM	MTM	MTM	MTM
Analysis Date	10.08.98	10.08.98	10.08.98	10.08.98
Batch ID	1001M	1001M	1001M	1001M
Dilution Factor	20	20	20	20

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LOG NO: T8-13238
Received: 26 SEP 98
Reported: 13 OCT 98
Revised: 09 DEC 98
Client PO. No.: 7867/P98645

Mr. Rick Ofsanko
Tetra Tech NUS, Inc.
794 South Military Drive
Deerfield Beach, FL 33442

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 11348129

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-18	Method Blank	
13238-19	Lab Control Standard Result	
13238-20	Lab Control Standard Duplicate Result	
13238-21	Expected Value, LCS/LCSD	
13238-22	Lab Control Standard % Recovery	

PARAMETER	13238-18	13238-19	13238-20	13238-21	13238-22
trans-1,3-Dichloropropene, ug/l	<0.36*J	---	---	---	---
Isopropylbenzene, ug/l	<1.0	---	---	---	---
Methylene chloride (Dichloromethane), ug/l	<5.0	---	---	---	---
1,1,2,2-Tetrachloroethane, ug/l	<0.52*J	---	---	---	---
Tetrachloroethene, ug/l	<1.0	---	---	---	---
1,1,1-Trichloroethane, ug/l	<1.0	---	---	---	---
1,1,2-Trichloroethane, ug/l	<1.0	---	---	---	---
Trichloroethylene, ug/l	<1.0	10.03	10.2	10	103 %
Trichlorofluoromethane, ug/l	<1.0	---	---	---	---
Vinyl chloride, ug/l	<1.0	---	---	---	---
Benzene, ug/l	<1.0	9.35	9.58	10	94 %
Toluene, ug/l	<1.0	9.67	9.97	10	97 %
Surrogate - Dibromofluoromethane	106 %	98 %	99 %	---	---
Surrogate - Toluene-d8	101 %	97 %	100 %	---	---
Surrogate - 4-Bromofluorobenzene	93 %	98 %	97 %	---	---
Analyst	MTM	MTM	MTM	---	MTM
Analysis Date	10.06.98	10.06.98	10.06.98	---	10.06.98
Batch ID	1001M	1001M	1001M	---	1001M
Dilution Factor	1.0	1.0	1.0	---	1.0

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LOG NO: T8-13238
Received: 26 SEP 98
Reported: 13 OCT 98
Revised: 09 DEC 98
Client PO. No.: 7867/P98645

Mr. Rick Ofsanko
Tetra Tech NUS, Inc.
794 South Military Drive
Deerfield Beach, FL 33442

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 11348129

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
13238-28	Method Blank	
13238-29	Lab Control Standard Result	
13238-30	Lab Control Standard Duplicate Result	
13238-31	Expected Value, LCS/LCSD	
13238-32	Lab Control Standard % Recovery	

PARAMETER	13238-28	13238-29	13238-30	13238-31	13238-32
cis-1,3-Dichloropropene, ug/kg dw	<5.0	---	---	---	---
trans-1,3-Dichloropropene, ug/kg dw	<5.0	---	---	---	---
Isopropylbenzene, ug/kg dw	<5.0	---	---	---	---
Methylene chloride (Dichloromethane), ug/kg dw	<5.0	---	---	---	---
1,1,2,2-Tetrachloroethane, ug/kg dw	<5.0	---	---	---	---
Tetrachloroethene, ug/kg dw	<5.0	---	---	---	---
1,1,1-Trichloroethane, ug/kg dw	<5.0	---	---	---	---
1,1,2-Trichloroethane, ug/kg dw	<5.0	---	---	---	---
Trichloroethylene, ug/kg dw	<5.0	67.1	54.6	50	134 %
Trichlorofluoromethane, ug/kg dw	<5.0	---	---	---	---
Vinyl chloride, ug/kg dw	<0.98*J	---	---	---	---
Benzene, ug/kg dw	<5.0	56.9	46.3	50	114 %
Toluene, ug/kg dw	<5.0	53.9	44.4	50	108 %
Ethylbenzene, ug/kg dw	<5.0	---	---	---	---
Total Xylenes, ug/kg dw	<10	---	---	---	---
Methyl tert-butyl ether (MTBE), ug/kg dw	<3.1*J	---	---	---	---
Surrogate - Dibromofluoromethane	103 %	104 %	111 %	---	---
Surrogate - Toluene-d8	104 %	99 %	104 %	---	---
Surrogate - 4-Bromofluorobenzene	95 %	96 %	108 %	---	---
Analyst	WHE	WHE	WHE	---	WHE
Analysis Date	10.07.98	10.01.98	10.01.98	---	10.01.98
Batch ID	0921S	0921S	0921S	---	0921S
Dilution Factor	1.0	1.0	1.0	---	1.0

