

N60200.AR.001541
NAS CECIL FIELD, FL
5090.3a

SITE ASSESSMENT REPORT FOR BUILDING 406 TANK 406 BASE REALIGNMENT AND
CLOSURE UNDERGROUND STORAGE TANK AND ABOVEGROUND STORAGE TANK
GREY SITES REVISION 1 NAS CECIL FIELD FL
11/1/1998
HARDING LAWSON ASSOCIATES

SITE ASSESSMENT REPORT
BUILDING 406, TANK 406
BASE REALIGNMENT AND CLOSURE
UNDERGROUND STORAGE TANK AND
ABOVEGROUND STORAGE TANK GREY SITES
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Unit Identification Code: N60200

Contract No.: N62467-89-D-0317/090

Prepared by:

Harding Lawson Associates
2590 Executive Center Circle, East
Tallahassee, Florida 32301

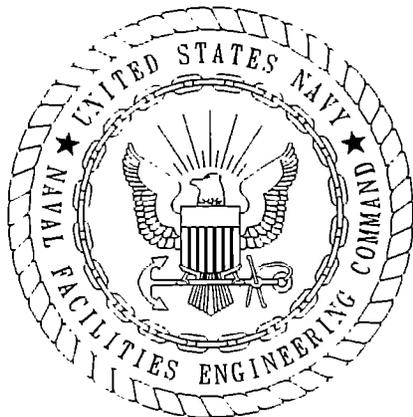
Prepared for:

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29418

Bryan Kizer, Code 1842, Engineer-in-Charge

November 1998

Revision 1.0



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, Harding Lawson Associates, hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/090 are complete and accurate and comply with all requirements of this contract.

DATE: November 3, 1998

NAME AND TITLE OF CERTIFYING OFFICIAL: Rao Angara
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Eric A. Blomberg, P.G.
Project Technical Lead

(DFAR 252.227-7036)

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Naval Air Station Cecil Field
Jacksonville, Florida

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Building 406, Tank 406
Naval Air Station Cecil Field
Jacksonville, Florida

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
bls	below land surface
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
HLA	Harding Lawson Associates
ISI	Innovative Services International, Inc.
KAG	Kerosene Analytical Group
OVA	organic vapor analyzer
SA	study area
UST	underground storage tank

1.0 INTRODUCTION

Harding Lawson Associates (HLA), under contract to the Southern Division, Naval Facilities Engineering Command, has completed the site assessment (SA) for Tank 406 at Naval Air Station Cecil Field in Jacksonville, Florida. This report summarizes the related field operations, results, conclusions, and recommendations of the SA.

Tank 406 was an underground storage tank (UST) located on the south side of Building 406, a duplex for family housing (Figure 1). The UST, which was installed in 1955, had a 350-gallon capacity and was used to store fuel oil for onsite heating (ABB Environmental Services, Inc. [ABB-ES], 1997). Tank 406 was removed by Innovative Services International, Inc. (ISI), on July 10, 1995. A closure assessment report (Appendix A) was prepared for Tank 406 and submitted to the Florida Department of Environmental Protection (ISI, 1995). The closure assessment report indicated that excessively contaminated soil was present at the site but did not indicate whether or not the excessively contaminated soil was removed. Therefore, to evaluate the current soil and groundwater conditions, the petroleum subcommittee (selected by the Naval Air Station Cecil Field partnering team) identified locations for soil screening and monitoring well installation. A contamination assessment plan for the Tank 406 site was prepared by HLA (then ABB-ES) in November 1996 (ABB-ES, 1996).

2.0 FIELD INVESTIGATION

The SA at Tank 406 was initiated in July 1997 and included

- the advancement of 14 soil borings to the water table,
- the installation of one shallow groundwater monitoring well, and
- collection and analysis of one subsurface soil sample and one groundwater sample.

Soil samples were collected at depth intervals of 1 foot below land surface (bls) and every 2 feet thereafter to the water table. These samples were screened for hydrocarbon vapors with an organic vapor analyzer (OVA). The subsurface soil sample, CEF-406-SB1, was collected from 3 to 4 feet bls at the soil boring location (SB1), which had the highest OVA reading, and was analyzed for the Kerosene Analytical Group (KAG) parameters.

One monitoring well, CEF-406-1S, was installed at the former UST location to a depth of 13 feet bls. One groundwater sample was collected on August 6, 1997, and analyzed for the KAG parameters. A general site plan indicating the location of monitoring well CEF-406-1S is presented on Figure 2. The monitoring well installation detail is included in Appendix B.

Groundwater flow direction was assessed using several monitoring wells in the base family housing area. Groundwater flow direction was determined to be to the southeast (Figure 1).

