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NAS CECIL FIELD, FL
5090.3a

AUGUST 2001 SEMI-ANNUAL GROUNDWATER MONITORING LETTER REPORT FOR
BUILDING 428 TANK 428 NAS CECIL FIELD FL
12/10/2001
TETRA TECH NUS INC



TETRA TECH NUS, INC.

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Document No. 01JAX0176

December 10, 2001

Project Number N0486

Mr. David Grabka
Remedial Project Manager
Technical Review/Federal Facilities
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Reference: Clean Contract No. N62467-94-D-0888
Contract Task Order No. 0121

Subject: Semi-Annual Groundwater Monitoring Report, August 2001
Building 428, Tank 428
Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Grabka:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit this Semi-Annual Groundwater Monitoring Letter Report for the referenced Contract Task Order (CTO). This report was prepared by TtNUS for the United States Navy Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) under the Comprehensive Long-term Environmental Action Navy (CLEAN) Contract Number N62467-94-D-0888. The objective of this task is to monitor groundwater beneath the Building 428, Tank 428 site, semi-annually, the locations of which are depicted on Figure 1. The guidance document for this report is Chapter 62-770, Florida Administrative Code (FAC).

The Florida Department of Environmental Protection (FDEP) approved the Monitoring Only Plan (MOP) for this site on May 13, 1999 (Attachment A). TtNUS returned to the site on August 8, 2001 to complete the second semi-annual sampling event. Sampling was conducted in general accordance with the Base-wide Generic Work Plan for Naval Air Station Cecil Field Volumes I and II (TtNUS, 1998).

FIELD OPERATIONS

Groundwater levels were measured and samples were collected from the newly designated replacement monitoring wells CEF-428-1SR and CEF-428-2SR on August 8, 2001. Groundwater elevation data is provided in Table 1. Well locations, water table flow direction, and analytical results are depicted on Figure 2. The depth to water level measurement was recorded from each of the wells, which ranged from 1.56 to 1.64 feet below land surface. Based on a relative survey of the top of each well casing, apparent elevations were assigned to each monitoring well. The apparent groundwater flow direction for the site is to the south. In general, this agrees with the southeasterly groundwater flow direction established by Harding Lawson Associates (HLA) for this area in their Natural Attenuation Monitoring Letter Report dated June 5, 2000.

Following collection, the groundwater samples were placed on ice and shipped overnight via Federal Express to Accura Laboratories in Norcross, Georgia, for analysis. The samples were analyzed for select volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method SW846 8260B, polynuclear aromatic hydrocarbons (PAHs) by USEPA Method SW846 8270C, and total

Mr. David Grabka
FDEP
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recoverable petroleum hydrocarbons (TRPH) by Florida-Petroleum Range Organics (FL-PRO) Method. A copy of the laboratory report is provided in Attachment B.

RESULTS

The results of the August 2001 sampling event were reviewed and compared to FDEP Chapter 62-777 FAC, Groundwater Cleanup Target Level (GCTL) criteria and historical data (Attachment C) reported by HLA. The analytical results for the groundwater sample from the downgradient monitoring well CEF-428-2SR indicated no detectable petroleum contaminants of concern (COC). Analytical data for the samples from source monitoring well CEF-428-1SR reported some COCs, but none were greater than the applicable GCTLs. The analytical results are shown in Table 2.

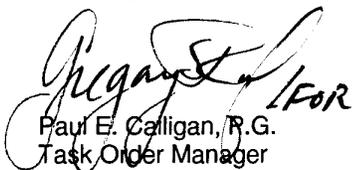
CONCLUSIONS and RECOMMENDATIONS

The historical data from HLA (Attachment C) indicates that no COCs were detected in groundwater samples from the perimeter well during the last two rounds in 1999 and 2000. Due to the shallow depth of the original wells (approximately six feet deep), which did not adequately screen the shallow aquifer, there is only limited VOC data available for the source well from one of the last two sampling rounds and no PAH or TRPH data. The available VOC data indicates there was detectable toluene in the sample, which was below the respective GCTL for that compound. Since the wells have been replaced and extended to about 13 feet in depth, TtNUS has conducted two consecutive sampling events.

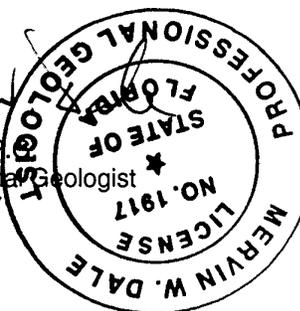
The data from the February 5, 2001 and August 8, 2001 sampling events indicate that the concentrations of detected COCs have remained below the GCTLs for two consecutive sampling events. As a result, no further action is recommended for the Building 428, Tank 428 site.

If you have any questions with regard to this submittal, please contact me at (850) 385-9899.

Sincerely,


Paul E. Calligan, R.G.
Task Order Manager


Mervin W. Dale, F.
Florida Professional Geologist
P.G. No. 0001917



PC/rjm

Attachments (7)

cc: N. Ugolini, SOUTHDIV
D. Vaughn-Wright, USEPA
D. Wroblewski (Cover Letter Only)
M. Perry (unbound)

Mr. David Grabka
FDEP
December 10, 2001 – Page 3

bcc: M. Dale, TtNUS
R. Simcik, TtNUS (bookcase file)
J. Johnson, Information Repository
Project File Tallahassee

Table 1
Groundwater Elevation and Monitoring Well Construction Data

Semi-Annual Groundwater Monitoring Report
 Building 428
 Naval Air Station Cecil Field
 Jacksonville, Florida

Well Number	Total Depth (feet, bls)	Top of Casing Elevation (feet msl)	February 5, 2001		August 8, 2001	
			Depth to Water Below Top of Casing (feet)	Water Elevation (feet msl)	Depth to Water Below Top of Casing (feet)	Water Elevation (feet msl)
CEF-428-1SR	13.42	79.66	4.14	75.52	1.64	78.02
CEF-428-2SR	12.55	78.88	3.66	75.22	1.56	77.32

Notes: bls= below land surface.

msl = mean sea level.