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LOG NO: T8-13238
Received: 26 SEP 98
Reported: 13 OCT 98
Revised: 13 Nov 98
Client PO. No.: 7867/P98645

Mr. Rick Ofsanko
Tetra Tech NUS, Inc.
794 South Military Drive
Deerfield Beach, FL 33442

Project: 7867/Mayport Naval Station
Sampled By: AW/TN
Code: 123481113

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
13238-7	BRPR-GW-MW05-01	09-25-98/1230
13238-8	BRPR-GW-MW04-01	09-25-98/1500
13238-9	BRPR-GW-MW02-01	09-25-98/1600

PARAMETER	13238-7	13238-8	13238-9
Polynuclear Aromatics (8310)			
Acenaphthene, ug/l	1.6	<25	17
Acenaphthylene, ug/l	<1.0	<25	<1.0
Anthracene, ug/l	<0.20	11	<0.20
Benzo(a)anthracene, ug/l	<0.013*J	<0.352*J	0.016*J
Benzo(a)pyrene, ug/l	<0.20	<5.0	<0.20
Benzo(b)fluoranthene, ug/l	<0.0046*J	<0.115*J	<0.0046*J
Benzo(g,h,i)perylene, ug/l	<0.50	<12	<0.50
Benzo(k)fluoranthene, ug/l	<0.20	<5.0	<0.20
Chrysene, ug/l	<0.20	<5.0	<0.20
Dibenzo(a,h)anthracene, ug/l	<0.043*J	<1.075*J	<0.043*J
Fluoranthene, ug/l	0.24*J	32	<0.50
Fluorene, ug/l	0.35*J	<12	4.5
Indeno(1,2,3-cd)pyrene, ug/l	<0.019*J	<0.475*J	<0.019*J
Naphthalene, ug/l	<1.0	<20	<1.0
Phenanthrene, ug/l	<0.20	54	0.32
Pyrene, ug/l	0.17*J	23	0.16*J
2-Methylnaphthalene, ug/l	0.82*J	<25	<1.0
1-Methylnaphthalene, ug/l	1.7	<25	<1.0
Surrogate - Terphenyl - d14	78 %	*F33	94 %
Prep Date	09.30.98	09.30.98	09.30.98
Analyst	RD	RD	RD
Analysis Date	10.03.98	10.05.98	10.05.98
Batch ID	0930B	0930B	0930B
Dilution Factor	1.0	25	1.0

Serial Number 119709

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

[ ] 5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax: (912) 352-0165
[X] 2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (904) 878-3994 — Fax: (904) 878-9504
[ ] 414 SW 12th Avenue, Deerfield Beach, FL 33442 — Phone: (954) 421-7400 — Fax: (954) 421-2584
[ ] 900 Lakeside Drive, Mobile, AL 36693 — Phone: (334) 666-6633 — Fax: (334) 666-6696
[ ] 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax: (813) 885-7049
[ ] 100 Alpha Drive, Suite 110, Destrehan, LA 70047 — Phone: (504) 764-1100 — Fax: (504) 725-1163

PROJECT REFERENCE: Naval Station Mayport
PROJECT NO: 7867
PO NUMBER:
PAGE 1 OF 1

PROJECT LOC (State): FL
SAMPLER(s) NAME: Tom Nicotera
PHONE: 904-281-0400
FAX: 904-281-0070

CLIENT NAME: TENNS
CLIENT PROJECT MANAGER: Rick Ofsanko

CLIENT ADDRESS (CITY, STATE, ZIP): 7018 AC Skinner Pkwy, Jacksonville Fl. 32256

[X] STANDARD REPORT DELIVERY
[ ] EXPEDITED REPORT DELIVERY (surcharge)
Date Due:

