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NS MAYPORT
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ADDENDUM 2 TO CONTAMINATION ASSESSMENT REPORT NAVY SUPPLY CENTER FUEL FARM WITH TRANSMITTAL LETTER NS MAYPORT FL
7/19/1999
BHATE ENVIRONMENTAL

NAVAL STATION MAYPORT
MAYPORT, FLORIDA
BHATE PROJECT NO: 9970058

ADDENDUM #2 TO THE CONTAMINATION ASSESSMENT REPORT NSC FUEL FARM

Prepared for:

COMMANDING OFFICER
ATTN: CODE 1848
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DRIVE, POST OFFICE BOX 190010
NORTH CHARLESTON, SOUTH CAROLINA 29419-1910

ATTENTION: MS. BEVERLY S. WASHINGTON

Prepared by:

BHATE ENVIRONMENTAL ASSOCIATES, INC.
1608 13th AVENUE SOUTH
BIRMINGHAM, ALABAMA 35205
TELEPHONE: (205) 918-4000

July 19, 1999

Bhate Environmental Associates, Inc.
Environmental Engineers & Scientists

BEA
Bhate Environmental Associates, Inc.
Environmental Engineers and Scientists
1608 13th Avenue South, Suite 300
Birmingham ■ Alabama ■ 35205

LETTER OF TRANSMITTAL

DATE	JOB NO
July 26, 1999	9970058

ATTENTION: Beverly Washington

RE: Addendum #2 to the CAR - NSC Fuel Farm

TO Southern Division-Code 1848
Naval Facilities Engineering Command
2155 Eagle Drive, P.O. Box 190010
North Carleston, SC 29419-9010

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO	DESCRIPTION
2	7-19-99	---	Addendum #2 to the CAR Report

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ 19 ____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS

Regular Mail

one copy to :
Commanding Officer
Naval Station Mayport
P.O. Box 280067
Mayport, FL 32228-0067
ATTN: N4E7-Mr. Jan Bovier

Florida Dpartment of Environmental
Protection (FDEP)
Twin Towers Office Building
2600 Blairstone Road
Tallashassee, FL 32399-2400
ATTN:Mr. Jim Cason

COPY TO _____ SIGNED: Emmett Beers

If enclosures are not as noted, kindly notify us at once.

Bhate Environmental Associates, Inc.
Environmental Engineers & Scientists
1608 13th Avenue, South, Suite 300
Birmingham ■ Alabama ■ 35205
(205) 918-4000
(205) 918-4050 (FAX)

July 19, 1999

Commanding Officer
Attn: Code 1848
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive, P.O. Box 190010
North Charleston, South Carolina 29419-1910

Attention: Ms. Beverly S. Washington

Subject: Addendum #2 to the Contamination Assessment Report
NSC Fuel Farm
Naval Station Mayport
Mayport, Florida
Contract No. N62467-96-0976
BHATE Project No.: 9970058

Dear Ms. Washington:

Bhate Environmental Associates (BEA) is pleased to submit an Addendum to the Contamination Assessment Report (CAR) previously submitted to the Florida Department of Environmental Protection (FDEP). This report contains results of additional groundwater sampling requested by the FDEP and a proposed course of action for the site.

A copy of the report has been submitted to the FDEP. If you have any questions or need additional information, please contact us at your earliest convenience at 1 (800) 806-4001.

Respectfully Submitted,
BHATE ENVIRONMENTAL ASSOCIATES, INC.

Emmett A. Beers
Senior Project Manager

I:\USR\PROJECTS.BEA\1997\9970058\ FUEL FARM\ADDENDUM #2 TO CAR FUEL FARM

Bhate Environmental Associates, Inc.
Environmental Engineers & Scientists
1608 13th Avenue, South, Suite 300
Birmingham ■ Alabama ■ 35205
(205) 918-4000
(205) 918-4050 (FAX)

July 19, 1999

Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blairstone Road
Tallahassee, FL 32399-2400

Attention: Mr. James H. Cason

Subject: Addendum #2 to the Contamination Assessment Report
NSC Fuel Farm
Naval Station Mayport
Mayport, Florida
Contract No. N62467-96-D-0976
BHATE Project No.: 9970082

Dear Mr. Cason:

Bhate Environmental Associates (BHATE), on behalf of the Southern Division of the Naval Facilities Engineering Command, is pleased to submit the following addendum to the Contamination Assessment Report dated December 10, 1997. The addendum report addresses the comments received from the Florida Department of Environmental Protection (FDEP) within a letter dated December 30, 1998.

If you have any questions or need additional information, please contact us at your earliest convenience at 1 (800) 806-4001.

Respectfully Submitted,
BHATE ENVIRONMENTAL ASSOCIATES, INC.

Emmett A. Beers, P.G.
Senior Project Manager

I:\USR\PROJECTS.BEA\1997\9970058\ FUEL FARM\ADDENDUM #2 TO CAR FUEL FARM

TABLE OF CONTENTS

ADDENDUM TO THE CONTAMINATION ASSESSMENT REPORT NAVAL STATION MAYPORT UST-350 BEA PROJECT NO.: 9970058

1.0 BACKGROUND 1

2.0 ASSESSMENT ACTIVITIES 2
- 2.1 Groundwater Sampling 2
- 2.2 Groundwater Flow Direction 2

3.0 RESULTS OF THE CONTAMINATION ASSESSMENT 3
- 3.1 Groundwater Analytical Results 3

4.0 QUALITY ASSURANCE/QUALITY CONTROL 3

5.0 SUMMARY AND CONCLUSIONS 4
- 5.1 Summary 4
- 5.2 Conclusions 4

6.0 RECOMMENDATIONS 4

7.0 CLOSING REMARKS 5

TABLE OF CONTENTS

ADDENDUM TO THE
CONTAMINATION ASSESSMENT REPORT
NAVAL STATION MAYPORT
UST-350
BEA PROJECT NO.: 9970058

TABLES

Table 1 - Monitoring Well Construction and Water Level Data
Table 2 - Summary of Groundwater Analytical Results from Assessment Wells

FIGURES

Figure 1 - Water Table Contour Map – February 8, 1999
Figure 2 - Monitoring Well Groundwater Analytical Results – February 8, 1999

APPENDICES

Appendix A - Groundwater Laboratory Report and Chain of Custody Form
Appendix B - FDEP Letter

ADDENDUM #2 TO THE CONTAMINATION ASSESSMENT REPORT
NSC FUEL FARM
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

1.0 BACKGROUND

The assessment site is the NSC Fuel Farm at the Mayport Naval Station in Mayport, Duval County, Florida. The NSC Fuel Farm contains cut and cover bulk fuel storage tanks (Figure 1).

A contamination assessment was conducted at the site between May and October 1997, to determine the source of free petroleum product encountered in monitoring well MPT-16-MWO2S. The affected well lies east of Tank 202 (Figure 1). The results of the contamination assessment concluded that soil and groundwater contamination is essentially localized in an area around Tank 202. The tank and associated piping are the suspected sources of contamination.

A Contamination Assessment Report, dated December 10, 1997, was submitted to the FDEP. Following review of the report, the FDEP issued a letter requesting additional site assessment in the general area around Tank 202.

In June 1998, additional soil samples were collected at three locations adjacent to Tank 202 and in close proximity to previous soil probes. Volatile organic concentrations of the soil samples were assessed using an organic vapor analyzer (OVA). Soil samples representative of the high, medium and low OVA screening results were selected for laboratory analyses. The samples were analyzed for the parameters specified in Table II of Chapter 62-770 FAC. Two additional groundwater-monitoring wells were installed at locations adjacent to Tank 202. Groundwater samples were collected from the wells and analyzed for Table II parameters.

The additional assessment activities concluded that soil and groundwater contamination is essentially localized in extent to an area around Tank 202. The tank and associated piping remain the suspected sources of contamination. Organic vapor headspace analyses of samples from above the capillary fringe exceeded the excessively contaminated soil limit of 10 ppm, at the location of monitoring well FF-MW-10. This affirms previous findings at GP-25 and FF-MW-5. The shallow impact at FF-MW-10 suggests a near-surface release.

Analyses of site monitoring well samples indicated that groundwater around Tank 202 is not impacted by petroleum hydrocarbons to concentrations greater than applicable FDEP Cleanup Target Levels, except at MPT-16-MW02S and FF-MW-10.

2.0 ASSESSMENT ACTIVITIES

Assessment activities conducted at the site included the collection of additional groundwater samples from monitoring wells specified by the FDEP in a letter dated December 30, 1998 (attached). A round of additional water-level measurements was obtained from monitoring wells at the site. The following is a summary of the site activities.