Benchmark assigned to northern edge of concrete floor carport on Building 428.

Assigned elevation to benchmark based on nearest topographic elevation on Fiftone Quadrangle.

Table 2
Summary of Detections in Groundwater

Semi-Annual Groundwater Monitoring Report
Building 428
Naval Air Station Cecil Field
Jacksonville, Florida

Well ID Date Sampled	Source Area Well		Perimeter Monitoring Well		GCTL ¹	NADSC ²
	CEF-428-1SR		CEF-428-2SR			
Compounds Detected	2/5/2001	8/8/2001	2/5/2001	8/8/2001		
Polynuclear Aromatic Hydrocarbons (USEPA Method 8270C) (µg/L)						
Acenaphthene	0.31J	0.68J	< 1.0	< 1.0	20	200
Flourene	< 1.0	0.87J	< 1.0	< 1.0	280	2800
1-Methylnaphthalene	0.73J	13	< 1.0	< 1.0	20	200
2-Methylnaphthalene	< 1.0	14	< 1.0	< 1.0	20	200
Naphthalene	0.48J	2	< 1.0	< 1.0	20	200
Phenanthrene	< 1.0	0.69J	< 1.0	< 1.0	210	2100
Volatile Organic Compounds (USEPA Method 8260B) (µg/L)						
Toluene	< 1.0	0.93J	< 1.0	< 1.0	40	400
Xylenes, total	3.9	0.69J	< 2.0	< 2.0	20	200
Florida - Petroleum Range Organics (FL-PRO) (mg/L)						
Total Recoverable Petroleum Hydrocarbons	0.49JB	1.1	0.37JB	< 1.0	5	50

Notes:

¹GCTL = Groundwater Cleanup Target Levels based on Chapter 62-770, Florida Administrative Code. (F.A.C.)

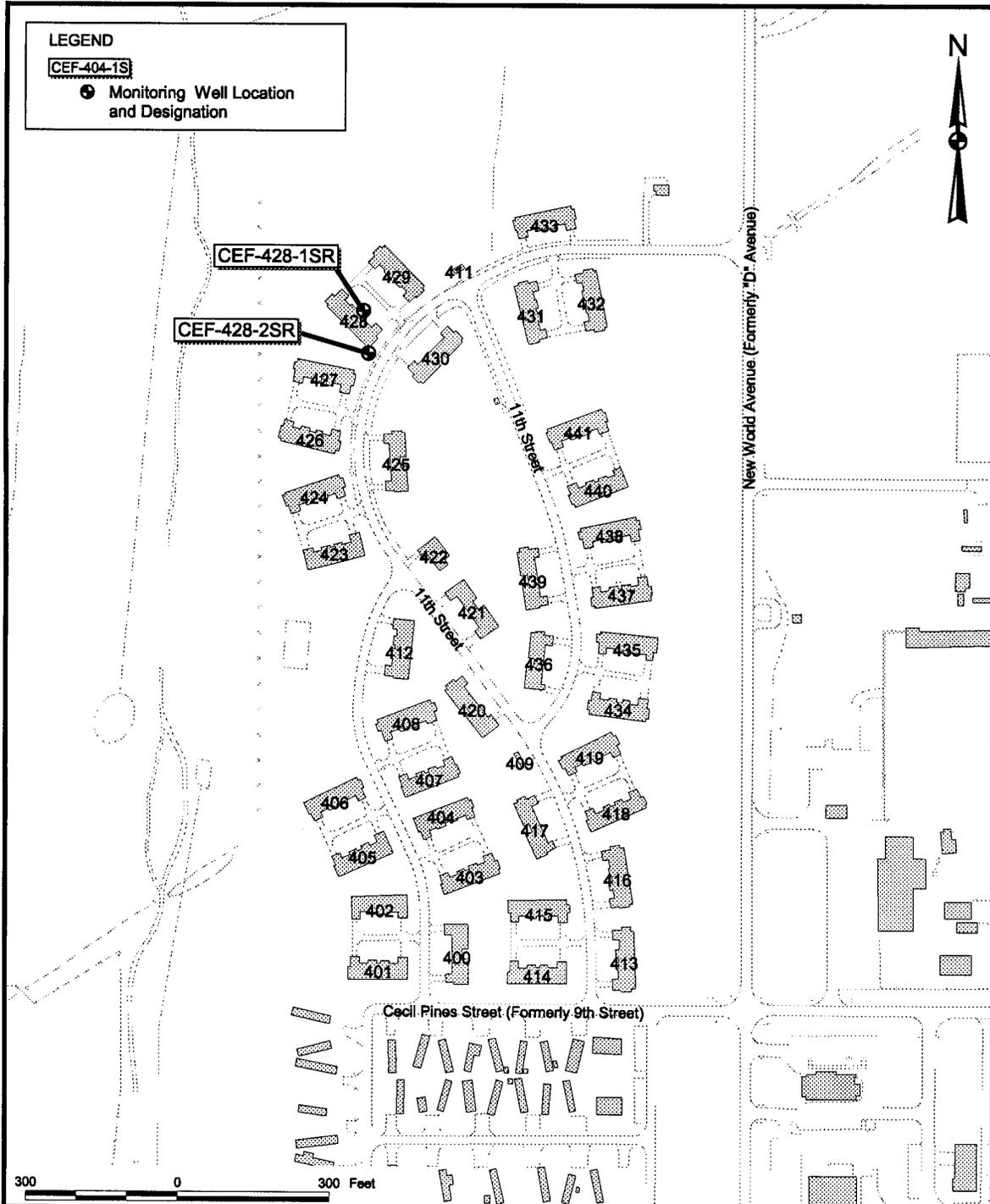
²NADSC = Natural Attenuation Default Source Concentrations as promulgated in Chapter 62-770.690, F.A.C.