REQUIRED ANALYSES

SAMPLE DATE	SAMPLE TIME	SL NO	SAMPLE IDENTIFICATION	MATRIX TYPE: AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	VOA 826c	PAH 8310	FL-PRO	Lead	FOC	8 RCRA metals	Total Halides	1312 (comp)	Encore	TOTAL	REMARKS
								—	—	—	—	—	—	—	—	—		
9-24-98	12:30		BRR-SS-MW01-01		X			1	1	1	1	1	—	—	1	4	10	
9-24-98	10:30		BRR-SS-MW04-01		X			1	1	1	1	1	—	—	1	4	10	48 hr. Turn
9-24-98	15:00		BRR-SS-MW02-01		X			1	1	1	1	1	—	—	1	4	10	Around
9-25-98	17:00		BRR-SS-IDW-01		X			1	1	1	1	1	1	1	1	—	8	For Encore
	17:00																	Sampler
																		Samples
																		left out
																		to 4°C

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
J Kobliens	9/24/98	1600	Tom Nicotera	9-25-98	2000			
RECEIVED BY (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**
Tom Nicotera	9-24-98	08:00						

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO	SL LOG NO.	LABORATORY REMARKS:
N Bassel	9/26/98	1000	[ ] YES [ ] NO		T813238	

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2846 Industrial Plaza Drive (32301) • P.O. Box 13056 • Tallahassee, FL 32317-3056 • (850) 878-3994 • Fax (850) 878-9504

LOG NO: T8-14066
Received: 08 DEC 98
Reported: 15 DEC 98

Mr. Rick Ofsanko
Tetra Tech NUS, Inc.
794 South Military Drive
Deerfield Beach, FL 33442

Client PO. No.: 7867/P9845

Project: 7867/Mayport Naval Station
Sampled By: GB
Code: 145581218

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES
14066-1	7867/MW-1/12-5-98

PARAMETER	14066-1
Volatiles by GC/MS (8260)	
Bromodichloromethane, ug/l	<1.0
Bromoform, ug/l	<5.0
Bromomethane, ug/l	<1.0
Carbon tetrachloride, ug/l	<1.0
Chlorobenzene, ug/l	<1.0
Chloroethane, ug/l	<1.0
2-Chloroethylvinyl ether, ug/l	<10
Chloroform, ug/l	<1.0
Chloromethane, ug/l	<1.0
Dibromochloromethane, ug/l	<1.0
1,2-Dichlorobenzene, ug/l	<1.0
1,3-Dichlorobenzene, ug/l	<1.0
1,4-Dichlorobenzene, ug/l	<1.0
Dichlorodifluoromethane, ug/l	<1.0
1,1-Dichloroethane, ug/l	<1.0
1,2-Dichloroethane, ug/l	<1.0
1,1-Dichloroethene, ug/l	<1.0
cis-1,2-Dichloroethylene, ug/l	<1.0
trans-1,2-Dichloroethylene, ug/l	<1.0
1,2-Dichloropropane, ug/l	<1.0
cis-1,3-Dichloropropene, ug/l	<0.36*J
trans-1,3-Dichloropropene, ug/l	<0.36*J
Isopropylbenzene, ug/l	84
Methylene chloride (Dichloromethane), ug/l	<5.0
1,1,2,2-Tetrachloroethane, ug/l	<0.52*J

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Tetra Tech NUS, Inc.
794 South Military Drive
Deerfield Beach, FL 33442

Client PO. No.: 7867/P9845

Project: 7867/Mayport Naval Station
Sampled By: GB
Code: 145581218

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES
14066-1	7867/MW-1/12-5-98

PARAMETER	14066-1
Tetrachloroethene, ug/l	<1.0
1,1,1-Trichloroethane, ug/l	<1.0
1,1,2-Trichloroethane, ug/l	<1.0
Trichloroethylene, ug/l	<1.0
Trichlorofluoromethane, ug/l	<1.0
Vinyl chloride, ug/l	<1.0
Benzene, ug/l	<1.0
Toluene, ug/l	<1.0
Ethylbenzene, ug/l	<1.0
Total Xylenes, ug/l	<2.0
Methyl tert-butyl ether (MTBE), ug/l	<10
Surrogate - Dibromofluoromethane	112 %
Surrogate - Toluene-d8	105 %
Surrogate - 4-Bromofluorobenzene	104 %
Analysis Date	12.18.98
Batch ID	1207M
Dilution Factor	1.0

SAVANNAH LABORATORIES
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Client PO. No.: 7867/P9845

Project: 7867/Mayport Naval Station
Sampled By: GB
Code: 145581218

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
14066-2	Method Blank	
14066-3	Lab Control Standard Result	
14066-4	Lab Control Standard Duplicate Result	
14066-5	Spike Amount Added, LCS/LCSD	
14066-6	Lab Control Standard % Recovery	