2.1 Groundwater Sampling

On February 8, 1998, groundwater samples were collected from monitoring wells MPT-16-MW02S, FF-MW-3, FF-MW-5, FF-MW-6, FF-MW-7, FF-MW-8 and FF-MW-9. Prior to sample collection, fluids from each monitoring well were examined for the presence of separate phase petroleum hydrocarbons (free product). To ensure representative groundwater samples, the wells were purged prior to sampling using a Teflon® bailer. Five well volumes were removed from each well prior to sampling.

The samples were collected utilizing the decontaminated Teflon® bailer. Groundwater samples were placed in appropriate containers, cooled on wet ice, and transported under chain of custody to Specialized Assays Laboratory. Samples were analyzed for the following:

- Florida Petroleum Residual Organics (FL-PRO) - Method TRPH (FDEP).
- Naphthalene and the 15 method-listed Polynuclear aromatic hydrocarbons (PAH) by EPA Method 8310.

The glass PAH sample container collected from well FF-MW-5 was broken during shipment to the laboratory. The FF-MW-13 PAH sample, collected as a duplicate QA/QC sample from FF-MW-5, was substituted for the broken FF-MW-5 PAH sample.

Groundwater evacuated during development and sampling of the monitoring wells was contained in a 55-gallon drum. The water was disposed as non-hazardous petroleum contaminated waste.

2.2 Groundwater Flow Direction

Groundwater levels were measured within each of the monitoring wells at the site on February 8, 1998 prior to groundwater sample collection. Water-level measurements were obtained with an electronic water-level indicator. They were taken to the nearest 0.01-foot and are referenced to a point on top of the well casing. Relative groundwater elevations were calculated and are summarized with measurements from previous dates in Table 1.

The groundwater levels were used to prepare a water-table contour map (Figure 1). Based on the data shown on the contour map, the primary direction of groundwater movement is

to the north and northeast, toward the St. Johns River. That direction is consistent with previous flow direction determinations.

3.0 RESULTS OF THE CONTAMINATION ASSESSMENT

3.1 Groundwater Analytical Results

Summaries of laboratory analytical results for groundwater samples collected from each of the monitoring wells are presented in Table 2 and on Figure 2. Copies of the laboratory analytical reports and chain-of-custody records are provided in Appendix A.

The examination of water collected from the top of the water column at monitoring well MPT-16MW02S indicated approximately 1/8 inch of free petroleum product. A petroleum sheen was observed on the sample collected from well FF-MW-5. An observation sample collected from well FF-MW-11 also had a petroleum sheen. Free petroleum product was not measurable within either of these wells.

The results of the laboratory analyses detected FL-PRO concentrations above the laboratory detection limit in wells MPT-16-MWO2S, FF-MW-5, FF-MW-6 and FF-MW-9. All samples were below the total cleanup target level of 5 mg/l or parts per million (ppm), except MPT-16-MW02S. This sample which had contained free petroleum product, had a FL-PRO concentration of 142 mg/l.

Naphthalene and the other PAH constituents were not detected above the laboratory detection limit within any of the monitoring wells sampled during this event, except MPT-16-MW02S. The sample collected from MPT-16-M02S contained 1-Methylnaphthalene and 2-Methynaphthalene at 254 and 192 ug/l, respectively. Groundwater cleanup criteria for the methylnaphthalene constituents have not been established.

4.0 QUALITY ASSURANCE/QUALITY

BHATE maintained a stringent QA/QC program for all activities, during data acquisition through report preparation. All appropriate groundwater sampling equipment was decontaminated with laboratory-grade detergent and appropriate solvent wash. It was then rinsed with deionized and analyte-free water, before each sample collection.

An equipment rinsate sample and duplicate sample was collected for the site.

5.0 SUMMARY AND CONCLUSIONS

5. 1 Summary

The following points summarize significant site conditions, based on the results of field and laboratory investigations:

- Approximately 1/8-inch free petroleum product was present within monitoring well MPT-16-MW-02S.

- The FL-PRO concentration in MPT-16-MW02S exceeded the regulatory cleanup target level of 5 ppm. FL-PRO concentrations were detected within three wells above the laboratory detection limit, but did not exceed the cleanup target level.

- Naphthalene and the other PAH constituents were not detected at concentrations exceeding the FDEP cleanup target levels.

- Groundwater measurements were obtained from all of the wells at the site. The direction of groundwater movement appears to be to the north and northeast, toward the St. Johns River and is consistent with previous flow direction determinations.

5.2 Conclusions

- Analyses of site monitoring well samples indicate that groundwater around Tank 202 is not impacted by petroleum hydrocarbons to concentrations greater than applicable FDEP Cleanup Target Levels, except at MPT-16-MW02S (142 ppm TRPH). Well FF-MW-10 contained a naphthalene concentration of 37 ppb during a previous sampling event. The FDEP target level for Naphthalene is 20 ppb.

6.0 RECOMMENDATIONS

On the basis of findings and conclusions discussed above, Bhate recommends the following:

- Preparation of a Remedial Action Plan, to address the removal and the treatment of soils affected to levels in excess of regulatory limits. All four tanks in the study area will be decommissioned. Each will be removed and replaced with above ground storage tanks. Removal of soils from the site for treatment elsewhere could be performed concurrently with construction efforts. Since the soils will be physically removed, a risk assessment is not recommended. Removal of the soils may also be effective in reducing petroleum concentrations in groundwater since source abatement would be accomplished.

7.0 CLOSING REMARKS

This Contamination Assessment Report has been prepared on behalf of the Department of the Navy, Southern Division for specific application to the subject site. Future environmental conditions at the site can change, subject to changes in operations and land usage. The opinions and findings of this report reflect the conditions apparent at the times the work was performed. New regulations, changes in surrounding land use, altered geologic conditions and other factors may also result in changed site conditions.

The work described in this report has been conducted in accordance with current FDEP UST regulations and with standard industry practice. No other warranty is implied or expressed.

TABLE 1
MONITORING WELL CONSTRUCTION AND WATER LEVEL DATA
CONTAMINATION ASSESSMENT REPORT
NSC FUEL FARM
NAVAL STATION MAYPORT

WELL NO.	DATE	TOTAL DEPTH OF WELL BLS (ft.)	TOP OF CASING BLS (ft.)	SURVEYED TOP OF CASING ELEVATION (MSL)*	SCREENED INTERVAL DEPTH BLS (ft.)	DEPTH OF WATER FROM TOP OF CASING (ft.)	ELEVATION OF WATER TABLE (MSL)*
FF-MW-1	2/8/99	18.8	0.17	16.37	8.62-18.12	14.74	1.63
	6/26/98					14.93	1.44
	10/8/97					14.46	1.81
	7/16/97					14.65	1.72
	6/18/97					14.19	2.18
FF-MW-2	2/8/99	17.4	0.21	18.46	7.37-16.87	12.99	5.47
	6/26/98					13.17	5.29
	10/8/97					12.83	5.63
	7/16/97					NR	NR
	6/18/97					12.39	6.07
FF-MW-3	2/8/99	14.30	0.24	10.25	4.09-13.59	9.57	0.68
	6/26/98					9.07	1.18
	10/8/97					9.18	1.07
	7/16/97					9.31	.94
	6/18/97					8.41	1.84
FF-MW-4	2/8/99	14.90	0.25	12.15	3.81-13.31	10.31	1.84
	6/26/98					10.55	1.60
	10/8/97					10.11	2.04
	7/16/97					10.28	1.87
	6/18/97					9.86	2.29
FF-MW-5	2/8/99	15.2	0.25	11.83	4.99-14.49	10.62	1.21
	6/26/98					10.56	1.27
	10/8/97					10.42	1.41
	7/16/97					10.65	1.18
	6/18/97					9.78	2.05
FW-MW-6	2/8/99	14.96	0.21	9.91	3.6-13.10	9.31	0.6
	6/26/98					8.54	1.37
	10/8/97					9.02	.89
	7/16/97					9.14	.77
	6/18/97					8.19	1.72

TABLE 1 (continued)
MONITORING WELL CONSTRUCTION AND WATER LEVEL DATA
CONTAMINATION ASSESSMENT REPORT
NSC FUEL FARM
NAVAL STATION MAYPORT