J = estimated.

B = compound also reported in laboratory method blank.

mg/L = milligrams per liter.

µg/L = micrograms per liter.



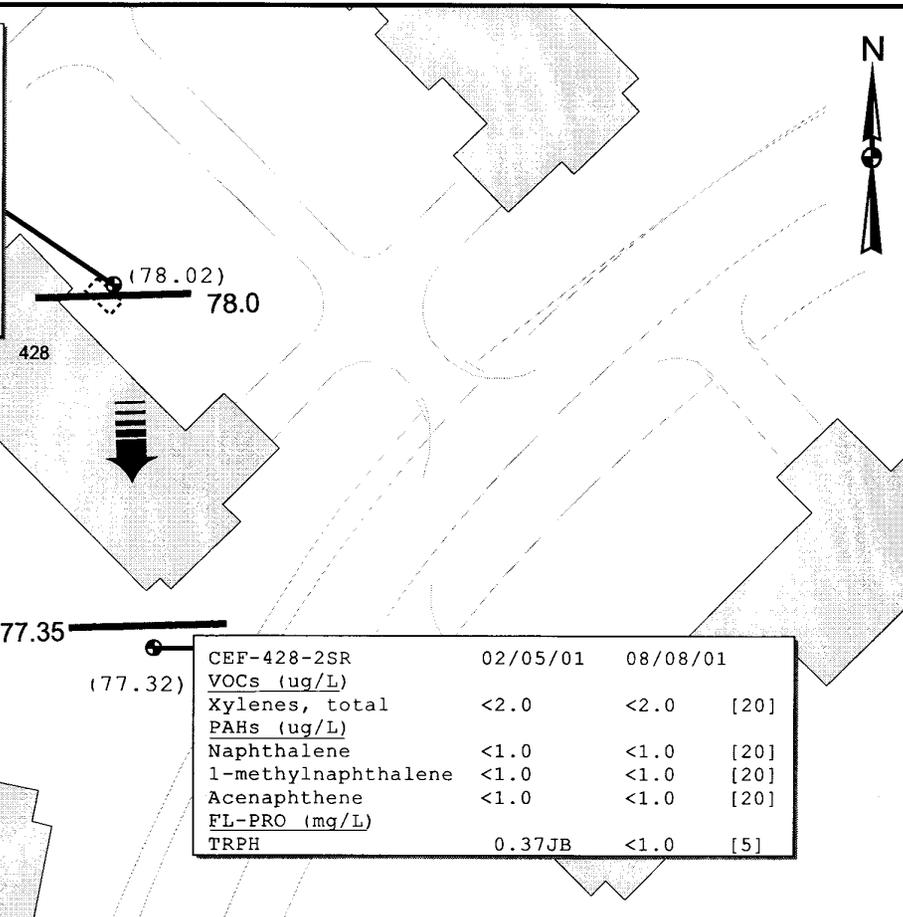
DRAWN BY MJJ	DATE 04Apr01
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	



SITE LOCATION MAP
MONITORING FOR NATURAL ATTENUATION
BUILDING 428, TANK 428
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

CONTRACT NUMBER N0486	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 1	REV 0

CEF-428-1SR	02/05/01	08/08/01	
<u>VOCs (ug/L)</u>			
Xylenes, total	3.9	0.69 J	[20]
Toluene	<1	0.93 J	[40]
<u>PAHs (ug/L)</u>			
Fluorene	<1	0.87 J	[280]
Naphthalene	0.48 J	2	[20]
1-methylnaphthalene	0.73 J	13	[20]
2-methylnaphthalene	<1	14	[20]
Phenanthrene	<1	0.69 J	[210]
Acenaphthene	0.31J	0.68 J	[20]
<u>FL-PRO (mg/L)</u>			
TRPH	0.49JB	1.1	[5]



LEGEND

- Monitoring Well Locations and Groundwater Elevation (Ft, MSL)
- ➡ Groundwater Flow Direction
- Groundwater Contour (Ft, MSL)
- ⋯ Former location of 350 gallon Underground Storage Tank

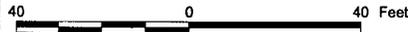
< Less Than
 J Concentration estimated by lab.
 B Compound also detected in lab method blank

Well ID
 Collection Date

CEF-104-23	12/5/00
<u>PAHs (ug/L)</u>	
Naphthalene	9.3 [20]
1-methylnaphthalene	9.1 [20]
2-methylnaphthalene	7.1 [20]
<u>VOCs (ug/L)</u>	
Ethylbenzene	1.6 [30]
TRPH	3.2 [5]

GCTLs
 Concentration Compound

CEF-428-2SR	02/05/01	08/08/01	
<u>VOCs (ug/L)</u>			
Xylenes, total	<2.0	<2.0	[20]
<u>PAHs (ug/L)</u>			
Naphthalene	<1.0	<1.0	[20]
1-methylnaphthalene	<1.0	<1.0	[20]
Acenaphthene	<1.0	<1.0	[20]
<u>FL-PRO (mg/L)</u>			
TRPH	0.37JB	<1.0	[5]