PARAMETER	14066-2	14066-3	14066-4	14066-5	14066-6
Volatiles by GC/MS (8260)					
Bromodichloromethane, ug/l	<1.0	---	---	---	---
Bromoform, ug/l	<5.0	---	---	---	---
Bromomethane, ug/l	<1.0	---	---	---	---
Carbon tetrachloride, ug/l	<1.0	---	---	---	---
Chlorobenzene, ug/l	<1.0	10.5	10.9	10.0	105 %
Chloroethane, ug/l	<1.0	---	---	---	---
2-Chloroethylvinyl ether, ug/l	<10	---	---	---	---
Chloroform, ug/l	<1.0	---	---	---	---
Chloromethane, ug/l	<1.0	---	---	---	---
Dibromochloromethane, ug/l	<1.0	---	---	---	---
1,2-Dichlorobenzene, ug/l	<1.0	---	---	---	---
1,3-Dichlorobenzene, ug/l	<1.0	---	---	---	---
1,4-Dichlorobenzene, ug/l	<1.0	---	---	---	---
Dichlorodifluoromethane, ug/l	<1.0	---	---	---	---
1,1-Dichloroethane, ug/l	<1.0	---	---	---	---
1,2-Dichloroethane, ug/l	<1.0	---	---	---	---
1,1-Dichloroethene, ug/l	<1.0	---	---	---	---
cis-1,2-Dichloroethylene, ug/l	<1.0	9.37	9.66	10.0	94 %
trans-1,2-Dichloroethylene, ug/l	<1.0	---	---	---	---
1,2-Dichloropropane, ug/l	<1.0	---	---	---	---
cis-1,3-Dichloropropene, ug/l	<1.0	---	---	---	---

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Received: 08 DEC 98
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Mr. Rick Ofsanko
Tetra Tech NUS, Inc.
794 South Military Drive
Deerfield Beach, FL 33442

Client PO. No.: 7867/P9845

Project: 7867/Mayport Naval Station
Sampled By: GB
Code: 145581218

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
14066-2	Method Blank	
14066-3	Lab Control Standard Result	
14066-4	Lab Control Standard Duplicate Result	
14066-5	Spike Amount Added, LCS/LCSD	
14066-6	Lab Control Standard % Recovery	

PARAMETER	14066-2	14066-3	14066-4	14066-5	14066-6
trans-1,3-Dichloropropene, ug/l	<1.0	---	---	---	---
Isopropylbenzene, ug/l	<1.0	---	---	---	---
Methylene chloride (Dichloromethane), ug/l	<5.0	---	---	---	---
1,1,2,2-Tetrachloroethane, ug/l	<1.0	---	---	---	---
Tetrachloroethene, ug/l	<1.0	---	---	---	---
1,1,1-Trichloroethane, ug/l	<1.0	---	---	---	---
1,1,2-Trichloroethane, ug/l	<1.0	---	---	---	---
Trichloroethylene, ug/l		10.6	11.1	10.0	106 %
Trichlorofluoromethane, ug/l	<1.0	---	---	---	---
Vinyl chloride, ug/l	<1.0	---	---	---	---
Benzene, ug/l	<1.0	10.9	11.5	10.0	109 %
Toluene, ug/l	<1.0	10.7	11.6	10.0	107 %
Ethylbenzene, ug/l	<1.0	---	---	---	---
Total Xylenes, ug/l	<2.0	---	---	---	---
Methyl tert-butyl ether (MTBE), ug/l	<10	---	---	---	---
Surrogate - Dibromofluoromethane	109 %	109 %	108 %	---	---
Surrogate - Toluene-d8	110 %	109 %	113 %	---	---
Surrogate - 4-Bromofluorobenzene	103 %	113 %	115 %	---	---
Analysis Date	12.09.98	12.08.98	12.08.98	---	---
Batch ID	1207M	1207M	1207M	---	---
Dilution Factor	1.0	1.0	1.0	---	---

JL LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2846 Industrial Plaza Drive (32301) • P.O. Box 13056 • Tallahassee, FL 32317-3056 • (850) 878-3994 • Fax (850) 878-3504

LOG NO: T8-14066
Received: 08 DEC 98
Reported: 15 DEC 98

Mr. Rick Ofsanko
Tetra Tech NUS, Inc.
794 South Military Drive
Deerfield Beach, FL 33442