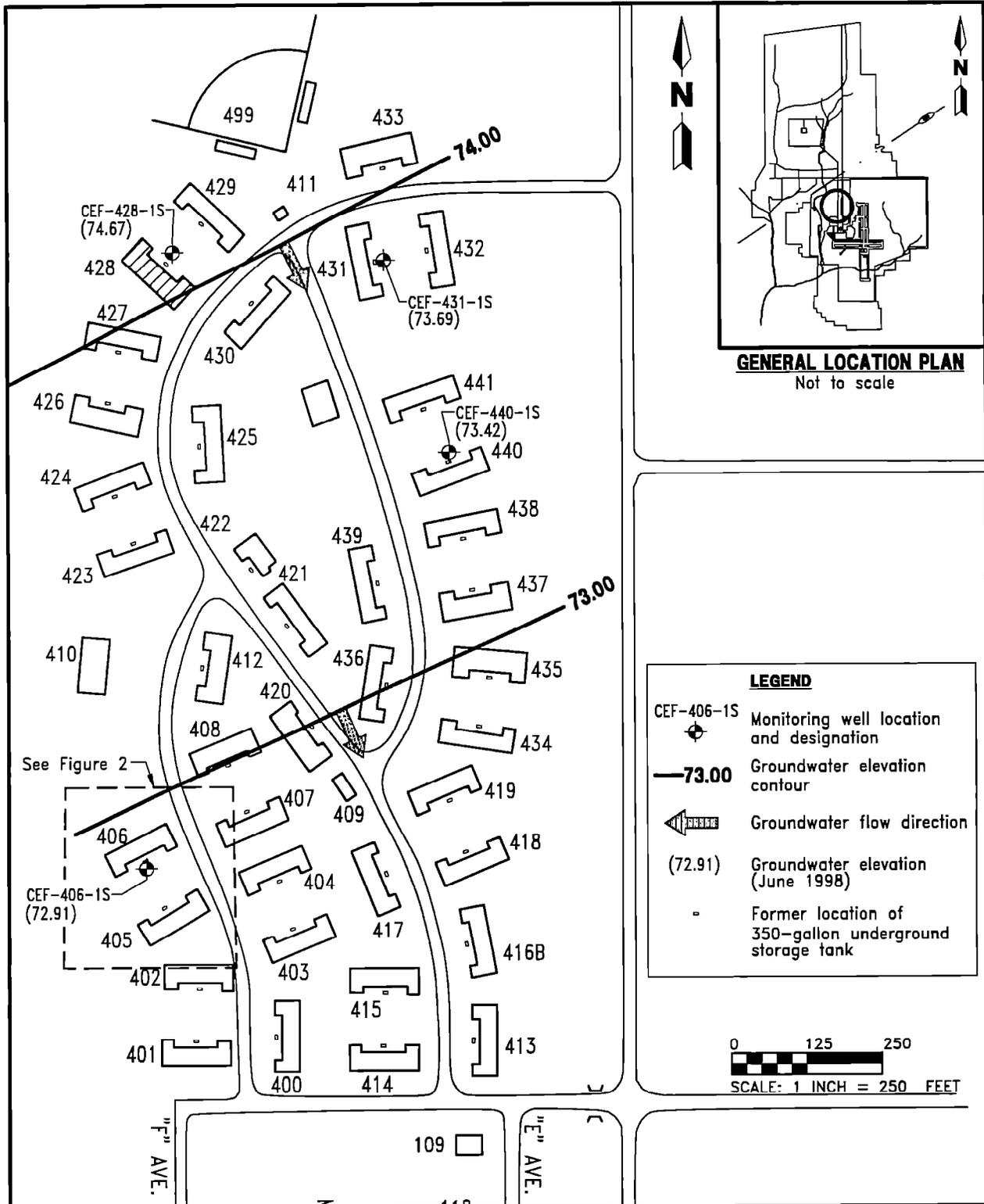
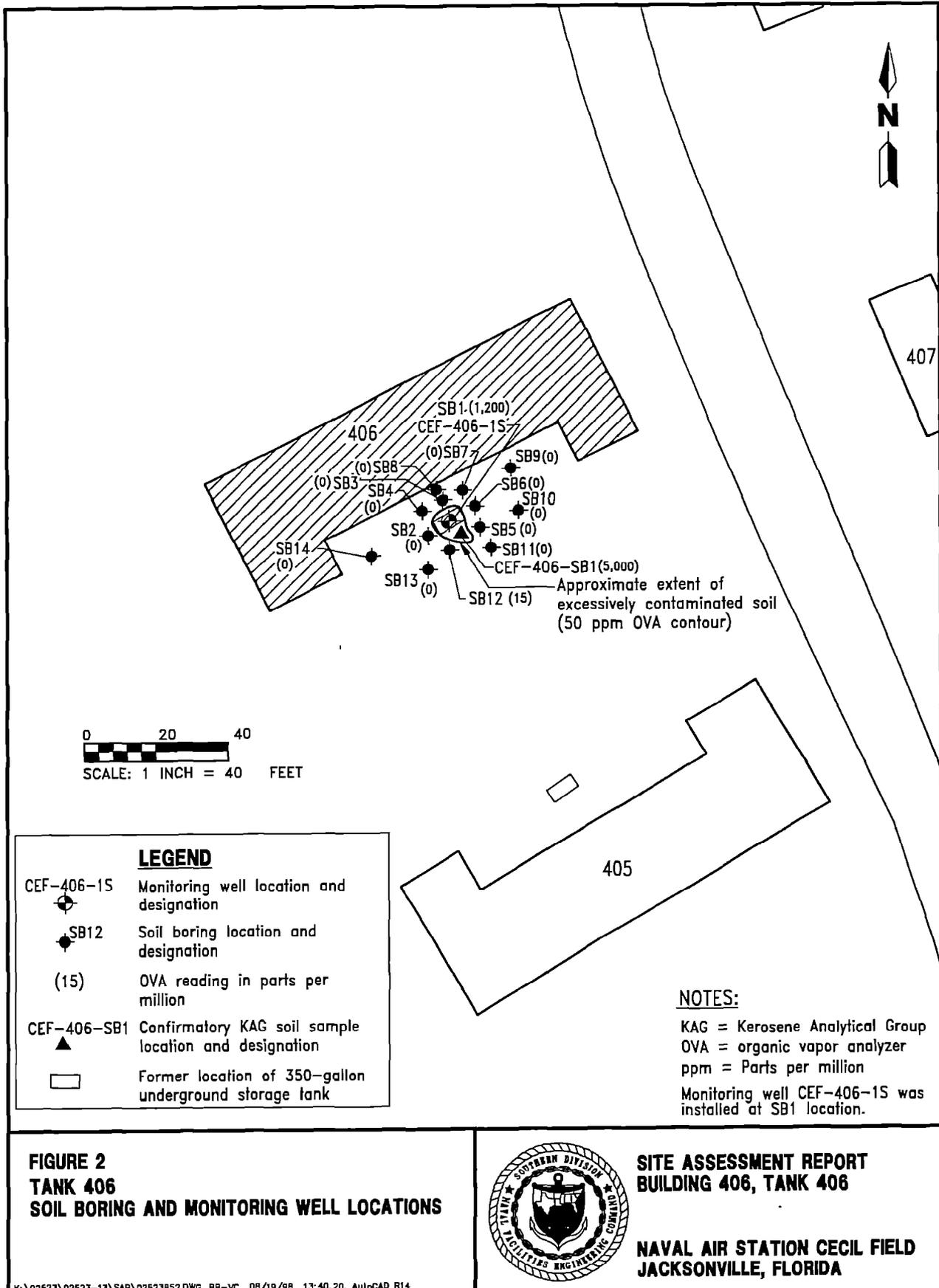


FIGURE 1
TANK 406
BASE FAMILY HOUSING



SITE ASSESSMENT REPORT
BUILDING 406, TANK 406

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA



LEGEND

- 
 CEF-406-15 Monitoring well location and designation
- 
 SB12 Soil boring location and designation
- (15) OVA reading in parts per million
- 
 CEF-406-SB1 Confirmatory KAG soil sample location and designation
- 
 Former location of 350-gallon underground storage tank

NOTES:

KAG = Kerosene Analytical Group
 OVA = organic vapor analyzer
 ppm = Parts per million

Monitoring well CEF-406-15 was installed at SB1 location.