WELL NO.	DATE	TOTAL DEPTHS OF WELL BLS (ft.)	TOP OF CASING BLS (ft.)	SURVEYED TOP OF CASING ELEVATION (MSL)*	SCREENED INTERVAL DEPTH BLS (ft.)	DEPTH OF WATER FROM TOP OF CASING (ft.)	ELEVATION OF WATER TABLE (MSL)*
FF-MW-7	2/8/99	15.05	0.17	9.43	4.84-14.34	8.73	0.70
	6/26/98					8.30	1.13
	10/8/97					8.34	1.09
	7/16/97					8.50	0.93
	6/18/97					7.62	1.81
FF-MW-8	**2/8/99**	**15.17**	**0.17**	**8.98**	**4.96-14.46**	**7.98**	**1.00**
	6/26/98					**7.85**	**1.13**
	10/8/97					**7.71**	**1.27**
	7/16/97					**7.78**	**1.20**
	6/18/97					**7.18**	**1.80**
FF-MW-9	**2/8/99**	**24.79**	**0.21**	**10.08**	**21.98-24.29**	**9.21**	**0.87**
	6/26/98					**8.58**	**1.50**
	10/8/97					**8.99**	**1.09**
	7/16/97					**9.15**	**0.93**
	6/18/97					**8.26**	**1.82**
FF-MW-10	**2/8/99**	**15.0**	**0.09**	**13.31**	**14.7-5.2**	**12.19**	**1.12**
	6/26/98					**12.02**	**1.29**
FF-MW-11	**2/8/99**	**25.0**	**0.17**	**21.45**	**15.2-24.2**	**19.91**	**1.54**
	6/26/98					**20.03**	**1.42**
MPT16MW 02S	**2/8/99**	**15.50**	**0.28**	**10.74**	**5.0-15.0**	**9.77**	**0.97**
	6/26/98					**9.28**	**1.46**
	10/8/97					**9.46**	**1.28**
	7/16/97					**9.73**	**1.01**
	6/18/97					**9.91**	**0.83**
MPT16MW 03S	**2/8/99**	**15.50**	**0.40**	**11.27**	**5.0-15.0**	**10.03**	**1.24**
	6/26/98					**10.03**	**1.24**
	10/8/97					**9.68**	**1.59**
	7/16/97					**9.85**	**1.42**
	6/18/97					**9.32**	**1.95**
MPT-8-PO1	2/8/99	15.0	NR	12.89**	10.0-15.0	6.63	6.26
	6/26/98	15.0				7.31	5.58
	10/8/97					6.44	6.45

TABLE 1 (continued)
MONITORING WELL CONSTRUCTION AND WATER LEVEL DATA
CONTAMINATION ASSESSMENT REPORT
NSC FUEL FARM
NAVAL STATION MAYPORT

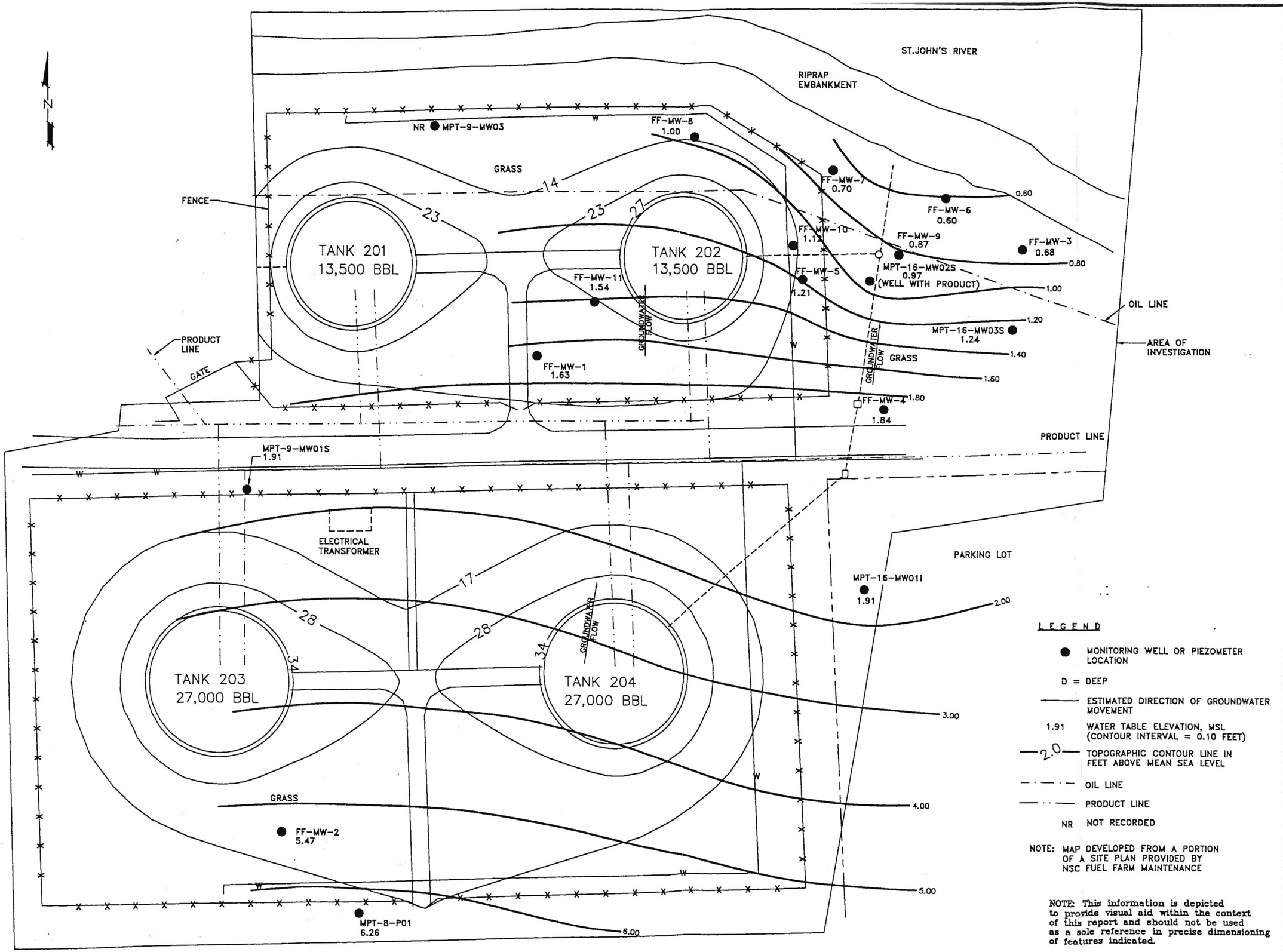
WELL NO.	DATE	TOTAL DEPTHS OF WELL BLS (ft.)	TOP OF CASING BLS (ft.)	SURVEYED TOP OF CASING ELEVATION (MSL)*	SCREENED INTERVAL DEPTH BLS (ft.)	DEPTH OF WATER FROM TOP OF CASING (ft.)	ELEVATION OF WATER TABLE (MSL)*
MPT-9-MW03	2/8/99	15.0	NR	11.49**	5.0-15.0	NR	NR
	10/8/97					10.32	1.17
MPT-16-MW01I	2/8/99	30.0	NR	12.84**	25-30.0	10.93	1.91
	6/26/98					10.77	2.07
	10/8/97					10.96	1.88
MPT-9-MW01S	2/8/99	20.0	NR	14.39	5.0-20.0	12.48	1.91
	6/26/98					12.81	1.58
	10/8/97					12.45	1.93

Notes:
NR = Not recorded
BLS = Below Land Surface
*= Elevations referenced to MSL (Mean Sea Level)
**= Elevations obtained from previous reports by others

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS FROM ASSESSMENT WELLS
NSC FUEL FARM
NAVAL STATION MAYPORT

POLYNUCLEAR AROMATIC HYDROCARBONS (Method 8310)									
PARAMETERS	DATE	MPT-16-MW02S	FF-MW-3	FF-,W-5**	FF-MW-6	FF-MW-7	FF-MW-8	FF-MW-9	REG. LEVELS
Naphthalene ug/l	2/8/99	**142000**	<11.1*	< 1.11*	< 1.01	< 1.10	< 1.15	< 1.10	20
Acenaphthene ug/l	2/8/99	< 51.5*	< 11.1*	< 1.11*	< 1.01	< 1.10	< 1.15	< 1.10	20
Anthracene ug/l	2/8/99	< 34*	< 0.73	< 0.73	< 0.67	< 0.73	< 0.76	< 0.73	2
Fluoranthene ug/l	2/8/99	< 10.8*	< 0.23	< 0.23	< 0.21	< 0.23	< 0.24	< 0.23	280
Fluorene	2/8/99	< 10.8*	< 0.23	< 2.33*	< 0.21	< 0.23	< 0.24	< 0.23	280
Pyrene ug/l	2/8/99	< 13.9*	< 0.30	< 0.30	< 0.27	< 0.30	< 0.31	< 0.30	210
Benzo(a)anthracene ug/l	2/8/99	< 6.70*	< 0.14	< 0.14	< 0.13	< 0.14	< 0.15	< 0.14	0.2
Benzo(a)pyrene ug/l	2/8/99	< 5.15*	< 0.11	< 0.11	< 0.10	< 0.11	< 0.11	< 0.11	0.2
Benzo(b)Fluoranthene ug/l	2/8/99	< 9.28*	< 0.20	< 0.20	< 0.18	< 0.20	< 0.21	< 0.20	0.2
Benzo(k)Fluoranthene ug/l	2/8/99	< 8.76*	< 0.19	< 0.19	< 0.17	< 0.19	< 0.20	< 0.19	0.5
Chrysene ug/l	2/8/99	< 7.73*	< 0.17	< 0.17	< 0.15	< 0.16	< 0.17	< 0.16	5
Dibenzo(a,h)Anthracene ug/l	2/8/99	< 6.0*	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	0.2
Indeno(1,2,3-c,d)pyrene ug/l	2/8/99	< 6.0*	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	0.2
Acenaphthylene ug/l	2/8/99	< 103*	< 22.2	< 2.22*	< 2.02	< 2.20	< 2.30	< 2.20	210
Benzo(g,h,I)perylene ug/l	2/8/99	< 39.2*	< 0.84	< 0.84	< 0.77	< 0.84	< 0.87	< 0.84	210
Phenanthrene ug/l	2/8/99	< 33.0*	< 0.71	< 7.11*	< 0.65	< 0.70	< 0.74	< 0.70	210
1-Methylnaphthalene ug/l	2/8/99	254	< 2.22	< 2.22	< 2.02	< 2.20	< 2.30	< 2.20	*
2-Methylnaphthalene ug/l	2/8/99	192	< 2.22	< 2.22	< 2.02	< 2.20	< 2.30	< 2.20	*
PETROLEUM HYDROCARBONS (FL-PRO)									
TRPH mg/l	2/8/99	**142**	< 0.211	3.07/3.17 Duplicate	1.19	< 0.206	0.280	< 0.208	5