DRAWN BY	DATE
MLJ	08Apr01
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	



SELECT GROUNDWATER CONCENTRATIONS AND FLOW DATA
 MONITORING FOR NATURAL ATTENUATION
 BUILDING 428, TANK 428
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

CONTRACT NUMBER N0486	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2	REV 0

ATTACHMENT A
FDEP MOP APPROVAL ORDER AND ANNUAL REVIEW



Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struba
Secretary

May 13, 1999

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Commanding Officer
Mr. Bryan Kizer, Code 1842
SOUTHNAVFACENGCOM
Post Office Box 190010
North Charleston, SC 29419-0068

Subject: Monitoring Only Plan
Approval Order
Facility 428, Tank 428, Naval Air Station Cecil Field

Dear Mr. Kizer:

The Bureau of Waste Cleanup has completed the review of the Site Assessment Report and Monitoring Only Proposal for Natural Attenuation dated February 1999 (received February 19, 1999), submitted for this site. Pursuant to Rule 62-770.690, Florida Administrative Code (F.A.C.), the Department approves the monitoring only proposal. Pursuant to Rule 62-770.690(7), F.A.C., you are required to complete the monitoring program outlined below. The first sampling event should be performed within 60 days of receipt of this Monitoring Only Plan Approval Order (Order). Water-level measurements should be made immediately prior to each sampling event. The analytical results (laboratory report), chain of custody, cumulative summary table of the analytical results, site map(s) illustrating the most recent analytical results, and the water-level elevation information (cumulative summary table and most recent flow interpretation map), should be submitted to the Department within 60 days of sample collection.

<u>Monitoring Wells</u>	<u>Parameters</u>	<u>Frequency</u>
CEF-428-1S and CEF-428-2S	602, 8310, and FL-Pro	Semi-annual

If concentrations of chemicals of concern in any of the designated wells increase above the action levels listed below, the well or wells must be resampled no later than 30 days after the initial positive results are known. If the results of the

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Mr. Bryan Kizer
Page Two
May 13, 1999

resampling confirm the initial sampling results, then a proposal must be submitted, as described in Rule 62-770.690(7)(f), F.A.C.

Contaminated well:

CEF-428-1S: 200 µg/l Xylene; 300 µg/l Ethylbenzene; 400 µg/l Toluene; 200 µg/l Naphthalene, 1-Methylnaphthalene 200 µg/l; 2-Methylnaphthalene 200 µg/l; and 50 mg/l TRPH

Perimeter well:

CEF-428-2S: 20 µg/l Xylene; 30 µg/l Ethylbenzene; 40 µg/l Toluene; 20 µg/l Naphthalene; and 5 mg/l TRPH

The approved Remedial Action by Natural Attenuation monitoring period is 5 years. "Milestone" objectives should be established if monitoring is projected to take greater than one year. The following are the "milestone" objectives that will be used for annual evaluation of remediation progress by natural attenuation. An explanation of the progress relative to these milestone objectives, and the need for corrective action (if applicable), should be provided in the annual evaluation:

<u>Xylene</u>	<u>MW-CEF-428-1S</u>
End of year 1	50
End of year 2	40
End of year 3	30
End of year 4	20
End of year 5	<20

<u>Naphthalene</u>	<u>MW-CEF-428-1S</u>
End of year 1	35
End of year 2	30
End of year 3	25
End of year 4	20
End of year 5	<20

If the applicable No Further Action criteria in Rule 62-770.680, F.A.C., are achieved at the end of the monitoring period, a Site Rehabilitation Completion Report, summarizing the monitoring program and containing documentation supporting the opinion that the cleanup objectives have been achieved, should be submitted as required in Rule 62-770.690(8), F.A.C. If the applicable No Further Action criteria in Rule 62-770.680, F.A.C., are not achieved following one year of monitoring, then a report summarizing the monitoring program should be submitted, including a proposal as described in Rule 62-770.690(7)(g).

ATTACHMENT B
GROUNDWATER ANALYTICAL REPORT

ACCURA ANALYTICAL LABORATORY, INC.

6017 Financial Drive, Norcross, Georgia 30071, Phone (770)449-8800, FAX (770)449-5477
 FL Certification # E87429 NC Certification # 483 SC Certification # 98015 USACE-MRD Approved
 LABORATORY REPORT

Accura Sample ID #: AC18309 Accura Project #: 28567
 Client: Tetra Tech Nus -Tallahassee Date Sampled: 8/8/01
 Client Contact: PAUL CALLIGAN Date Received: 8/9/01
 Client Project Number: N0486/CTO 121 Date Reported: 9/12/01
 Client Project Name: NAS CECIL FIELD-BLDG 428 Sample Matrix: WATER
 Client Sample ID: CEF-428-GW-1S-02

ANALYSIS: PAH's - Low Level

Method Ref: 8270C

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/29/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1-Methylnaphthalene	13		1.0
2-Methylnaphthalene	14		1.0
Acenaphthene	0.68	J	1.0
Acenaphthylene	<RL		1.0
Anthracene	<RL		1.0
Benzo(a)anthracene	<RL		1.0
Benzo(a)pyrene	<RL		1.0
Benzo(b)fluoranthene	<RL		1.0
Benzo(g,h,i)perylene	<RL		1.0
Benzo(k)fluoranthene	<RL		1.0
Chrysene	<RL		1.0
Dibenz(a,h)anthracene	<RL		1.0
Fluoranthene	<RL		1.0
Fluorene	0.87	J	1.0
Indeno(1,2,3-cd)pyrene	<RL		1.0
Naphthalene	2.0		1.0
Phenanthrene	0.69	J	1.0
Pyrene	<RL		1.0

ANALYSIS: Petroleum Range Organics (PRO)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/24/01 Result Units: mg/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
Petroleum Range Organics (PRO)	1.1		1.0

ANALYSIS: VOC's - Cecil Field(25 ml purge)

Method Ref: 8260B

Date Ext/Dig/Prep: 8/17/01 Date Analyzed: 8/17/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1,1,1-Trichloroethane	<RL		1.0
1,1,2,2-Tetrachloroethane	<RL		1.0
1,1,2-Trichloroethane	<RL		1.0
1,1-Dichloroethane	<RL		1.0
1,1-Dichloroethene	<RL		1.0
1,2-Dichloroethane	<RL		1.0
1,2-Dichloropropane	<RL		1.0
1,3-Dichloropropene	<RL		1.0

ACCURA ANALYTICAL LABORATORY, INC.