**FIGURE 2
 TANK 406
 SOIL BORING AND MONITORING WELL LOCATIONS**



**SITE ASSESSMENT REPORT
 BUILDING 406, TANK 406**

**NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA**

K:\02523\02523-13\SAR\02523852.DWG, BB-VC 08/19/98 13:40.20, AutoCAD R14

3.0 SCREENING AND ANALYTICAL RESULTS

Excessively contaminated soil was detected in one soil boring at a concentration of 1,200 parts per million on the OVA. The extent of excessively contaminated soil is presented on Figure 2. The soil OVA data are summarized in Table 1.

No contaminants detected in the subsurface soil sample CEF-406-SB1 were above Florida Department of Environmental Protection (FDEP) cleanup target levels as specified in Chapter 62-770, Florida Administrative Code (FAC) (Table 2).

Contaminant concentrations in groundwater were below the regulatory standards for Class G-II groundwater as specified in Chapter 62-770, FAC (Table 3). The complete analytical data set is presented in Appendix C.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Groundwater flow direction at the Tank 406 site is to the southeast.

Data obtained during the confirmatory sampling at the Tank 406 site provided an adequate assessment of the horizontal and vertical extent of excessively contaminated soil.

No contaminants were detected in subsurface soil sample CEF-406-SB1 above FDEP cleanup target levels as specified in Chapter 62-770, FAC. This soil sample was collected from within the area of excessively contaminated soil.

No contaminants were detected above the regulatory standard specified in Chapter 62-770, FAC, in the groundwater sample collected from monitoring well CEF-406-1S.

It is recommended that no further action take place at the Tank 406 site.

**Table 1
Soil Screening Results**

Site Assessment Report
Building 406, Tank 406
Naval Air Station Cecil Field
Jacksonville, Florida

Location	OVA Concentration (ppm)			
	Depth (feet bls)	Unfiltered	Filtered	Actual
SB1	1	0	—	0
	3	1,200	0	1,200
	4.5 (wet)	3,200	0	3,200
SB2	1	0	—	0
	3 (wet)	60	0	60
SB3	1	0	—	0
	3 (wet)	440	0	440
SB4	1	0	—	0
	3 (wet)	32	0	32
SB5	1	0	—	0
	3 (wet)	300	0	300
SB6	1	0	--	0
	3 (wet)	900	0	900
SB7	1	0	—	0
	3 (wet)	0	--	0
SB8	1	0	—	0
	3 (wet)	0	—	0
SB9	1	0	—	0
	3	0	—	0
	3.5 (wet)	0	—	0
SB10	1	0	—	0
	3 (wet)	0	--	0
SB11	1	0	—	0
	3 (wet)	0	--	0
SB12	1	15	0	15
	3 (wet)	50	20	30
SB13	1	0	—	0
	3	5	0	5
	3.5 (wet)	10	0	10
SB14	1	0	—	0
	3 (wet)	10	1	9

Notes: All soil samples were collected on June 3, 1997.
Soil samples were filtered with carbon to determine the methane concentration.

OVA = organic vapor analyzer.

ppm = parts per million.

bls = below land surface.

-- = filtered readings were not collected.

wet = soil sample was completely saturated when analyzed.

**Table 2
Summary of Subsurface Soil Analytical Detections**

Site Assessment Report
Building 406, Tank 406
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	CEF-406-SB1 (3 to 4 feet bls; OVA = 1,200 ppm)	Soil Cleanup Target Levels ¹
<u>Volatile Organic Aromatics (USEPA Method 8020) (mg/kg)</u>		
No compounds detected		
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (mg/kg)</u>		
Benzo(a)pyrene	0.040	0.1/7.8
Benzo(b)fluoranthene	0.033	1.4/9.8
Benzo(g,h,i)perylene	0.026	2,300/13,000
Benzo(k)fluoranthene	0.018	15/25
Chrysene	0.030	140/80
Dibenzo(a,h)anthracene	0.017	0.1/14
Fluoranthene	0.073	2,800/550
Indeno(1,2,3-cd)pyrene	0.021	1.5/28
Pyrene	0.063	2,200/570
<u>Total Recoverable Petroleum Hydrocarbons (FL-PRO) (mg/kg)</u>		
No compounds detected		
¹ Chapter 62-770, Florida Administrative Code: Direct Exposure, Table 1; Leachability, Table V.		
Notes: Soil sample was collected on April 16, 1998.		
bls = below land surface.		
OVA = organic vapor analyzer.		
ppm = parts per million.		
USEPA = U.S. Environmental Protection Agency.		
mg/kg = milligrams per kilogram.		
FL-PRO = Florida-Petroleum Residual Organics.		

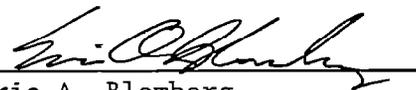
**Table 3
Summary of Groundwater Analytical Detections**

Site Assessment Report
Building 406, Tank 406
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	Monitoring Wells		Groundwater Cleanup Target Levels ¹
	ISI Temporary Well	CEF-406-1S	
<u>Volatile Organic Aromatics (USEPA Method 601/602) (µg/l)</u>			
No compounds detected			
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 610) (µg/l)</u>			
No compounds detected			
<u>Total Recoverable Petroleum Hydrocarbons (FL-PRO) (mg/l)</u>			
Not detected			
<u>Lead (USEPA Method 239.2) (µg/l)</u>			
Lead	125	ND	15
¹ Chapter 62-770, Florida Administrative Code. Notes: Groundwater samples were collected by ISI on June 22, 1995, and by HLA (then ABB-ES) on August 6, 1997. TRPH was analyzed by USEPA Method 418.1 during the 1995 sampling event. ISI = Innovative Services International, Inc. USEPA = U.S. Environmental Protection Agency. µg/l = micrograms per liter. ND = compound not detected. FL-PRO = Florida-Petroleum Residual Organics. mg/l = milligrams per liter. HLA = Harding Lawson Associates. ABB-ES = ABB Environmental Services, Inc.			

5.0 PROFESSIONAL REVIEW CERTIFICATION

The SA contained in this report was prepared using sound hydrogeologic principles and judgment. This assessment is based on the geologic investigation and associated information detailed in the text and appended to this report. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of any additional information on the assessment described in this report. This SAR was developed for the Tank 406 site at Naval Air Station Cecil Field, Jacksonville, Florida, and should not be construed to apply to any other site.



Eric A. Blomberg
Professional Geologist
P.G. No. 0001695

11-23-98

Date

REFERENCES

ABB Environmental Services, Inc. (ABB-ES). 1996. *Contamination Assessment Plan, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), North Charleston, South Carolina (November).