Bold values indicate value exceeding regulatory cleanup levels
*Dilution factor required in detection limit calculation.
** FF-MW-13 PAH duplicate sample substituted for FF-MW-5 PAH sample broken during shipment.
*** Cleanup target levels have not been established



LEGEND

- ● MONITORING WELL OR PIEZOMETER LOCATION
- D = DEEP
- ——— ESTIMATED DIRECTION OF GROUNDWATER MOVEMENT
- 1.91 WATER TABLE ELEVATION, MSL (CONTOUR INTERVAL = 0.10 FEET)
- —2.0— TOPOGRAPHIC CONTOUR LINE IN FEET ABOVE MEAN SEA LEVEL
- — · — OIL LINE
- — · · — PRODUCT LINE
- NR NOT RECORDED

NOTE: MAP DEVELOPED FROM A PORTION OF A SITE PLAN PROVIDED BY NSC FUEL FARM MAINTENANCE

NOTE: This information is depicted to provide visual aid within the context of this report and should not be used as a sole reference in precise dimensioning of features indicated.

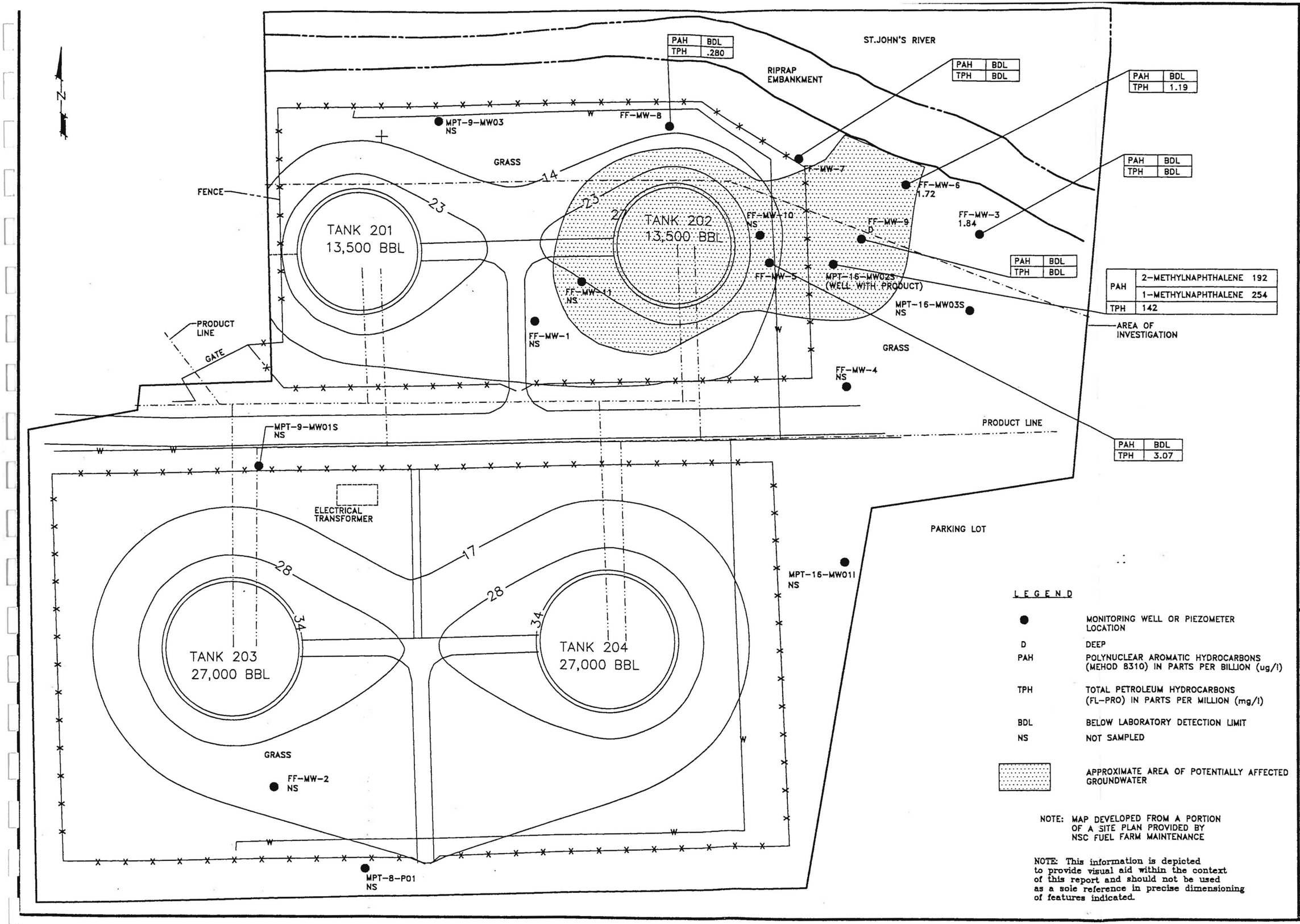
Contamination Assessment Report
NSC FUEL FARM
Naval Station Mayport
Mayport, Florida

Figure 1

WATER TABLE CONTOUR MAP
FEBRUARY 8, 1999

DRAWN BY:	CLL
DRAWING NO:	fig4
DATE	4/17/97
SCALE	APPROX. 1"=65'
PROJECT NO.	9990058

Bhate Environmental Associates, Inc.
Environmental Engineers & Scientists



LEGEND

●	MONITORING WELL OR PIEZOMETER LOCATION
D	DEEP
PAH	POLYNUCLEAR AROMATIC HYDROCARBONS (MEHOD 8310) IN PARTS PER BILLION (ug/l)
TPH	TOTAL PETROLEUM HYDROCARBONS (FL-PRO) IN PARTS PER MILLION (mg/l)
BDL	BELOW LABORATORY DETECTION LIMIT
NS	NOT SAMPLED
	APPROXIMATE AREA OF POTENTIALLY AFFECTED GROUNDWATER

NOTE: MAP DEVELOPED FROM A PORTION OF A SITE PLAN PROVIDED BY NSC FUEL FARM MAINTENANCE

NOTE: This information is depicted to provide visual aid within the context of this report and should not be used as a sole reference in precise dimensioning of features indicated.