<RL = Less than Reporting Limit

Pg 1 of 10

Client Sample ID: CEF-428-GW-1S-02

AALSample ID #: AC18309 Accura Project #: 28567

2-Chloroethylvinyl ether	<RL		10
Acrolein	<RL		10
Acrylonitrile	<RL		10
Benzene	<RL		1.0
Bromodichloromethane	<RL		1.0
Bromoform	<RL		1.0
Bromomethane	<RL		1.0
Carbon tetrachloride	<RL		1.0
Chlorobenzene	<RL		1.0
Chloroform	<RL		1.0
Chloromethane	<RL		1.0
Ethylbenzene	<RL		1.0
Methylene chloride	<RL		5.0
Methyl-tert-butyl ether (MTBE)	<RL		10
Tetrachloroethene	<RL		1.0
Toluene	0.93	J	1.0
trans-1,2-Dichloroethene	<RL		1.0
Trichloroethene	<RL		1.0
Vinyl chloride	<RL		1.0
Xylenes (Total)	0.69	J	2.0

ANALYSIS: X B/N Sample Surrogates (Waters)

Method Ref: 8270C

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/29/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 21-122)	64		
Nitrobenzene-d5 (Range 16-125)	64		
p-Terphenyl-d14 (Range 5-157)	42		

ANALYSIS: X PRO Sample Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/24/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
C(39) (Range 42-193)	34	Z	
o-Terphenyl (Range 82-142)	59	Z	

ANALYSIS: X VOC Sample Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 8/17/01 Date Analyzed: 8/17/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (81-132)	107		
4-Bromofluorobenzene (80-120)	99		
Toluene-d8 (80-119)	102		

ACCURA ANALYTICAL LABORATORY, INC.

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 LABORATORY REPORT

Accura Sample ID #: AC18310 Accura Project #: 28567
 Client: Tetra Tech Nus -Tallahassee Date Sampled: 8/8/01
 Client Contact: PAUL CALLIGAN Date Received: 8/9/01
 Client Project Number: N0486/CTO 121 Date Reported: 9/12/01
 Client Project Name: NAS CECIL FIELD-BLDG 428 Sample Matrix: WATER
 Client Sample ID: CEF-428-GW-2S-02

ANALYSIS: PAH's - Low Level

Method Ref: 8270C

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/29/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1-Methylnaphthalene	<RL		1.0
2-Methylnaphthalene	<RL		1.0
Acenaphthene	<RL		1.0
Acenaphthylene	<RL		1.0
Anthracene	<RL		1.0
Benzo(a)anthracene	<RL		1.0
Benzo(a)pyrene	<RL		1.0
Benzo(b)fluoranthene	<RL		1.0
Benzo(g,h,i)perylene	<RL		1.0
Benzo(k)fluoranthene	<RL		1.0
Chrysene	<RL		1.0
Dibenz(a,h)anthracene	<RL		1.0
Fluoranthene	<RL		1.0
Fluorene	<RL		1.0
Indeno(1,2,3-cd)pyrene	<RL		1.0
Naphthalene	<RL		1.0
Phenanthrene	<RL		1.0
Pyrene	<RL		1.0

ANALYSIS: Petroleum Range Organics (PRO)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/23/01 Result Units: mg/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
Petroleum Range Organics (PRO)	<RL		1.0

ANALYSIS: VOC's - Cecil Field(25 ml purge)

Method Ref: 8260B

Date Ext/Dig/Prep: 8/17/01 Date Analyzed: 8/17/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1,1,1-Trichloroethane	<RL		1.0
1,1,2,2-Tetrachloroethane	<RL		1.0
1,1,2-Trichloroethane	<RL		1.0
1,1-Dichloroethane	<RL		1.0
1,1-Dichloroethene	<RL		1.0
1,2-Dichloroethane	<RL		1.0
1,2-Dichloropropane	<RL		1.0
1,3-Dichloropropene	<RL		1.0

ACCURA ANALYTICAL LABORATORY, INC.

<RL = Less than Reporting Limit

Pg 3 of 10

Client Sample ID: CEF-428-GW-2S-02

AALSample ID #: AC18310 Accura Project #: 28567

2-Chloroethylvinyl ether	<RL	10
Acrolein	<RL	10
Acrylonitrile	<RL	10
Benzene	<RL	1.0
Bromodichloromethane	<RL	1.0
Bromoform	<RL	1.0
Bromomethane	<RL	1.0
Carbon tetrachloride	<RL	1.0
Chlorobenzene	<RL	1.0
Chloroform	<RL	1.0
Chloromethane	<RL	1.0
Ethylbenzene	<RL	1.0
Methylene chloride	<RL	5.0
Methyl-tert-butyl ether (MTBE)	<RL	10
Tetrachloroethene	<RL	1.0
Toluene	<RL	1.0
trans-1,2-Dichloroethene	<RL	1.0
Trichloroethene	<RL	1.0
Vinyl chloride	<RL	1.0
Xylenes (Total)	<RL	2.0

ANALYSIS: X B/N Sample Surrogates (Waters)

Method Ref: 8270C

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/29/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 21-122)	66		
Nitrobenzene-d5 (Range 16-125)	64		
p-Terphenyl-d14 (Range 5-157)	72		

ANALYSIS: X PRO Sample Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/23/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
C(39) (Range 42-193)	51		
o-Terphenyl (Range 82-142)	76	Z	

ANALYSIS: X VOC Sample Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 8/17/01 Date Analyzed: 8/17/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (81-132)	105		
4-Bromofluorobenzene (80-120)	109		
Toluene-d8 (80-119)	102		

ACCURA ANALYTICAL LABORATORY, INC.