ABB-ES. 1997. *Base Realignment and Closure Tank Management Plan, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (January).

Innovative Services International, Inc. 1995. *Closure Report for Underground Storage Tank Removals, Naval Air Station Cecil Field, Jacksonville, Florida*.

APPENDIX A
CLOSURE ASSESSMENT REPORT



Florida Department of Environmental Regulation

Twin Towers Office Bldg • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

DER Form #	17-761.602a
Title	Closure Assessment Form
Revision	December 10, 1994
DER Assessment No.	Approved by DER

Closure Assessment Form

Owners of storage tank systems that are replacing, removing or closing in place storage tanks shall use this form to demonstrate that a storage system closure assessment was performed in accordance with Rule 17-761 or 17-762, Florida Administrative Code. Eligible Early Detection Incentive (EDI) and Reimbursement Program sites do not have to perform a closure assessment.

Please Print or Type
Complete All Applicable Blanks

- Date: July 10, 1995
- DER Facility ID Number: N/A
- County: Duval
- Facility Name: Naval Air Station - Cecil Field Enlisted Housing Unit # 406
- Facility Owner: U.S. Navy
- Facility Address: Naval Air Station - Cecil Field
- Mailing Address: Naval Air Station - Cecil Field
- Telephone Number: (____) _____
- Facility Operator: U.S. Navy
- Are the Storage Tank(s): (Circle one or both) A. Aboveground or B. Underground
- Type of Product(s) Stored: #2 Heating Oil
- Were the Tank(s): (Circle one) A. Replaced B. Removed C. Closed in Place D. Upgraded (aboveground tanks only)
- Number of Tanks Closed: One (1)
- Age of Tanks: Unknown

Facility Assessment Information

Yes No Not Applicable

- | | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | | 1. Is the facility participating in the Florida Petroleum Liability Insurance and Restoration Program (FPLIRP)? |
| <input type="checkbox"/> | <input type="checkbox"/> | | 2. Was a Discharge Reporting Form submitted to the Department?
If yes, When: _____ Where: _____ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | 3. Is the depth to ground water less than 20 feet? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Are monitoring wells present around the storage system?
If yes, specify type: <input type="checkbox"/> Water monitoring <input type="checkbox"/> Vapor monitoring |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 5. Is there free product present in the monitoring wells or within the excavation? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 6. Were the petroleum hydrocarbon vapor levels in the soils greater than 500 parts per million for gasoline?
Specify sample type: <input type="checkbox"/> Vapor Monitoring wells <input type="checkbox"/> Soil sample(s) |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7. Were the petroleum hydrocarbon vapor levels in the soils greater than 50 parts per million for diesel/kerosene?
Specify sample type: <input type="checkbox"/> Vapor Monitoring wells <input checked="" type="checkbox"/> Soil sample(s) |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 8. Were the analytical laboratory results of the ground water sample(s) greater than the allowable state target levels?
(See target levels on reverse side of this form and supply laboratory data sheets) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 9. If a used oil storage system, did a visual inspection detect any discolored soil indicating a release? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | | 10. Are any potable wells located within 1/4 of a mile radius of the facility? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | | 11. Is there a surface water body within 1/4 mile radius of the site? If yes, indicate distance: _____ |

17-261.900(1)
 Form 10 Closure Assessment Form
 Effective Date: December 10, 1990
 DEQ Application No. _____
 Printed by DEQ

12. A detailed drawing or sketch of the facility that includes the storage system location, monitoring wells, buildings, storm drains, sample location and dispenser locations must accompany this form.
13. If a facility has a pollutant storage tank system that has both gasoline and kerosene/diesel stored on site, both EPA Method 602 and EPA Method 610 must be performed on the ground water samples obtained.
14. Amount of soils removed and receipt of proper disposal.
15. If yes is answered to any one of questions 5-9, a Discharge Reporting Form 17-761.900(1) indicating a suspected release shall be submitted to the Department within one working day.
16. A copy of this form and any attachments must be submitted to the Department's district office in your area and to the locally administered program office under contract with the Department within 60 days of completion of tank removal or filling a tank with an inert material.

 Signature of Owner



 Signature of Person Performing Assessment

Professional Geologist

 Title of Person Performing Assessment

 Date

7/11/95

 Date

State Ground Water Target Levels That Affect A Pollutant Storage Tank System Closure Assessment

State ground water target levels are as follows:

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. For gasoline (EPA Method 602): <ol style="list-style-type: none"> a. Benzene 1 ug/l b. Total VOA 50 ug/l <ul style="list-style-type: none"> - Benzene - Toluene - Total Xylenes - Ethylbenzene c. Methyl Tertiary Butyl Ether (MTBE) 50 ug/l | <ol style="list-style-type: none"> 2. For kerosene/diesel (EPA Method 610): <ol style="list-style-type: none"> a. Polynuclear Aromatic Hydrocarbons (PAHS)
 (Best achievable detection limit, 10 ug/l maximum) |
|---|---|



Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

DER Form #	17-761.900(5)
Form Title	Underground Storage Tank Installation & Removal Form for Certified Contractors
Effective Date	December 10, 1990
DER Approval No.	(Filled in by DER)

Underground Storage Tank Installation and Removal Form For Certified Contractors

Pollutant Storage System Specialty Contractors as defined in Section 489.113, Florida Statutes (Certified contractors as defined in Section 17-761.200, Florida Administrative Code) shall use this form to certify that the installation, replacement or removal of the storage tank system(s) located at the address listed below was performed in accordance with Department Reference Standards.

General Facility Information

- DER Facility Identification No.: N/A
- Facility Name: Naval Air Station - Cecil Field Enlist Telephone: ()
- Street Address (physical location): Naval Air Station - Cecil Field Housing #406
- Owner Name: U.S. Navy Telephone: ()
- Owner Address: Naval Air Station - Cecil Field
- Number of Tanks: a. Installed at this time b. Removed at this time One
- Tank(s) Manufactured by: Unknown
- Date Work Initiated: 6/13/95 9. Date Work Completed: 6/16/95

Underground Pollutant Tank Installation Checklist

Please certify the completion of the following installation requirements by placing an (X) in the appropriate box.