Department of the Navy
Naval Station Mayport
Mayport, Florida

Figure 2

MONITORING WELL GROUNDWATER ANALYTICAL RESULTS FEBRUARY 8, 1999

DRAWN BY:	DRAWING NO:
–	82-F12

DATE	SCALE	PROJECT NO.
7/15/93	Approx. 1"=65'	9990058

Bhate Environmental Associates, Inc.
Environmental Engineers & Scientists

SPECIALIZED
ASSAYS, INC.
2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

E ENVIRONMENTAL, INC. 5896
13TH AVENUE SOUTH
INGHAM, AL 35205

ect: 9970082
ject Name: MAYPORT NAS/FUEL FARM
ler: DEWEY TRAPP

Lab Number: 99-A17414
Sample ID: FF-MW-3
Sample Type: Ground water
Site ID:

Date Collected: 2/ 8/99
Time Collected: 15:20
Date Received: 2/ 9/99
Time Received: 9:00

lyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
GANIC PARAMETERS*										
rida Pro	ND	ug/l	211.	100.	1	2/13/99	4:15	K.Phelps	FDEP	5523
Naphthalene	ND	ug/l	1.11	1.00	1	2/11/99	21:22	Moorbakhsh	8310	4344
enapthene	ND	ug/l	1.11	1.00	1	2/11/99	21:22	Moorbakhsh	8310	4344
thracene	ND	ug/l	0.73	0.66	1	2/11/99	21:22	Moorbakhsh	8310	4344
Fluoranthene	ND	ug/l	0.23	0.21	1	2/11/99	21:22	Moorbakhsh	8310	4344
Fluorene	ND	ug/l	0.23	0.21	1	2/11/99	21:22	Moorbakhsh	8310	4344
rene	ND	ug/l	0.30	0.27	1	2/11/99	21:22	Moorbakhsh	8310	4344
enzo(a)anthracene	ND	ug/l	0.14	0.13	1	2/11/99	21:22	Moorbakhsh	8310	4344
Benzo(a)pyrene	ND	ug/l	0.11	0.10	1	2/11/99	21:22	Moorbakhsh	8310	4344
nzo(b)fluoranthene	ND	ug/l	0.20	0.18	1	2/11/99	21:22	Moorbakhsh	8310	4344
nzo(k)fluoranthene	ND	ug/l	0.19	0.17	1	2/11/99	21:22	Moorbakhsh	8310	4344
Chrysene	ND	ug/l	0.17	0.15	1	2/11/99	21:22	Moorbakhsh	8310	4344
benzo(a,h)anthracene	ND	ug/l	0.12	0.12	1	2/11/99	21:22	Moorbakhsh	8310	4344
deno(1,2,3-cd)pyrene	ND	ug/l	0.12	0.12	1	2/11/99	21:22	Moorbakhsh	8310	4344
Acenaphthylene	ND	ug/l	2.22	2.00	1	2/11/99	21:22	Moorbakhsh	8310	4344
Benzo(g,h,i)perylene	ND	ug/l	0.84	0.76	1	2/11/99	21:22	Moorbakhsh	8310	4344
enanthrene	ND	ug/l	0.71	0.64	1	2/11/99	21:22	Moorbakhsh	8310	4344
-Methylnapthalene	ND	ug/l	2.22	2.00	1	2/11/99	21:22	Moorbakhsh	8310	4344
2-Methylnapthalene	ND	ug/l	2.22	2.00	1	2/11/99	21:22	Moorbakhsh	8310	4344

rrogate outside QC range, insufficient sample for re-extraction and re-analysis.

ND = Not detected at the report limit.

ample Extraction Data

	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
AH's	900. ml	1.00 ml	2/10/99	M. Cauthen	3510
rida Pro	950. ml	2.0 ml	2/12/99	Fitzwater	FDEP

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ANALYTICAL REPORT

Laboratory Number: 99-A17414
Sample ID: FF-MW-3

rrogate	% Recovery	Target Range
a Pro Surr., O-Terphenyl	128.	82. - 142.
a Pro Surr., C-35 Hydrocarbon	103.	55. - 118.
PAH Surr., p-terphenyl d14	14. *	20. - 140.

Report Approved By: _____ Report Date: 2/15/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

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ANALYTICAL REPORT

ATE ENVIRONMENTAL, INC. 3896
0 13TH AVENUE SOUTH
RMINGHAM, AL 35205

ject: 9970082
oject Name: MAYPORT NAS/FUEL FARM
ler: DEWEY TRAPP

Lab Number: 99-A17409
Sample ID: FF-MW-5
Sample Type: Ground water
Site ID:

Date Collected: 2/ 8/99
Time Collected: 12:40
Date Received: 2/ 9/99
Time Received: 9:00

alyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
RGANIC PARAMETERS*										
orida Pro	3070	ug/l	211.	100.	1	2/13/99	1:20	K.Phelps	FDEP	5523

= Not detected at the report limit.

ample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
Fla Pro	950. ml	2.0 ml	2/12/99	Fitzwater	FDEP

Surrogate	% Recovery	Target Range
Fla Pro Surr., O-Terphenyl	120.	82. - 142.
Fla Pro Surr., C-35 Hydrocarbon	105.	55. - 118.

Report Approved By: JA Mitchell Report Date: 2/15/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

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ANALYTICAL REPORT

TE ENVIRONMENTAL, INC. 5896
13TH AVENUE SOUTH
INGHAM, AL 35205

ct: 9970082
ject Name: MAYPORT NAS/FUEL FARM
er: DEWEY TRAPP

Lab Number: 99-A17410
Sample ID: FF-MW-13
Sample Type: Ground water
Site ID:

Date Collected: 2/ 8/99
Time Collected: 13:10
Date Received: 2/ 9/99
Time Received: 9:00

ate	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
ANIC PARAMETERS*										
ida Pro	3170	ug/l	211.	100.	1	2/13/99	1:49	K.Phelps	FDEP	5523
aphthalene	ND	ug/l	11.1	1.00	10	2/11/99	21:22	Moorbakhsh	8310	4344
aphthene	ND	ug/l	11.1	1.00	10	2/11/99	21:22	Moorbakhsh	8310	4344
racene	ND	ug/l	0.73	0.66	1	2/11/99	21:22	Moorbakhsh	8310	4344
luoranthene	ND	ug/l	0.23	0.21	1	2/11/99	21:22	Moorbakhsh	8310	4344
rene	ND	ug/l	2.33	0.21	10	2/11/99	21:22	Moorbakhsh	8310	4344
ene	ND	ug/l	0.30	0.27	1	2/11/99	21:22	Moorbakhsh	8310	4344
enzo(a)anthracene	ND	ug/l	0.14	0.13	1	2/11/99	21:22	Moorbakhsh	8310	4344
enzo(a)pyrene	ND	ug/l	0.11	0.10	1	2/11/99	21:22	Moorbakhsh	8310	4344
zo(b)fluoranthene	ND	ug/l	0.20	0.18	1	2/11/99	21:22	Moorbakhsh	8310	4344
zo(k)fluoranthene	ND	ug/l	0.19	0.17	1	2/11/99	21:22	Moorbakhsh	8310	4344
hrysene	ND	ug/l	0.17	0.15	1	2/11/99	21:22	Moorbakhsh	8310	4344
enzo(a,h)anthracene	ND	ug/l	0.12	0.12	1	2/11/99	21:22	Moorbakhsh	8310	4344
eno(1,2,3-cd)pyrene	ND	ug/l	0.12	0.12	1	2/11/99	21:22	Moorbakhsh	8310	4344
enaphthylene	ND	ug/l	22.2	2.00	10	2/11/99	21:22	Moorbakhsh	8310	4344
zo(g,h,i)perylene	ND	ug/l	0.84	0.76	1	2/11/99	21:22	Moorbakhsh	8310	4344
nanthrene	ND	ug/l	7.11	0.64	10	2/11/99	21:22	Moorbakhsh	8310	4344
methylnapthalene	ND	ug/l	2.22	2.00	1	2/11/99	21:22	Moorbakhsh	8310	4344
-Methylnapthalene	ND	ug/l	2.22	2.00	1	2/11/99	21:22	Moorbakhsh	8310	4344

= Not detected at the report limit.

ple Extraction Data

ameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
f's	900. ml	1.00 ml	2/10/99	M. Cauthen	3510
Pro	950. ml	2.0 ml	2/12/99	Fitzwater	FDEP

rogate	% Recovery	Target Range
a Pro Surr., O-Terphenyl	127.	32. - 142.

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ANALYTICAL REPORT

Laboratory Number: 99-A17410
Sample ID: FF-MW-13

Surrogate	% Recovery	Target Range
Pro Surr., C-35 Hydrocarbon	106.	55. - 118.