Client PO. No.: 7867/P9845

Project: 7867/Mayport Naval Station
Sampled By: GB
Code: 145581218

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
14066-7	Lab Control Standard Duplicate % Recovery	
14066-8	Precision (%RPD) of LCS/LCSD	
14066-9	LCS Accuracy Control Limit (%R)	
14066-10	LCS Precision Control Limit (Advisory) %RPD	
14066-11	Control Limit Source	

PARAMETER	14066-7	14066-8	14066-9	14066-10	14066-11
Volatiles by GC/MS (8260)					
Chlorobenzene, ug/l	107 %	3.7 %	60-127 %	<25 %	SL
1,1-Dichloroethene, ug/l	96 %	3.1 %	38-155 %	<25 %	SL
Trichloroethylene, ug/l	108 %	4.6 %	10-213 %	<40 %	SL
Benzene, ug/l	112 %	5.4 %	52-143 %	<31 %	SL
Toluene, ug/l	112 %	8.0 %	76-128 %	<25 %	SL
Surrogate - Dibromofluoromethane	108 %	---	64-142 %	---	---
Surrogate - Toluene-d8	111 %	---	67-134 %	---	---
Surrogate - 4-Bromofluorobenzene	114 %	---	67-132 %	---	---
Analysis Date	12.08.98	---	---	---	---
Batch ID	1207M	---	---	---	---
Dilution Factor	1.0	---	---	---	---

Method: EPA SW-846
Florida Dept. of Health Certification No.: E81005
FDEP CompQAP No.: 890142G

***J The flag 'J' indicates the result is reported at the method detection limit for project specific compounds.**

Laura B Snead
Laura B. Snead, Project Manager

Final Page Of Report

Brown & Root Environmental

REPORT TO ADDRESS: T+N US 794 S. MILITARY TRAIL DEERFIELD BCH FL

TELEPHONE 954/570-5885 FAX 5974 33442

SITE MANAGER: RICK OFSANIKO

PROJECT NAME: BRAVO PIER MAYPORT

BRE PROJECT NO.: 7867 CODE:

P.O. NO.:

SHIPPED TO: SAVANNAH TALLAHASSEE (LABORATORY NAME, CITY)

PAGE 1 OF 1

CHAIN OF CUSTODY RECORD

SAMPLED BY (PRINT): GEOFF BEARDALL

SAMPLER SIGNATURE: G Beardall

LABORATORY ANALYSIS

☐ STANDARD TAT ☐ RUSH

☐ 24 HR. ☐ 48 HR. ☐ 72 HR. ☒ 7 DAYS

RESULTS DUE DATE:

LAB NO.	DATE	TIME	SAMPLE IDENTIFICATION	SAMPLE TYPE COMP.	SAMPLE TYPE GRAB	MATRIX	PARAMETERS / PRES. TYPE: 8260 / HCL	NUMBER OF CONTAINERS	COMMENTS:
	12/5/98	1420	7867/MW-1/12-5-98			GW		3	
TOTAL NUMBER OF CONTAINERS									

EMPTY BOTTLES RELINQUISHED BY (SIGNATURE)	SEAL INTACT? YES NO N/A	DATE: TIME: 7 GB	EMPTY BOTTLES RECEIVED BY (SIGNATURE) ②	SEAL INTACT? YES NO N/A	DATE: TIME:
RELINQUISHED BY (SIGNATURE) G Beardall	SEAL INTACT? (YES) NO N/A	DATE: 12-8-98 TIME: 10:00	RECEIVED BY (SIGNATURE) ④	SEAL INTACT? YES NO N/A	DATE: TIME:
RELINQUISHED BY (SIGNATURE)	SEAL INTACT? YES NO N/A	DATE: TIME:	RECEIVED BY (SIGNATURE) ⑥	SEAL INTACT? YES NO N/A	DATE: TIME:

SPECIAL INSTRUCTIONS: NEED 1 WEEK TAT.

LABORATORY REMARKS: 7814066

SAMPLE CONTAINERS PRECLEANED BY ☐ BRE ☐ LABORATORY ☐ MANUFACTURER

METHOD OF SHIPMENT: FED EX

BILL OF LADING NO.:

WHITE-FULLY EXECUTED COPY
YELLOW-RECEIVING LABORATORY COPY
PINK-SAMPLERS' COPY QA COPY
GREEN-SITE MANAGERS' COPY

SAMPLING TEAM

RECEIVED FOR LABORATORY BY (SIGNATURE): [signature]

DATE 12/8/98 TIME: 1205