6017 Financial Drive, Norcross, Georgia 30071, Phone (770)449-8800, FAX (770)449-5477
 FL Certification # E87429 NC Certification # 483 SC Certification # 98015 USACE-MRD Approved
 LABORATORY REPORT

Accura Sample ID #: AC18311 Accura Project #: 28567
 Client: Tetra Tech Nus -Tallahassee Date Sampled: 8/8/01
 Client Contact: PAUL CALLIGAN Date Received: 8/9/01
 Client Project Number: N0486/CTO 121 Date Reported: 9/12/01
 Client Project Name: NAS CECIL FIELD-BLDG 428 Sample Matrix: WATER
 Client Sample ID: CEF-428-DUP-GW-02

ANALYSIS: PAH's - Low Level

Method Ref: 8270C

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/29/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1-Methylnaphthalene	<RL		1.0
2-Methylnaphthalene	<RL		1.0
Acenaphthene	<RL		1.0
Accnaphthylene	<RL		1.0
Anthracene	<RL		1.0
Benzo(a)anthracene	<RL		1.0
Benzo(a)pyrene	<RL		1.0
Benzo(b)fluoranthene	<RL		1.0
Benzo(g,h,i)perylene	<RL		1.0
Benzo(k)fluoranthene	<RL		1.0
Chrysene	<RL		1.0
Dibenz(a,h)anthracene	<RL		1.0
Fluoranthene	<RL		1.0
Fluorene	<RL		1.0
Indeno(1,2,3-cd)pyrene	<RL		1.0
Naphthalene	<RL		1.0
Phenanthrene	<RL		1.0
Pyrene	<RL		1.0

ANALYSIS: Petroleum Range Organics (PRO)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/24/01 Result Units: mg/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
Petroleum Range Organics (PRO)	1.2		1.0

ANALYSIS: VOC's - Cecil Field(25 ml purge)

Method Ref: 8260B

Date Ext/Dig/Prep: 8/17/01 Date Analyzed: 8/17/01 Result Units: ug/L

Analyte Name	Analytical Results	Qualifier	Reported Detection Limits
1,1,1-Trichloroethane	<RL		1.0
1,1,2,2-Tetrachloroethane	<RL		1.0
1,1,2-Trichloroethane	<RL		1.0
1,1-Dichloroethane	<RL		1.0
1,1-Dichloroethene	<RL		1.0
1,2-Dichloroethane	<RL		1.0
1,2-Dichloropropane	<RL		1.0
1,3-Dichloropropene	<RL		1.0

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<RL = Less than Reporting Limit

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Client Sample ID: CEF-428-DUP-GW-02

AALSample ID #: AC18311 Accura Project #: 28567

2-Chloroethylvinyl ether	<RL		10
Acrolein	<RL		10
Acrylonitrile	<RL		10
Benzene	<RL		1.0
Bromodichloromethane	<RL		1.0
Bromoform	<RL		1.0
Bromomethane	<RL		1.0
Carbon tetrachloride	<RL		1.0
Chlorobenzene	<RL		1.0
Chloroform	<RL		1.0
Chloromethane	<RL		1.0
Ethylbenzene	<RL		1.0
Methylene chloride	<RL		5.0
Methyl-tert-butyl ether (MTBE)	<RL		10
Tetrachloroethene	<RL		1.0
Toluene	0.87	J	1.0
trans-1,2-Dichloroethene	<RL		1.0
Trichloroethene	<RL		1.0
Vinyl chloride	<RL		1.0
Xylenes (Total)	0.63	J	2.0

ANALYSIS: X B/N Sample Surrogates (Waters)

Method Ref: 8270C

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/29/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 21-122)	55		
Nitrobenzene-d5 (Range 16-125)	66		
p-Terphenyl-d14 (Range 5-157)	39		

ANALYSIS: X PRO Sample Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/24/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
C(39) (Range 42-193)	51		
o-Terphenyl (Range 82-142)	59	Z	

ANALYSIS: X VOC Sample Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 8/17/01 Date Analyzed: 8/17/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (81-132)	106		
4-Bromofluorobenzene (80-120)	103		
Toluene-d8 (80-119)	104		

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 FL Certification # E87429 NC Certification # 483 SC Certification # 98015 USACE-MRD Approved
 LABORATORY REPORT

Accura Sample ID #: AC18312 Accura Project #: 28567
 Client: Tetra Tech Nus -Tallahassee Date Sampled: 8/8/01
 Client Contact: PAUL CALLIGAN Date Received: 8/9/01
 Client Project Number: N0486/CTO 121 Date Reported: 9/12/01
 Client Project Name: NAS CECIL FIELD-BLDG 428 Sample Matrix: WATER
 Client Sample ID: CEF-428-MD-GW-02