The HPLC surr was diluted out due to sample matrix

Report Approved By: _____ Report Date: 2/15/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

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ANALYTICAL REPORT

ATE ENVIRONMENTAL, INC. 5896
) 13TH AVENUE SOUTH
R.MINGHAM, AL 35205

ject: 9970082
oject Name: MAYPORT NAS/FUEL FARM
ler: DEWEY TRAPP

Lab Number: 99-A17412
Sample ID: FF-MW-6
Sample Type: Ground water
Site ID:

Date Collected: 2/ 8/99
Time Collected: 14:45
Date Received: 2/ 9/99
Time Received: 9:00

alyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
RGANIC PARAMETERS*										
orida Pro	1190	ug/l	211.	100.	1	2/13/99	2:47	K.Phelps	FDEP	5523
Naphthalene	ND	ug/l	1.01	1.00	1	2/11/99	21:22	Noorbakhsh	8310	4344
enapthene	ND	ug/l	1.01	1.00	1	2/11/99	21:22	Noorbakhsh	8310	4344
thracene	ND	ug/l	0.67	0.66	1	2/11/99	21:22	Noorbakhsh	8310	4344
Fluoranthene	ND	ug/l	0.21	0.21	1	2/11/99	21:22	Noorbakhsh	8310	4344
luorene	ND	ug/l	0.21	0.21	1	2/11/99	21:22	Noorbakhsh	8310	4344
grene	ND	ug/l	0.27	0.27	1	2/11/99	21:22	Noorbakhsh	8310	4344
enzo(a)anthracene	ND	ug/l	0.13	0.13	1	2/11/99	21:22	Noorbakhsh	8310	4344
Benzo(a)pyrene	ND	ug/l	0.10	0.10	1	2/11/99	21:22	Noorbakhsh	8310	4344
enzo(b)fluoranthene	ND	ug/l	0.18	0.18	1	2/11/99	21:22	Noorbakhsh	8310	4344
enzo(k)fluoranthene	ND	ug/l	0.17	0.17	1	2/11/99	21:22	Noorbakhsh	8310	4344
Chrysene	ND	ug/l	0.15	0.15	1	2/11/99	21:22	Noorbakhsh	8310	4344
ibenzo(a,h)anthracene	ND	ug/l	0.12	0.12	1	2/11/99	21:22	Noorbakhsh	8310	4344
deno(1,2,3-cd)pyrene	ND	ug/l	0.12	0.12	1	2/11/99	21:22	Noorbakhsh	8310	4344
Acenaphthylene	ND	ug/l	2.02	2.00	1	2/11/99	21:22	Noorbakhsh	8310	4344
Benzo(g,h,i)perylene	ND	ug/l	0.77	0.76	1	2/11/99	21:22	Noorbakhsh	8310	4344
henanthrene	ND	ug/l	0.65	0.64	1	2/11/99	21:22	Noorbakhsh	8310	4344
1-Methylnapthalene	ND	ug/l	2.02	2.00	1	2/11/99	21:22	Noorbakhsh	8310	4344
2-Methylnapthalene	ND	ug/l	2.02	2.00	1	2/11/99	21:22	Noorbakhsh	8310	4344

D = Not detected at the report limit.

ample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
PAH's	990. ml	1.00 ml	2/10/99	M. Cauthen	3510
la Pro	950. ml	2.0 ml	2/12/99	Fitzwater	FDEP

Surrogate	% Recovery	Target Range
Fla Pro Surr., O-Terphenyl	102.	82. - 142.

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ANALYTICAL REPORT

Laboratory Number: 99-A17412
Sample ID: FF-MW-6

rrogate	% Recovery	Target Range
a Pro Surr., C-35 Hydrocarbon	103.	55. - 118.
4 Surr., p-terphenyl d14	0. *	20. - 140.

Surrogate outside QC range, insufficient sample for
-extraction and re-analysis.

Report Approved By: _____ Report Date: 2/15/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

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ANALYTICAL REPORT

ATE ENVIRONMENTAL, INC. 5896
13TH AVENUE SOUTH
RMINGHAM, AL 35205

ject: 9970082
ject Name: MAYPORT NAS/FUEL FARM
ler: DEWEY TRAPP

Lab Number: 99-A17411
Sample ID: FF-MW-7
Sample Type: Ground water
Site ID:

Date Collected: 2/ 8/99
Time Collected: 14:17
Date Received: 2/ 9/99
Time Received: 9:00

alyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
GANIC PARAMETERS*										
orida Pro	ND	ug/l	206.	100.	1	2/13/99	2:18	K.Phelps	FDEP	5523
Naphthalene	ND	ug/l	1.10	1.00	1	2/11/99	21:22	Moorbakhsh	8310	4344
enapthene	ND	ug/l	1.10	1.00	1	2/11/99	21:22	Moorbakhsh	8310	4344
thracene	ND	ug/l	0.73	0.66	1	2/11/99	21:22	Moorbakhsh	8310	4344
Fluoranthene	ND	ug/l	0.23	0.21	1	2/11/99	21:22	Moorbakhsh	8310	4344
luorene	ND	ug/l	0.23	0.21	1	2/11/99	21:22	Moorbakhsh	8310	4344
rene	ND	ug/l	0.30	0.27	1	2/11/99	21:22	Moorbakhsh	8310	4344
enzo(a)anthracene	ND	ug/l	0.14	0.13	1	2/11/99	21:22	Moorbakhsh	8310	4344
Benzo(a)pyrene	ND	ug/l	0.11	0.10	1	2/11/99	21:22	Moorbakhsh	8310	4344
nzo(b)Fluoranthene	ND	ug/l	0.20	0.18	1	2/11/99	21:22	Moorbakhsh	8310	4344
enzo(k)Fluoranthene	ND	ug/l	0.19	0.17	1	2/11/99	21:22	Moorbakhsh	8310	4344
Chrysene	ND	ug/l	0.16	0.15	1	2/11/99	21:22	Moorbakhsh	8310	4344
benzo(a,h)anthracene	ND	ug/l	0.12	0.12	1	2/11/99	21:22	Moorbakhsh	8310	4344
deno(1,2,3-cd)pyrene	ND	ug/l	0.12	0.12	1	2/11/99	21:22	Moorbakhsh	8310	4344
Acenaphthylene	ND	ug/l	2.20	2.00	1	2/11/99	21:22	Moorbakhsh	8310	4344
enzo(g,h,i)perylene	ND	ug/l	0.84	0.76	1	2/11/99	21:22	Moorbakhsh	8310	4344
enanthrene	ND	ug/l	0.70	0.64	1	2/11/99	21:22	Moorbakhsh	8310	4344
1-Methylnapthalene	ND	ug/l	2.20	2.00	1	2/11/99	21:22	Moorbakhsh	8310	4344
2-Methylnapthalene	ND	ug/l	2.20	2.00	1	2/11/99	21:22	Moorbakhsh	8310	4344

D = Not detected at the report limit.

ample Extraction Data

arameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
AH's	910. ml	1.00 ml	2/10/99	N. Cauthen	3510
la Pro	970. ml	2.0 ml	2/12/99	Fitzwater	FDEP

urrogate	% Recovery	Target Range
la Pro Surr., O-Terpheanyl	125.	82. - 142.

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Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A17411
Sample ID: FF-MW-7

rrogate	% Recovery	Target Range
a Fro Surr., C-35 Hydrocarbon	104.	55. - 118.
H Surr., p-terphenyl d14	22.	20. - 140.

Report Approved By: _____ Report Date: 2/15/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

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Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

TE ENVIRONMENTAL, INC. 5896
13TH AVENUE SOUTH
INGHAM, AL 35205

ect: 9970082
ject Name: MAYPORT NAS/FUEL FARM
ler: DEWEY TRAPP

Lab Number: 99-A17408
Sample ID: FF-MW-8
Sample Type: Ground water
Site ID:

Date Collected: 2/ 8/99
Time Collected: 12:13
Date Received: 2/ 9/99
Time Received: 9:00

lyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
GANIC PARAMETERS*										
orida Pro	280.	ug/l	202.	100.	1	2/13/99	0:51	K.Phelps	FDEP	5523
Naphthalene	ND	ug/l	1.15	1.00	1	2/11/99	21:22	Noorbakhsh	8310	4344
enaphthene	ND	ug/l	1.15	1.00	1	2/11/99	21:22	Noorbakhsh	8310	4344
thracene	ND	ug/l	0.76	0.66	1	2/11/99	21:22	Noorbakhsh	8310	4344
Fluoranthene	ND	ug/l	0.24	0.21	1	2/11/99	21:22	Noorbakhsh	8310	4344
Fluorene	ND	ug/l	0.24	0.21	1	2/11/99	21:22	Noorbakhsh	8310	4344
rene	ND	ug/l	0.31	0.27	1	2/11/99	21:22	Noorbakhsh	8310	4344
enzo(a)anthracene	ND	ug/l	0.15	0.13	1	2/11/99	21:22	Noorbakhsh	8310	4344
Benzo(a)pyrene	ND	ug/l	0.11	0.10	1	2/11/99	21:22	Noorbakhsh	8310	4344
zo(b)Fluoranthene	ND	ug/l	0.21	0.18	1	2/11/99	21:22	Noorbakhsh	8310	4344
zo(k)Fluoranthene	ND	ug/l	0.20	0.17	1	2/11/99	21:22	Noorbakhsh	8310	4344
Chrysene	ND	ug/l	0.17	0.15	1	2/11/99	21:22	Noorbakhsh	8310	4344
benzo(a,h)anthracene	ND	ug/l	0.12	0.12	1	2/11/99	21:22	Noorbakhsh	8310	4344
deno(1,2,3-cd)pyrene	ND	ug/l	0.12	0.12	1	2/11/99	21:22	Noorbakhsh	8310	4344
Acenaphthylene	ND	ug/l	2.30	2.00	1	2/11/99	21:22	Noorbakhsh	8310	4344
Benzo(g,h,i)perylene	ND	ug/l	0.87	0.76	1	2/11/99	21:22	Noorbakhsh	8310	4344
enanthrene	ND	ug/l	0.74	0.64	1	2/11/99	21:22	Noorbakhsh	8310	4344
1-Methylnaphthalene	ND	ug/l	2.30	2.00	1	2/11/99	21:22	Noorbakhsh	8310	4344
2-Methylnapthalene	ND	ug/l	2.30	2.00	1	2/11/99	21:22	Noorbakhsh	8310	4344

= Not detected at the report limit.

mple Extraction Data

rameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
AH's	870. ml	1.00 ml	2/10/99	M. Cauthen	3510
la Pro	990 ml	2.0 ml	2/12/99	Filtrwater	FDEP

rrogate	% Recovery	Target Range
la Pro Surr., O-Terphenyl	114.	82. - 142.