- The tanks and piping are corrosion resistant and approved for use by State and Federal Laws.
- Excavation, backfill and compaction completed in accordance with NFPA (National Fire Protection Association) 30(87), API (American Petroleum Institute) 1615, PEI (Petroleum Equipment Institute) RP100-87 and the manufacturers' specifications.
- Tanks and piping pretested and installed in accordance with NFPA 30(87), API 1615, PEI/RP100(87) and the manufacturers' specifications.
- Steel tanks and piping are cathodically protected in accordance with NFPA 30(87), API 1632, UL (Underwriters Laboratory) 1746, STI (Steel Tank Institute) R892-89 and the manufacturer's specifications.
- Tanks and piping tested for tightness after installation in accordance with NFPA 30(87) and PEI/RP100-87.
- Monitoring well(s) or other leak detection devices installed and tested in accordance with Section 17-761.640, Florida Administrative Code (F.A.C.)
- Spill and overfill protection devices installed in accordance with Section 17-761.500, F.A.C.
- Secondary containment installed for tanks and piping as applicable in accordance with Section 17-761.500, F.A.C.

Please Note: The numbers following the abbreviations (e.g. API 1615) are publication or specification numbers issued by these institutions.

Underground Pollutant Tank Removal Checklist

- Closure assessment performed in accordance with Section 17-761.800, F.A.C.
- Underground tank removed and disposed of as specified in API 1604 in accordance with Section 17-761.800, F.A.C.

DER Form	17-761.9025
Form Title	Underground Storage Tank Installation & Removal Form for Certified Contractors
Effective Date	December 10, 1990
DER Application No.	(Filled in by DER)

Certification

I hereby certify and attest that I am familiar with the facility that is registered with the Florida Department of Environmental Regulation; that to the best of my knowledge and belief, the tank installation, replacement or removal at this facility was conducted in accordance with Chapter 489 and Section 376.303, Florida Statutes and Chapter 17-761, Florida Administrative Code (and its adopted reference sources from publications and standards of the National Fire Protection Association (NFPA), the American Petroleum Institute (API), the National Association of Corrosion Engineers (NACE), American Society for Testing and Materials (ASTM); Petroleum Equipment Institute (PEI); Steel Tank Institute (STI); Underwriters Laboratory (UL); and the tank and integral piping manufacturers' specifications; and that the operations on the checklist were performed accordingly.

Richard M. Bandman

(Type or Print)

Certified Pollutant Tank Contractor Name

Pollutant Storage System Specialty Contractor License Number (PSSSC)

PCC 054952

PSSSC Number

[Signature]

Certified Tank Contractor Signature

7-12-95

Date

VERNON MCKINNON

(Type or Print)

Field Supervisor Name

7-12-95

Date

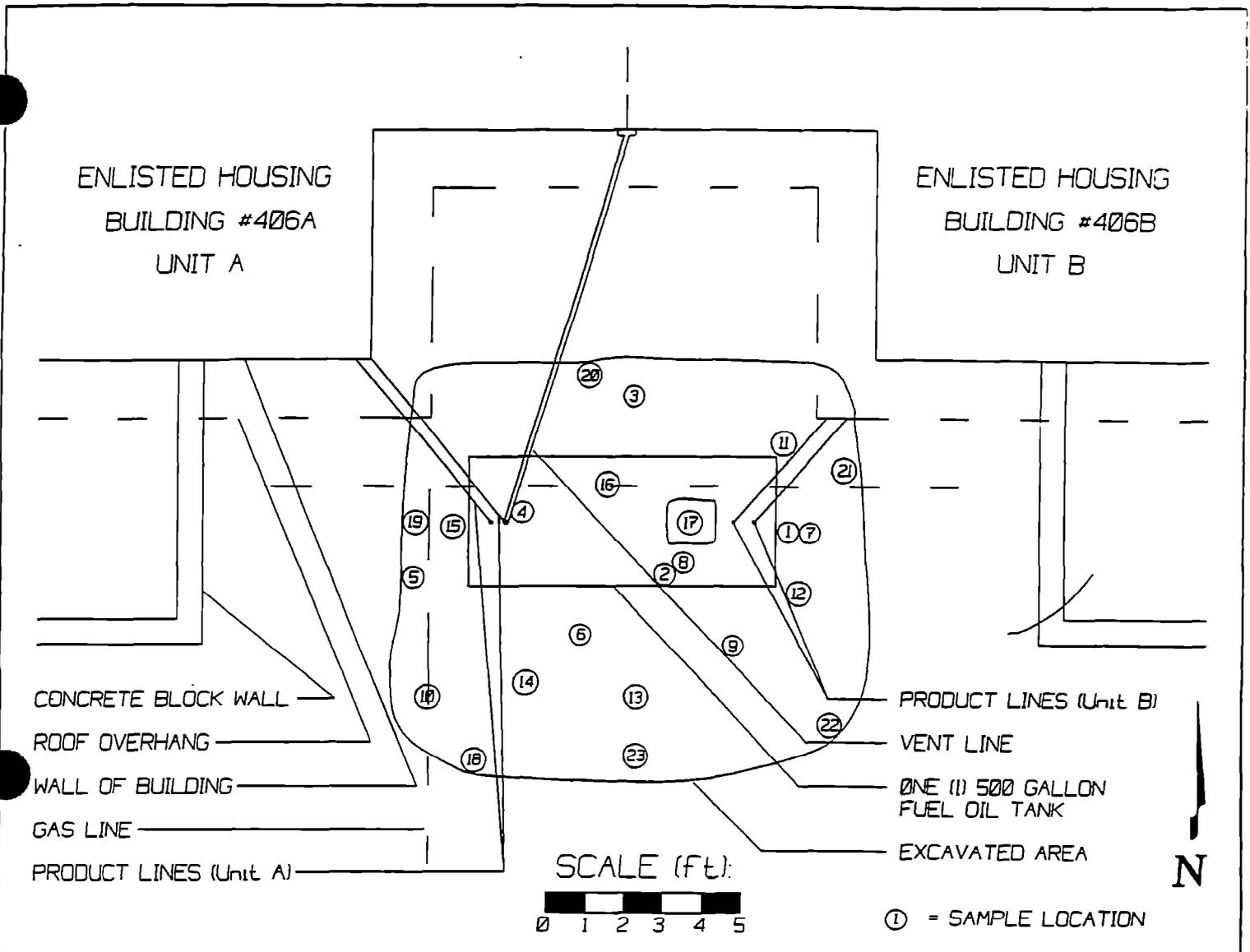
[Signature]

Field Supervisor Signature

7-12-95

Date

The owner or operator of the facility must register the tanks with the Department at least 10 days before the installation. The installer must submit this form no more than 30 days after the completion of installation to the Department of Environmental Regulation at the address printed at the top of page one.