ANALYSIS: PAH's - Low Level

Method Ref: 8270C

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/29/01 Result Units: ug/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1-Methylnaphthalene	<RL		1.0
2-Methylnaphthalene	<RL		1.0
Acenaphthene	<RL		1.0
Acenaphthylene	<RL		1.0
Anthracene	<RL		1.0
Benzo(a)anthracene	<RL		1.0
Benzo(a)pyrene	<RL		1.0
Benzo(b)fluoranthene	<RL		1.0
Benzo(g,h,i)perylene	<RL		1.0
Benzo(k)fluoranthene	<RL		1.0
Chrysene	<RL		1.0
Dibenz(a,h)anthracene	<RL		1.0
Fluoranthene	<RL		1.0
Fluorene	<RL		1.0
Indeno(1,2,3-cd)pyrene	<RL		1.0
Naphthalene	<RL		1.0
Phenanthrene	<RL		1.0
Pyrene	<RL		1.0

ANALYSIS: Petroleum Range Organics (PRO)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/24/01 Result Units: mg/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
Petroleum Range Organics (PRO)	<RL		1.0

ANALYSIS: VOC's - Cecil Field(25 ml purge)

Method Ref: 8260B

Date Ext/Dig/Prep: 8/17/01 Date Analyzed: 8/17/01 Result Units: ug/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,1,1-Trichloroethane	<RL		1.0
1,1,2,2-Tetrachloroethane	<RL		1.0
1,1,2-Trichloroethane	<RL		1.0
1,1-Dichloroethane	<RL		1.0
1,1-Dichloroethene	<RL		1.0
1,2-Dichloroethane	<RL		1.0
1,2-Dichloropropane	<RL		1.0
1,3-Dichloropropene	<RL		1.0

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<RL = Less than Reporting Limit

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Client Sample ID: CEF-428-MD-GW-02

AALSample ID #: AC18312 Accura Project #: 28567

2-Chloroethylvinyl ether	<RL	10
Acrolein	<RL	10
Acrylonitrile	<RL	10
Benzene	<RL	1.0
Bromodichloromethane	<RL	1.0
Bromoform	<RL	1.0
Bromomethane	<RL	1.0
Carbon tetrachloride	<RL	1.0
Chlorobenzene	<RL	1.0
Chloroform	<RL	1.0
Chloromethane	<RL	1.0
Ethylbenzene	<RL	1.0
Methylene chloride	<RL	5.0
Methyl-tert-butyl ether (MTBE)	<RL	10
Tetrachloroethene	<RL	1.0
Toluene	<RL	1.0
trans-1,2-Dichloroethene	<RL	1.0
Trichloroethene	<RL	1.0
Vinyl chloride	<RL	1.0
Xylenes (Total)	<RL	2.0

ANALYSIS: X B/N Sample Surrogates (Waters)

Method Ref: 8270C

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/29/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 21-122)	56		
Nitrobenzene-d5 (Range 16-125)	51		
p-Terphenyl-d14 (Range 5-157)	50		

ANALYSIS: X PRO Sample Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/24/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
C(39) (Range 42-193)	49		
o-Terphenyl (Range 82-142)	70	Z	

ANALYSIS: X VOC Sample Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 8/17/01 Date Analyzed: 8/17/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (81-132)	106		
4-Bromofluorobenzene (80-120)	111		
Toluene-d8 (80-119)	106		

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 LABORATORY REPORT

Accura Sample ID #: AC18313 Accura Project #: 28567
 Client: Tetra Tech Nus -Tallahassee Date Sampled: 8/9/01
 Client Contact: PAUL CALLIGAN Date Received: 8/9/01
 Client Project Number: N0486/CTO 121 Date Reported: 9/12/01
 Client Project Name: NAS CECIL FIELD-BLDG 428 Sample Matrix: WATER
 Client Sample ID: METHOD BLANK

ANALYSIS: PAH's - Low Level

Method Ref: 8270C

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/27/01 Result Units: ug/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1-Methylnaphthalene	<RL		1.0
2-Methylnaphthalene	<RL		1.0
Acenaphthene	<RL		1.0
Acenaphthylene	<RL		1.0
Anthracene	<RL		1.0
Benzo(a)anthracene	<RL		1.0
Benzo(a)pyrene	<RL		1.0
Benzo(b)fluoranthene	<RL		1.0
Benzo(g,h,i)perylene	<RL		1.0
Benzo(k)fluoranthene	<RL		1.0
Chrysene	<RL		1.0
Dibenz(a,h)anthracene	<RL		1.0
Fluoranthene	<RL		1.0
Fluorene	<RL		1.0
Indeno(1,2,3-cd)pyrene	<RL		1.0
Naphthalene	<RL		1.0
Phenanthrene	<RL		1.0
Pyrene	<RL		1.0

ANALYSIS: Petroleum Range Organics (PRO)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/23/01 Result Units: mg/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
Petroleum Range Organics (PRO)	<RL		1.0

ANALYSIS: VOC's - Cecil Field(25 ml purge)

Method Ref: 8260B

Date Ext/Dig/Prep: 8/17/01 Date Analyzed: 8/17/01 Result Units: ug/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,1,1-Trichloroethane	<RL		1.0
1,1,2,2-Tetrachloroethane	<RL		1.0
1,1,2-Trichloroethane	<RL		1.0
1,1-Dichloroethane	<RL		1.0
1,1-Dichloroethene	<RL		1.0
1,2-Dichloroethane	<RL		1.0
1,2-Dichloropropane	<RL		1.0
1,3-Dichloropropene	<RL		1.0

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<RL = Less than Reporting Limit

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Client Sample ID: METHOD BLANK