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Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A17408
Sample ID: FF-MW-8

ogate	% Recovery	Target Range
Pro Surr., C-35 Hydrocarbon	103.	55. - 110.
Surr., p-terphenyl d14	22.	20. - 140.

Report Approved By: J.M. Mitchell Report Date: 2/15/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

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Phone 1-615-726-0177

ANALYTICAL REPORT

TE ENVIRONMENTAL, INC. 5896
13TH AVENUE SOUTH
INGHAM, AL 35205

ect: 9970082
ject Name: MAYPORT NAS/FUEL FARM
ler: DEWEY TRAPP

Lab Number: 99-A17413
Sample ID: FF-MW-9
Sample Type: Ground water
Site ID:

Date Collected: 2/ 8/99
Time Collected: 15:02
Date Received: 2/ 9/99
Time Received: 9:00

lyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
GANIC PARAMETERS*										
rida Pro	ND	ug/l	208.	100.	1	2/13/99	3:45	K.Phelps	FDEP	5523
Naphthalene	ND	ug/l	1.10	1.00	1	2/11/99	21:22	Moorbakhsh	8310	4344
naphthene	ND	ug/l	1.10	1.00	1	2/11/99	21:22	Moorbakhsh	8310	4344
hracene	ND	ug/l	0.73	0.66	1	2/11/99	21:22	Moorbakhsh	8310	4344
Fluoranthene	ND	ug/l	0.23	0.21	1	2/11/99	21:22	Moorbakhsh	8310	4344
Fluorene	ND	ug/l	0.23	0.21	1	2/11/99	21:22	Moorbakhsh	8310	4344
ene	ND	ug/l	0.30	0.27	1	2/11/99	21:22	Moorbakhsh	8310	4344
Benzo(a)anthracene	ND	ug/l	0.14	0.13	1	2/11/99	21:22	Moorbakhsh	8310	4344
Benzo(a)pyrene	ND	ug/l	0.11	0.10	1	2/11/99	21:22	Moorbakhsh	8310	4344
zo(b)fluoranthene	ND	ug/l	0.20	0.18	1	2/11/99	21:22	Moorbakhsh	8310	4344
zo(k)fluoranthene	ND	ug/l	0.19	0.17	1	2/11/99	21:22	Moorbakhsh	8310	4344
Chrysene	ND	ug/l	0.16	0.15	1	2/11/99	21:22	Moorbakhsh	8310	4344
benzo(a,h)anthracene	ND	ug/l	0.12	0.12	1	2/11/99	21:22	Moorbakhsh	8310	4344
deno(1,2,3-cd)pyrene	ND	ug/l	0.12	0.12	1	2/11/99	21:22	Moorbakhsh	8310	4344
Acenaphthylene	ND	ug/l	2.20	2.00	1	2/11/99	21:22	Moorbakhsh	8310	4344
Benzo(g,h,i)perylene	ND	ug/l	0.84	0.76	1	2/11/99	21:22	Moorbakhsh	8310	4344
enanthrene	ND	ug/l	0.70	0.64	1	2/11/99	21:22	Moorbakhsh	8310	4344
1-Methylnaphthalene	ND	ug/l	2.20	2.00	1	2/11/99	21:22	Moorbakhsh	8310	4344
2-Methylnaphthalene	ND	ug/l	2.20	2.00	1	2/11/99	21:22	Moorbakhsh	8310	4344

rrogate outside QC range, insufficient sample for re-extraction and re-analysis.

ND = Not detected at the report limit.

ample Extraction Data

rameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
AH's	910. ml	1.00 ml	2/10/99	M. Cauthen	3510
Fla Pro	960. ml	2.0 ml	2/12/99	Fitzwater	FDEP

COPY 1

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ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A17413
Sample ID: FF-MW-9

rogate	% Recoverg	Target Range
Pro Surr., O-Terphenyl	125.	82. - 142.
Pro Surr., C-35 Hydrocarbon	102.	55. - 118.
PAH Surr., p-terphenyl d14	12. *	20. - 140.

Report Approved By: _____ Report Date: 2/15/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

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Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

ATE ENVIRONMENTAL, INC. 5896
13TH AVENUE SOUTH
..INGHAM, AL 35205

ject: 9970082
oject Name: MAYPORT NAS/FUEL FARM
ler: DEWEY TRAPP

Lab Number: 99-A17415
Sample ID: MPT-16-MW02S
Sample Type: Ground water
Site ID:

Date Collected: 2/ 8/99
Time Collected: 15:40
Date Received: 2/ 9/99
Time Received: 9:00

alyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
RGANIC PARAMETERS*										
orida Pro	142000	ug/l	4260	100.	20	2/13/99	13:00	K.Phelps	FDEP	5523
Naphthalene	ND	ug/l	51.5	1.00	50	2/11/99	21:22	Moorbakhsh	8310	4344
enapthene	ND	ug/l	51.5	1.00	50	2/11/99	21:22	Moorbakhsh	8310	4344
thracene	ND	ug/l	34.0	0.66	50	2/11/99	21:22	Moorbakhsh	8310	4344
Fluoranthene	ND	ug/l	10.8	0.21	50	2/11/99	21:22	Moorbakhsh	8310	4344
Fluorene	ND	ug/l	10.8	0.21	50	2/11/99	21:22	Moorbakhsh	8310	4344
rene	ND	ug/l	13.9	0.27	50	2/11/99	21:22	Moorbakhsh	8310	4344
enzo(a)anthracene	ND	ug/l	6.70	0.13	50	2/11/99	21:22	Moorbakhsh	8310	4344
Benzo(a)pyrene	ND	ug/l	5.15	0.10	50	2/11/99	21:22	Moorbakhsh	8310	4344
nzo(b)fluoranthene	ND	ug/l	9.20	0.18	50	2/11/99	21:22	Moorbakhsh	8310	4344
nzo(k)fluoranthene	ND	ug/l	8.76	0.17	50	2/11/99	21:22	Moorbakhsh	8310	4344
Chrysene	ND	ug/l	7.73	0.15	50	2/11/99	21:22	Moorbakhsh	8310	4344
ibenzo(a,h)anthracene	ND	ug/l	6.00	0.12	50	2/11/99	21:22	Moorbakhsh	8310	4344
nzo(1,2,3-cd)pyrene	ND	ug/l	6.00	0.12	50	2/11/99	21:22	Moorbakhsh	8310	4344
enaphthylene	ND	ug/l	103.	2.00	50	2/11/99	21:22	Moorbakhsh	8310	4344
Benzo(g,h,i)perylene	ND	ug/l	39.2	0.76	50	2/11/99	21:22	Moorbakhsh	8310	4344
enanthrene	ND	ug/l	33.0	0.64	50	2/11/99	21:22	Moorbakhsh	8310	4344
-Methylnapthalene	254.	ug/l	103.	2.00	50	2/11/99	21:22	Moorbakhsh	8310	4344
2-Methylnapthalene	192.	ug/l	103.	2.00	50	2/11/99	21:22	Moorbakhsh	8310	4344

D = Not detected at the report limit.

ample Extraction Data

arameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
AH's	970. ml	1.00 ml	2/10/99	M. Cauthen	3510
la Pro	940. ml	2.0 ml	2/12/99	Fitzwater	FDEP

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SLA PRO surrogates were out of range due to sample matrix.