SAMPLE #	HC READING	DEPTH	TIME (COLLECTED/READ)	SAMPLE #	HC READING	DEPTH	TIME (COLLECTED/READ)
1	0.0	1'	9:03/9:07	13	119.6	5.5'	13:50/14:07
2	0.0	1'	9:03/9:08	14	204.0	5'	13:52/14:09
3	0.0	1'	9:04/9:09	15	7.3	4.5'	13:52/14:10
4	0.0	1'	9:04/9:09	16	26.3	4.5'	13:54/14:12
5	68.8	2'	9:17/9:22	17	308.0	6'	13:55/14:14
6	14.3	2'	9:17/9:23	18	19.1	6'	14:55/15:15
7	33.7	2'	9:18/9:24	19	7.3	6'	14:56/15:16
8	9.3	2'	9:19/9:24	20	234.0	6'	14:58/15:17
9	75.1	3.5'	9:59/10:03	21	231.3	6'	14:58/15:18
10	17.9	4.5'	10:34/10:42	22	250.5	6'	15:00/15:20
11	31.3	5.5'	13:47/14:04	23	2.3	6'	15:03/15:21
12	1.6	5.5'	13:49/14:05				

ALL SAMPLES ANALYZED WITH A THERMO ENVIRONMENTAL INSTRUMENTS MODEL 580B PHOTOIONIZATION DETECTOR.



INNOVATIVE SERVICES INTERNATIONAL, INC.

SITE PLAN

ENLISTED HOUSING UNIT #406

NAVAL AIR STATION
CECIL FIELD
JACKSONVILLE, FLORIDA

GEOLOGICAL, ENVIRONMENTAL AND OCEANOGRAPHIC SCIENCES, INC.

ENVIRONMENTAL SPECIALTY LABORATORY (813) 626-0101
 5909A BRECKENRIDGE PARKWAY FAX: (813) 626-0746
 TAMPA, FLORIDA 33610-4237

ISI100014396
 Attn: RON BOARDMAN

 P.O. BOX 150016
 NAS CECIL FIELD, FL
 32215

Page 1
 5 Jul 1995
 Report J5-06-209-01
 LAB ID. 82223/E82101

Sample Description:
 N.A.S. CECIL FIELD
 TEMP. MON WELL @ ENLISTED HOUSING #406
 GROUNDWATER

SAMPLE ID.: ENL-406-695
 COLLECTED: 06/22/95 13:49
 RECEIVED: 06/22/95
 COLLECTED BY: S.W. VOCKELL

Parameter	Result	Units	Method	Det. Limit	Extracted	Analyzed	Analyst
Hydrocarbons, Total IR	<0.200	mg/L	418.1	0.200	06/27/95	06/28/95	AM
Lead, Total	0.125	mg/L	239.2	0.005	06/29/95	06/30/95	JC
Polynuclear Aromatics			625\8270				
Naphthalene	BDL	µg/L		10	06/28/95	06/28/95	AT
Acenaphthylene	BDL	µg/L		10	06/28/95	06/28/95	AT
1-Methylnaphthalene	BDL	µg/L		10	06/28/95	06/28/95	AT
2-Methylnaphthalene	BDL	µg/L		10	06/28/95	06/28/95	AT
Acenaphthene	BDL	µg/L		10	06/28/95	06/28/95	AT
Fluorene	BDL	µg/L		10	06/28/95	06/28/95	AT
Phenanthrene	BDL	µg/L		10	06/28/95	06/28/95	AT
Anthracene	BDL	µg/L		10	06/28/95	06/28/95	AT
Fluoranthene	BDL	µg/L		10	06/28/95	06/28/95	AT
Pyrene	BDL	µg/L		10	06/28/95	06/28/95	AT
Benzo(a)anthracene	BDL	µg/L		10	06/28/95	06/28/95	AT
Chrysene	BDL	µg/L		10	06/28/95	06/28/95	AT
Benzo(b)fluoranthene	BDL	µg/L		10	06/28/95	06/28/95	AT
Benzo(k)fluoranthene	BDL	µg/L		10	06/28/95	06/28/95	AT
Benzo(a)pyrene	BDL	µg/L		10	06/28/95	06/28/95	AT
Indeno(1,2,3-c,d)pyrene	BDL	µg/L		10	06/28/95	06/28/95	AT
Dibenzo(a,h)anthracene	BDL	µg/L		10	06/28/95	06/28/95	AT
Benzo(g,h,i)perylene	BDL	µg/L		10	06/28/95	06/28/95	AT
Surrogates							
Nitrobenzene-d5	87	Min: 35		Max: 114			
2-Fluorobiphenyl	78	Min: 43		Max: 116			
4-Terphenyl-d14	95	Min: 33		Max: 141			
Volatile Aromatics			602				
Methyl-tert-butyl ether	BDL	µg/L		5.0	06/24/95	06/24/95	MD
Benzene	BDL	µg/L		1.0	06/24/95	06/24/95	MD
Toluene	BDL	µg/L		1.0	06/24/95	06/24/95	MD
Ethyl benzene	BDL	µg/L		1.0	06/24/95	06/24/95	MD
Xylene, Total	BDL	µg/L		1.0	06/24/95	06/24/95	MD

ISI100014396

Attn: RON BOARDMAN

P.O. BOX 150016
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LAB ID. 82223/E82101