AALSample ID #: AC18313 Accura Project #: 28567

2-Chloroethylvinyl ether	<RL	10
Acrolein	<RL	10
Acrylonitrile	<RL	10
Benzene	<RL	1.0
Bromodichloromethane	<RL	1.0
Bromoform	<RL	1.0
Bromomethane	<RL	1.0
Carbon tetrachloride	<RL	1.0
Chlorobenzene	<RL	1.0
Chloroform	<RL	1.0
Chloromethane	<RL	1.0
Ethylbenzene	<RL	1.0
Methylene chloride	<RL	5.0
Methyl-tert-butyl ether (MTBE)	<RL	10
Tetrachloroethene	<RL	1.0
Toluene	<RL	1.0
trans-1,2-Dichloroethene	<RL	1.0
Trichloroethene	<RL	1.0
Vinyl chloride	<RL	1.0
Xylenes (Total)	<RL	2.0

ANALYSIS: X Base Neutral OC Surrogates (W)

Method Ref: 8270C

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/27/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 27-121)	88		
Nitrobenzene-d5 (Range 24-114)	97		
p-Terphenyl-d14 (Range 28-139)	103		

ANALYSIS: X PRO OC Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 8/15/01 Date Analyzed: 8/23/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
C(39) (Range 42-193)	23	Z	
o-Terphenyl (Range 82-142)	74	Z	

ANALYSIS: X VOC OC Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 8/17/01 Date Analyzed: 8/17/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (83-124)	89		
4-Bromofluorobenzene (81-118)	107		
Toluene-d8 (84-115)	105		

AAL Project #: 28567

Client Project: NAS Cecil Field-Bldg. 428 / N0486/CTO 121

CTO Manager: Paul Calligan

The following items were noted concerning this project:

1. The following samples were received at Accura Analytical Laboratory on 08/09/01 at 0950:

<u>Client Sample ID</u>	<u>Laboratory Sample ID</u>
CEF-428-GW-1S-02	AC18309
CEF-428-GW-2S-02	AC18310
CEF-428-DU-GW-02	AC18311
CEF-428-MD-GW-02	AC18312

2. The sample cooler temperature was noted to be 2⁰C upon receipt at the laboratory.
3. The pH of the samples was 1.0 prior to the VOC analysis.
4. The "J" values noted for the VOC and PAH results indicate estimated concentrations that were above the method detection limits, but below the reporting limits.
5. The following surrogates were outside the method specified limits, as indicated by the "Z" qualifier:

<u>FLA-PRO</u>		
C(39) -	CEF-428-GW-1S-02	Method Blank
o-Terphenyl -	CEF-428-GW-1S-02	CEF-428-GW-2S-02
	CEF-428-DUP-GW-02	CEF-428-MD-GW-02
	Method Blank	Laboratory Control Sample
	Laboratory Control Sample Duplicate	

The recoveries were within in-house limits established at the laboratory; therefore the data was accepted.

6. The laboratory control sample recoveries were outside the project specified limits for the following analytes:

<u>VOC-SW-846-8260B</u>		
Laboratory Control Sample -	Acrolein	Acrylonitrile

The recoveries were bias high, and there were no hits of these analytes in the samples; therefore the data was accepted.

7. The laboratory control sample and laboratory control sample duplicate recoveries were outside the project specified limits for the following analysis:

FLA-PRO

The recoveries were within in-house limits established at the laboratory; therefore the data was accepted.

8. The following spike recoveries were outside the method specified limits due to possible matrix interference:

VOC-SW-846-8260B

Matrix Spike/Matrix Spike Duplicate -

2-Chloroethylvinyl ether
Acrylonitrile

Acrolein

9. Batch QC is reported for all analyses submitted for this project. Note that laboratory control sample/laboratory control sample duplicate recoveries are reported as matrix spike/matrix spike duplicate recoveries on the QC spreadsheet for the PAH and FLA-PRO analyses.

Approved for Quality Assurance Release By:

Camden Robinson
Quality Assurance Officer

Date

ATTACHMENT C
HISTORICAL ANALYTICAL TABLE

Table B-3
Summary of Groundwater Analytical Results

Building 428, Tank 428
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	Source Area Monitoring Well			Perimeter Monitoring Well			FL GCTL	Action Levels ¹		1year Milestone Objectives (Source) ¹
	CEF-428-1S			CEF-428-2S				Source	Perimeter	
	Aug-97	Sep-99	Mar-00	Jul-98	Sep-99	Mar-00				
<u>Volatile Organic Aromatics</u>										
Ethylbenzene	2.9	NS	ND	ND	ND	ND	30	300	30	50
Toluene	1.5	NS	11	ND	ND	ND	40	400	40	
Xylenes	39	NS	ND	ND	ND	ND	20	200	20	
<u>Polynuclear Aromatic Hydrocarbons</u>										
Naphthalene	ND	NS	NS	ND	ND	ND	20	200	20	35
1-Methylnaphthalene	35	NS	NS	ND	ND	ND	20	200		
2-Methylnaphthalene	33	NS	NS	ND	ND	ND	20	200		
Phenanthrene	ND	NS	NS	0.22	ND	ND	210			
<u>Total Recoverable Petroleum Hydrocarbons</u>										
TRPH	3.3	NS	NS	ND	ND	ND	5	50	5	
Lead										
Lead	ND	NS	NS	NS	ND	ND	15			
<p>Notes: VOC and PAH concentrations are in micrograms per liter. TRPH and Lead concentrations are in milligrams per liter ¹As specified in the Monitoring Only Plan Approval Order (FDEP, May 1999) Only detected compounds, and compounds identified as contaminants of concern by FDEP are listed. GCTL= groundwater cleanup target level ND=not detected NS=not sampled (well screen not installed at appropriate depth) Results for current sampling event are shaded</p>										