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2960 Foster Creighton Dr.
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Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A17415
Sample ID: MPT-16-MW02S

Report Approved By: JMitchell Report Date: 2/15/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

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MAR 10 1999
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ANALYTICAL REPORT

ATE ENVIRONMENTAL, INC. 5896
3 13TH AVENUE SOUTH
MINGHAM, AL 35205

ject: 9970082
oject Name: MAYPORT NAS/FUEL FARM
pler: DEWEY TRAPP

Lab Number: 99-A17416
Sample ID: FF-RS-1
Sample Type: Ground water
Site ID:

Date Collected: 2/ 8/99
Time Collected: 14:05
Date Received: 2/ 9/99
Time Received: 9:00

alyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
RGANIC PARAMETERS*										
orida Pro	ND	ug/l	222.	100.	1	2/13/99	5:13	K.Phelps	FDEP	5523
Naphthalene	ND	ug/l	1.05	1.00	1	2/11/99	21:22	Noorbakhsh	8310	4344
enapthene	ND	ug/l	1.05	1.00	1	2/11/99	21:22	Noorbakhsh	8310	4344
thracene	ND	ug/l	0.69	0.66	1	2/11/99	21:22	Noorbakhsh	8310	4344
Fluoranthene	ND	ug/l	0.22	0.21	1	2/11/99	21:22	Noorbakhsh	8310	4344
Fluorene	ND	ug/l	0.22	0.21	1	2/11/99	21:22	Noorbakhsh	8310	4344
grene	ND	ug/l	0.28	0.27	1	2/11/99	21:22	Noorbakhsh	8310	4344
enzo(a)anthracene	ND	ug/l	0.14	0.13	1	2/11/99	21:22	Noorbakhsh	8310	4344
Benzo(a)pyrene	ND	ug/l	0.11	0.10	1	2/11/99	21:22	Noorbakhsh	8310	4344
enzo(b)Fluoranthene	ND	ug/l	0.19	0.18	1	2/11/99	21:22	Noorbakhsh	8310	4344
enzo(k)Fluoranthene	ND	ug/l	0.18	0.17	1	2/11/99	21:22	Noorbakhsh	8310	4344
Chrysene	ND	ug/l	0.16	0.15	1	2/11/99	21:22	Noorbakhsh	8310	4344
ibenzo(a,h)anthracene	ND	ug/l	0.12	0.12	1	2/11/99	21:22	Noorbakhsh	8310	4344
ndeno(1,2,3-cd)pyrene	ND	ug/l	0.12	0.12	1	2/11/99	21:22	Noorbakhsh	8310	4344
Acenaphthylene	ND	ug/l	2.11	2.00	1	2/11/99	21:22	Noorbakhsh	8310	4344
Benzo(g,h,i)perylene	ND	ug/l	0.80	0.76	1	2/11/99	21:22	Noorbakhsh	8310	4344
henanthrene	ND	ug/l	0.67	0.64	1	2/11/99	21:22	Noorbakhsh	8310	4344
1-Methylnapthalene	ND	ug/l	2.11	2.00	1	2/11/99	21:22	Noorbakhsh	8310	4344
2-Methylnapthalene	ND	ug/l	2.11	2.00	1	2/11/99	21:22	Noorbakhsh	8310	4344

ND = Not detected at the report limit.

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
PAH's	950. ml	1.00 ml	2/10/99	M. Cauthen	3510
Fla Pro	900. ml	2.0 ml	2/12/99	Fitzwater	FDEP

Surrogate	% Recovery	Target Range
Fla Pro Surr., O-Terphenyl	107.	82. - 142.

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2960 Foster Creighton Dr.
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Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A17416
Sample ID: FF-RS-1

Surrogate	% Recovery	Target Range
Fla Pro Surr., C-35 Hydrocarbon	104.	55. - 118.
Surr., p-terphenyl d14	26.	20. - 140.

Report Approved By: _____ Report Date: 2/15/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

BHAT
Environmental Engineers and Scientists
1608 13th Avenue South
Birmingham, Alabama 35205
(205) 918-4000 (FAX) (205) 918-4050

5896 130383

CHAIN-OF-CUSTODY

PROJECT NO.: 9970082 PROJECT NAME: Mayport NAS/Fuel Farm
P.O. NO.: LAB DESTINATION:
SAMPLER(s) NAME: Dewey Trapp
TITLE:

CONTAINERS

Preserved (Code): A E
Iced (yes/no): Y Y

Code: A – None, B – HNO3, C – H2SO4, D – NaOH, E – HCl, F –

Lab Code – for Lab use only	Yr. / Date	Time	Comp	Grab	Sample No./ Sample Location	SOIL	WATER	SOLID OTHER	NON-AQUEOUS LIQUID	No.	Volume	Type	TEST: METHOD: SVOC (8310)	TEST: METHOD: TPH FLPRO	TEST: METHOD:	TEST: METHOD:	TEST: METHOD:	REMARKS
124108	2/8/99	1213		✓	FF-mw-8		☒			2	1l	GA	✓	✓				
4109	2/8/99	1240		✓	FF-mw-5		☒			2	1l	GA	✓	✓	8310			liter BIS
4110	2/8/99	1310		✓	FF-mw-13		☒			2	1l	GA	✓	✓		for		MW-5
4111	2/8/99	1417		✓	FF-mw-7		☒			2	1l	GA	✓	✓				
4112	2/8/99	1445		✓	FF-mw-6		☒			2	1l	GA	✓	✓				
4113	2/8/99	1502		✓	FF-mw-9		☒			2	1l	GA	✓	✓				Told
4114	2/8/99	1520		✓	FF-mw-3		☒			2	1l	GA	✓	✓				Emily Beers
4115	2/8/99	1540		✓	MPT-10-mw02		☒			2	1l	GA	✓	✓				1433 2/9
124116	2/8/99	1405		✓	FF-RS-1		☒			2	1l	GA	✓	✓				Disregard
	2/8/99																	8310

Relinquished by: (Signature):	Date:	Time:	Received by: (Signature):	Date:	Time:
Dewey Trapp	2/8/99	1700	Released to Fed Ex		
Relinquished by: (Signature):	Date:	Time:	Received by: (Signature):	Date:	Time:
Relinquished by: (Signature):	Date:	Time:	Received for Laboratory by: (Signature): J Jacob	2/9/99	900

LAB COMMENTS
4°C
* 8310 liter Broke in shipment for FF-MW-5

REMARKS ON SAMPLE RECEIVED BY LAB:
Bottle Intact: ☐
Preserved: ☐
Chilled: ☐
Other: ☐

SAMPLE SHIPPING METHOD
Hand Delivery ☐
Air (specify) ☐
Other (specify) ☐

SAMPLE CONTAINER TYPE
P = Plastic
G = Glass
GA = Glass Amber

DISTRIBUTION: WHITE COPY - Project File YELLOW COPY - Lab copy PINK COPY - Working File

F:\DWG\BLOCK\BC

Department of Environmental Protection

Buddy MacKay
Governor

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Kirby B. Green, III
Secretary

December 30, 1998

Ms. Beverly Washington
Department of the Navy, Petroleum Program
Southern Division - Naval Facilities Engineering Command
PO Box 190010
2155 Eagle Drive
North Charleston, SC 29419-9010

file: NSC_ADD1.doc

RE: Contamination Assessment Report Addendum, NSC Fuel Farm, Naval Station Mayport, Mayport, FL

Dear Ms. Washington:

I have reviewed the above document dated December 17, 1998 (received December 21, 1998). The following comments should be addressed by the Navy:

1. The Navy is reminded of the reason to conduct analyses on soil samples representing low, medium and high relative readings based on field OVA evaluations. In the absence of analytical data, soil with OVA readings >10 ppm are potentially contaminated and can act as a source of contamination. Accordingly, spreading soil with "less than 50 ppm OVA readings" can possibly contaminate additional soil and ground water (see ***Guidelines for Assessment and Source Removal of Petroleum Contaminated Soil***, May 1998, page 10).

2. Ground water from MW-10 is contaminated with Naphthalene, 1-methylnapthalene and 2-methylnapthalene (these last two compounds have TCLs of 20 ug/L - see Chapter 62-785, F.A.C.). In order to understand the contamination at the site and because of the proximity of monitoring wells MW-3, MW-6, MW-7 and MW-8 to the St. Johns River, additional data are needed from them. Prior to producing a Remedial Action Plan (RAP), those wells and monitoring wells MW-02S, MW-5 and MW-9 should be sampled and analyzed for semivolatile petroleum constituents and TRPH by Fla-PRO. As may be inferred by these comments, I am concerned about the possibility of contaminant migration to the St. Johns River. The above data will help evaluate that possibility, or may show that this is not a consideration.

Please incorporate the above data in a Site Assessment Report Addendum (SAR Addendum). You may use a letter format if you choose and please propose a course of action for

the site. If further clarification is required or if you have any questions, please contact me at 850-921-4230.

Sincerely,

James H. Cason, P.G.
Remedial Project Manager

12-31-98
Date

CC: Emmett A. Beers, Bahte Environmental Associates, Birmingham
Jan Bouvier, NAVSTA Mayport
Brian Cheary, FDEP Northeast District
Jerry Young, City of Jacksonville

TJB JJC for JJC ESN for ESN ESN