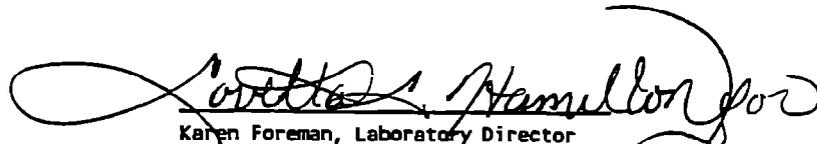
Parameter	Result	Units	Method	Det. Limit	Extracted	Analyzed	Analyst
Chlorobenzene	BDL	µg/L		1.0	06/24/95	06/24/95	MD
1,4-Dichlorobenzene	BDL	µg/L		1.0	06/24/95	06/24/95	MD
1,3-Dichlorobenzene	BDL	µg/L		1.0	06/24/95	06/24/95	MD
1,2-Dichlorobenzene	BDL	µg/L		1.0	06/24/95	06/24/95	MD
Surrogates							
Bromobenzene	102	Min: 70		Max: 130			
Volatile Halocarbons			601				
Dichlorodifluoromethane	BDL	µg/L		1.0	06/23/95	06/23/95	MD
Chloromethane	BDL	µg/L		1.0	06/23/95	06/23/95	MD
Bromomethane	BDL	µg/L		1.0	06/23/95	06/23/95	MD
Vinyl chloride	BDL	µg/L		1.0	06/23/95	06/23/95	MD
Chloroethane	BDL	µg/L		1.0	06/23/95	06/23/95	MD
Methylene chloride	BDL	µg/L		1.0	06/23/95	06/23/95	MD
Trichlorofluoromethane	BDL	µg/L		1.0	06/23/95	06/23/95	MD
1,1-Dichloroethene	BDL	µg/L		1.0	06/23/95	06/23/95	MD
1,1-Dichloroethane	BDL	µg/L		1.0	06/23/95	06/23/95	MD
total-1,2-Dichloroethene	BDL	µg/L		1.0	06/23/95	06/23/95	MD
Chloroform	BDL	µg/L		1.0	06/23/95	06/23/95	MD
1,2-Dichloroethane	BDL	µg/L		1.0	06/23/95	06/23/95	MD
1,1,1-Trichloroethane	BDL	µg/L		1.0	06/23/95	06/23/95	MD
Carbon tetrachloride	BDL	µg/L		1.0	06/23/95	06/23/95	MD
Bromodichloromethane	BDL	µg/L		1.0	06/23/95	06/23/95	MD
1,2-Dichloropropane	BDL	µg/L		1.0	06/23/95	06/23/95	MD
trans-1,3-Dichloropropene	BDL	µg/L		1.0	06/23/95	06/23/95	MD
Trichloroethene	BDL	µg/L		1.0	06/23/95	06/23/95	MD
Dibromochloromethane	BDL	µg/L		1.0	06/23/95	06/23/95	MD
1,1,2-Trichloroethane	BDL	µg/L		1.0	06/23/95	06/23/95	MD
cis-1,3-Dichloropropene	BDL	µg/L		1.0	06/23/95	06/23/95	MD
2-Chloroethylvinyl ether	BDL	µg/L		1.0	06/23/95	06/23/95	MD
Bromoform	BDL	µg/L		1.0	06/23/95	06/23/95	MD
1,1,2,2-Tetrachloroethane	BDL	µg/L		1.0	06/23/95	06/23/95	MD
Tetrachloroethene	BDL	µg/L		1.0	06/23/95	06/23/95	MD
Chlorobenzene	BDL	µg/L		1.0	06/23/95	06/23/95	MD
1,3-Dichlorobenzene	BDL	µg/L		1.0	06/23/95	06/23/95	MD
1,2-Dichlorobenzene	BDL	µg/L		1.0	06/23/95	06/23/95	MD

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Parameter	Result	Units	Method	Det. Limit	Extracted	Analyzed	Analyst
1,4-Dichlorobenzene	BDL	µg/L		1.0	06/23/95	06/23/95	MD
Surrogates							
Bromobenzene	103	Min: 70		Max: 130			


Karen Foreman, Laboratory Director




1057 N. ELLIS ROAD, SUITE 17, JACKSONVILLE, FL 32254-2249 • (904) 786-8340
 5909A BRECKENRIDGE PARKWAY, TAMPA, FL 33610-4237 • (813) 626-0101

JOB NUMBER: 0506209

CLIENT NAME: ISI	PROJECT NAME: Cecil Field - Enlisted Housing	PRESERVATIVE CONTAINER SIZE AND TYPE 3x 70 ml HCL 1000 ml AS UN 1000 ml AS HCL 500 ml Plastic HNO3
ADDRESS: Cecil Field	P. O. NUMBER / PROJECT NUMBER	
PHONE: 778-2984 FAX:	PROJECT LOCATION: Cecil Field NAS	
CONTACT: R. Boardman	SAMPLED BY: SCOTT W. VOICHELL	
TURN AROUND TIME or RESULTS DUE BY: <input checked="" type="checkbox"/> STANDARD <input type="checkbox"/> VERBAL <input type="checkbox"/> RUSH <input type="checkbox"/> FAX <input type="checkbox"/> OTHER <input type="checkbox"/> HARD COPY		SPECIAL INSTRUCTIONS:

SAMPLE ID	SAMPLE DESCRIPTION	SAMPLING		MATRIX	Notes CONTAIN
		DATE	TIME		
ENL-406-695	Temp. Well @ Enlisted Housing #406	6/22/95	1349	GW	6 K X X X X

* GW—Groundwater SW—Surface Water DW—Drinking Water WW—Wastewater SO—Solid/Soil SL—Sludge HW—Hazardous Waste A—Air

FIELD PARAMETERS / COMMENTS:	TRANS. NO.	TRANSFERS RELINQUISHED BY:	ACCEPTED BY:	DATE	TIME
	1	Scott W. Voichell	K. Howille	6/22/95	16:16
	2				
	3				
CONTAINERS/SEALS INTACT <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	ON ICE / 4°C <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	SHIPPED VIA			

APPENDIX B

MONITORING WELL INSTALLATION DETAIL

PROJECT: NAS Ceall Field BRAC UST Site

LOG of WELL: CEF-408-IS

BORING NO. CEF-408-IS

CLIENT: SOUTHDIYNAVFACENGCOM

PROJECT NO: 8571-03

DATE STARTED: 7-16-97

COMPLETED: 7-16-97

DRILLING SUBCONTRACTOR: Alliance

SITE: Quarters 408 (Housing)

MONITOR INST. FID

METHOD: 6.25" ID HSA

WELL CASE DIAM.: 2"

SCREEN INT.: 3-13 FT.

SCREEN SLOT SIZE: 0

TOC ELEVATION: FT. NGVD

GROUND ELEV.: FT. NGVD

NORTHING:

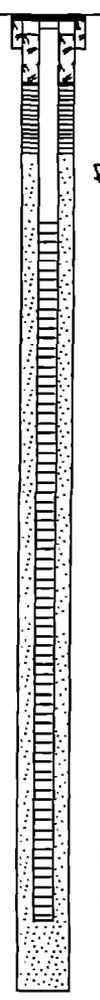
EASTING:

WELL DEVELOP. DATE: 7-23-97

TOTAL DEPTH: 14 FT. BLS

DEPTH TO ∇ 2.35 FT. BLS

LOGGED BY: J Tarr

DEPTH FT.	SAMPLE INTERVAL	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0			180	SILTY SAND: Light brown, fine grain, poorly graded.		SM	posthole	
0			>5,000	SILTY SAND: Dark gray, fine grain, petroleum like odor.		posthole		
5		NA	2,000	SILTY SAND: Gray, fine grain, poorly graded with small carbonate sea shells, petroleum like odor.		Augers		
10		NA	200	SILTY SAND: Light brown, fine grain with silt, poorly graded, wet.		Augers		
15								
20								

TITLE: NAS Cecil Field, Bldg.406, Site Assessment Report		LOG of WELL: CEF-406-1S	BORING NO. CEF-406-1S
CLIENT: SOUTHDIVNAVFACENGCOM			PROJECT NO: Q2523.13
CONTRACTOR: Alliance Drilling		DATE STARTED: 07-16-97	COMPLTD: 07-16-97
METHOD: HSA	CASE SIZE: 2in.	SCREEN INT.: 3-13 ft.	PROTECTION LEVEL: D
TOC ELEV.: N/A FT.	MONITOR INST.: FID	TOT DPTH: 13.5FT.	DPTH TO ∇ N/A FT.
LOGGED BY: J Tarr	WELL DEVELOPMENT DATE: 07-23-97		SITE: Building 406

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1			180	SILTY SAND; light brown, fine grain.		SM	posthole	
2								
3			>5000	SILTY SAND: gray, fine grain, petroleum odor.			posthole	
4								
5							*	
6			2000	SILTY SAND: gray, fine grain with small shells, poorly graded, petroleum odor			**	
7								
8								
9								
10								
11			200	SILTY SAND: light brown, fine grain.				
12								
13				* no split spoon samples taken ** OVA readings taken from auger cuttings				
14								
15								

APPENDIX C
ANALYTICAL DATA

NAS CECIL FIELD -- TANK 406
 SOIL DATA -- KEROSENE ANALYTICAL GROUP -- REPORT REQ NO. 9951

Lab Sample Number: ABD1701040
 Site: UST GREY
 Locator: CEF-406-SB1
 Collect Date: 16-APR-98

	VALUE	QUAL UNITS	DL
UST GREY			
Benzene	1.2 U	ug/kg	1.2
Ethylbenzene	1.2 U	ug/kg	1.2
Toluene	1.2 U	ug/kg	1.2
Xylenes (total)	1.2 U	ug/kg	1.2
Acenaphthene	230 U	ug/kg	230
Acenaphthylene	230 U	ug/kg	230
Anthracene	230 U	ug/kg	230
Benzo (a) anthracene	5.9 U	ug/kg	5.9
Benzo (a) pyrene	40	ug/kg	5.9
Benzo (b) fluoranthene	33	ug/kg	5.9
Benzo (g,h,i) perylene	26	ug/kg	5.9
Benzo (k) fluoranthene	18	ug/kg	5.9
Chrysene	30	ug/kg	23
Dibenzo (a,h) anthracene	17	ug/kg	5.9
Fluoranthene	73	ug/kg	5.9
Fluorene	230 U	ug/kg	230
Indeno (1,2,3-cd) pyrene	21	ug/kg	5.9
Naphthalene	230 U	ug/kg	230
Phenanthrene	230 U	ug/kg	230
Pyrene	63	ug/kg	5.9
FLA. PRD.			
TPH C8-C40	12 U	mg/kg	12

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- BRAC UST GREY BASE FAMILY HOUSING
GROUNDWATER -- ANALYTICAL DATA -- TANK 406 -- REPORT NO. 9546

Lab Sample Number: B7H0701520
Site: BRACGREY
Locator: CEF-406-1S
Collect Date: 06-AUG-97

VALUE QUAL UNITS DL

BRACGREY ANALYTICAL PARAMETERS

1,1,1-Trichloroethane	1 U	ug/L	1
1,1,2,2-Tetrachloroethane	1 U	ug/L	1
1,1,2-Trichloroethane	1 U	ug/L	1
1,1-Dichloroethane	1 U	ug/L	1
1,1-Dichloroethene	1 U	ug/L	1
1,2-Dichlorobenzene	1 U	ug/L	1
1,3-Dichlorobenzene	1 U	ug/L	1
1,4-Dichlorobenzene	1 U	ug/L	1
1,2-Dichloroethane	1 U	ug/L	1
1,2-Dichloropropane	1 U	ug/L	1
1-Methylnaphthalene	2 U	ug/L	2
2-Methylnaphthalene	2 U	ug/L	2
Acenaphthene	2 U	ug/L	2
Acenaphthylene	2 U	ug/L	2
Anthracene	2 U	ug/L	2
Benzene	1 U	ug/L	1
Benzo (a) anthracene	.1 U	ug/L	.1
Benzo (a) pyrene	.1 U	ug/L	.1
Benzo (b) fluoranthene	.1 U	ug/L	.1
Benzo (g,h,i) perylene	.2 U	ug/L	.2
Benzo (k) fluoranthene	.15 U	ug/L	.15
Bromodichloromethane	1 U	ug/L	1
Bromoform	1 U	ug/L	1
Bromomethane	1 U	ug/L	1
Carbon tetrachloride	1 U	ug/L	1
Chlorobenzene	1 U	ug/L	1
Chloromethane	1 U	ug/L	1
Chloroform	1 U	ug/L	1
Chloromethane	1 U	ug/L	1
Chrysene	.1 U	ug/L	.1
Dibenzo (a,h) anthracene	.2 U	ug/L	.2
Dibromochloromethane	1 U	ug/L	1
Dichlorodifluoromethane	1 U	ug/L	1
Ethylbenzene	1 U	ug/L	1
Ethylene dibromide	.02 U	ug/L	.02
Fluoranthene	.2 U	ug/L	.2
Fluorene	2 U	ug/L	2
Indeno (1,2,3-cd) pyrene	.1 U	ug/L	.1
Lead	5 U	ug/L	5
Methyl tert-butyl ether	1 U	ug/L	1
Methylene chloride	5 U	ug/L	5
Naphthalene	2 U	ug/L	2
Phenanthrene	2 U	ug/L	2
Pyrene	.2 U	ug/L	.2
Tetrachloroethene	1 U	ug/L	1
Toluene	1 U	ug/L	1
Total petroleum hydrocarbons	.5 U	mg/l	.5
Trichloroethene	1 U	ug/L	1
Trichlorofluoromethane	1 U	ug/L	1
Vinyl chloride	1 U	ug/L	1

NAS CECIL FIELD -- BRAC UST GREY BASE FAMILY HOUSING
GROUNDWATER -- ANALYTICAL DATA -- TANK 406 -- REPORT NO. 9546

Lab Sample Number: B7H0701520
Site BRACGREY
Locator CEF-406-1S
Collect Date: 06-AUG-97

VALUE QUAL UNITS DL

Xylenes (total)	1 U	ug/L	1
cis-1,3-Dichloropropene	1 U	ug/L	1
trans-1,2-Dichloroethene	1 U	ug/L	1
trans-1,3-Dichloropropene	1 U	ug/L	1

U * NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE