

N60200.AR.003323
NAS CECIL FIELD, FL
5090.3a

SEMI-ANNUAL/ANNUAL GROUNDWATER MONITORING LETTER REPORT FOR
DECEMBER 2001 AT BUILDING 502 TANK 502 NAS CECIL FIELD FL
5/3/2002
TETRA TECH NUS INC



TETRA TECH NUS, INC.

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Document Tracking No. 02JAX0102

May 3, 2002

Project Number 0486

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 Number N62467-94-D-0888
Contract Task Order Number 0121

Subject: Semi-Annual/Annual Groundwater Monitoring Report, (December 2001)
Building 502, Tank 502
Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Grabka:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit this semi-annual Groundwater Monitoring Report for the referenced Contract Task Order (CTO) for Building 502, Tank 502. This groundwater monitoring report was prepared for the U.S. 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 quality at the site semi-annually. The guidance document for this report is Chapter 62-770, Florida Administrative Code (FAC). The sampling program was accomplished in general accordance with the Natural Attenuation Monitoring Plan (MONA) Approval Order signed by the Florida Department of Environmental Protection (FDEP) on July 13, 1999 (Attachment A), and as modified by subsequent reports (HLA, 2000; TtNUS, 2001). In accordance with the SARA (TtNUS, 2001), TtNUS installed CEF-502-8S on December 05, 2001. The boring log and monitoring well construction diagram for that well are included in Attachment B.

The fieldwork and analytical results of the groundwater sampling conducted at the site in December 2001, as well as a re-sample event that took place in March 2002, are summarized in this report. The work was performed in general accordance with the Base-wide Generic Work Plan Volumes I and II (TtNUS, 1998). The location of the site is presented on Figure 1.

FIELD OPERATIONS

On December 11, 2001, water level measurements were recorded from each of the monitoring wells prior to sample collection. The depth to water ranged from 3.73 feet (ft) below top-of-casing (btoc) (CEF-502-4S) to 5.27 ft btoc (CEF-502-1SR). The depth-to-water measurements, along with top-of-casing elevations, were used to calculate groundwater elevations.

On December 11, 2001, groundwater samples were collected from five shallow monitoring wells (CEF-502-1SR, CEF-502-3S, CEF-502-4S, CEF-502-6S, and CEF-502-8S) and one deep monitoring well (CEF-502-7D) (Figure 1). Following collection, the samples were placed on ice and subsequently shipped under chain-of-custody to Accura Laboratories in Norcross, Georgia. The laboratory analyzed the samples for 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 recoverable petroleum hydrocarbons (TRPHs) by Florida Petroleum Range Organics (FL-PRO). The reported detection limits for these methods meet the requirements for the similar methods recommended in the MONA.

On December 17, 2001, the site's wells were surveyed by a Florida-registered surveyor for horizontal and vertical data. The survey data is included as Attachment C.

Following receipt of the analyses, TtNUS determined that re-sampling of monitoring well CEF-502-3S was required. This field effort was conducted on March 4, 2002. Since only PAH analytical data for that well was cause for concern, only a PAH sample was collected and shipped in the same manner as done previously. A second round of water levels was collected prior to sampling.

RESULTS

Groundwater elevation data from the December and March events and the previous sampling event are shown on Table 1. The groundwater flow direction with elevation data for December 2001 is shown on Figure 2. Based on the data, the inferred direction of groundwater flow is to the northwest and northeast converging on monitoring well CEF-502-6S in the former tank pit area. An evaluation of the March 2002 elevation data revealed a similar flow direction.

Compounds of concern (COCs) reported by the laboratory, for the groundwater samples collected for this sampling event were compared to FDEP Groundwater Cleanup Target Levels (GCTLs) and Natural Attenuation Default Source Concentrations (NADSCs). The data and comparable standards are indicated on Table 2, and the results for naphthalene compounds and TRPH are illustrated on Figure 3. Four COCs (naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, and TRPH) were reported at values exceeding GCTLs in samples collected from well CEF-502-1SR, and results for two COCs (1-methylnaphthalene and 2-methylnaphthalene) exceeded respective GCTLs in wells CEF-502-3S and CEF-502-6S. According to the MONA, CEF-502-3S had to be re-sampled, since it is a perimeter well with a GCTL exceedance of naphthalene-type COCs. A copy of the laboratory report for the December 11, 2001 sampling event is provided as Attachment D. The second laboratory report (Attachment E) indicates that only 1-methylnaphthalene was detected and the concentration was below its GCTL.

CONCLUSIONS and RECOMMENDATIONS

It appears that the rise in groundwater levels from April 2001 to December 2001 was concurrent with an increase in concentrations of naphthalene-type COCs. Particularly, the two source wells show this change. However, even with a continued rise in water levels, the concentrations for naphthalene-type COCs reported for well CEF-502-3S decreased. So, there doesn't appear to be a clear trend.

This event is considered representative of the end of the second year of monitoring. A comparison of the Table 2 analytical and the milestone objectives for the source well, summarized on Table 3, indicate that the objectives have been met for Year 2.

Mr. David Grabka
FDEP
May 3, 2002 – Page 3

TiNUS recommends continued monitoring for another year. The next event is scheduled for early June 2002.

If you have any questions with regard to this submittal, please contact me at (850) 806-0202.

Sincerely,



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


Mervin W. Dale, P.G.
Florida Professional Geologist
P.G. No. 00019



PEC/mwd

Attachments (11)

cc: W. Hansel, SOUTHDIV
D. Taylor, USEPA
D. Wroblewski, TiNUS (cover letter only)
M. Perry, TiNUS (unbound)
Project File

Mr. David Grabka
FDEP
May 3, 2002 – Page 4

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

TABLES

Table 1
Groundwater Elevation and Monitoring Well Construction Data

Semi-Annual/Annual Groundwater Monitoring Report
 Building 502, Tank 502
 Naval Air Station Cecil Field
 Jacksonville, Florida

Well Number	Total Depth (feet, bls)	Top of Casing Elevation (feet NAVD)	April 9, 2001		December 11, 2001		March 4, 2002	
			Depth to Water Below Top-of-Casing (feet)	Water Elevation (feet msl)	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-502-1SR	12.48	82.16	6.31	75.85	5.27	76.89	4.65	77.51
CEF-502-3S	12.22	80.68	5.03	75.65	3.77	76.91	3.03	77.65
CEF-502-4S	12.36	80.68	5.07	75.61	3.73	76.95	3.02	77.66
CEF-502-6S	14.80	81.70	5.72	75.98	5.20	76.50	4.64	77.06
CEF-502-7D	29.95	81.65	6.00	75.65	4.87	76.78	4.21	77.44
CEF-502-8S	13.57	81.75	NA	NM	4.83	76.92	4.14	77.61

Notes: bls = below land surface.
 msl = mean sea level.
 NAVD = North American Vertical Datum, 1988.
 NA = Not Applicable
 NM = Not Measured

Table 2
Summary of Detections in Groundwater

Semi-Annual/Annual Groundwater Monitoring Report
Building 502, Tank 502
Naval Air Station Cecil Field
Jacksonville, Florida
Page 1 of 2

Sample ID	Source Well		Perimeter Wells			
	CEF-502-GW-1SR-02	CEF-502-GW-1SR-03	CEF-502-GW-3S-03	CEF-502-GW-3S-03B	CEF-502-GW-4S-02	CEF-502-GW-4S-03
Date Sampled	4/9/2001	12/11/2001	12/11/2001	3/4/2002	4/10/2001	12/11/2001
Compounds Detected	CEF-502-1SR		CEF-502-3S		CEF-502-4S	
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 8270C) (µg/L)</u>						
Acenaphthene	3.7	5.9	1.1 J	<1.0	<1.0	<1.3
Fluorene	4.5	5.5	0.7J	<1.0	<1.0	<1.3
Phenanthrene	1.7	3.3	<1.1	<1.0	<1.0	<1.3
1-Methylnaphthalene	63	93	28	11	<1.0	1.2J
2-Methylnaphthalene	85	130	25	<1.0	<1.0	1.6
Naphthalene	66	96	3.4	<1.0	<1.0	<1.3
<u>Volatile Organic Compounds (USEPA Method 8260B) (µg/L)</u>						
Chlorobenzene	<1.0	<1.0	<1.0	NS	<1.0	<1.0
Ethylbenzene	13	5.9	<1.0	NS	0.92J	<1.0
Total Xylenes	4.8	1.2J	<3.0	NS	<2.0	<3.0
<u>Florida - Petroleum Range Organics (FL-PRO) (mg/L)</u>						
TRPH	24	36	1.5	NS	1.1	0.46J

See notes at end of table

Table 2
Summary of Detections in Groundwater

Semi-Annual Groundwater Monitoring Report
Building 502, Tank 502
Naval Air Station Cecil Field
Jacksonville, Florida
Page 2 of 2

Sample ID	Source Well		Perimeter Wells			GCTL ¹	NADSC ²
	CEF-502-GW-6S-02	CEF-502-GW-6S-03	CEF-502-GW-7D-02	CEF-502-GW-7D-03	CEF-502-GW-8S-03		
Date Sampled	4/9/2001	12/11/2001	4/9/2001	12/11/2001	12/11/2001		
Compounds Detected	CEF-502-6S		CEF-502-7D		CEF-502-8S		
Polynuclear Aromatic Hydrocarbons (USEPA Method 8270C) (µg/L)							
Acenaphthene	1.2	3.8	<1.0	<1.1	<1.1	20	200
Fluorene	0.48J	2.3	<1.0	<1.1	<1.1	280	2800
Phenanthrene	<1.0	0.89J	<1.0	<1.1	<1.1	210	2100
1-Methylnaphthalene	7.4	28	<1.0	<1.1	<1.1	20	200
2-Methylnaphthalene	0.96J	41	<1.0	<1.1	<1.1	20	200
Naphthalene	2.0	5.0	<1.0	<1.1	<1.1	20	200
Volatile Organic Compounds (USEPA Method 8260B) (µg/L)							
Chlorobenzene	<1.0	<1.0	<1.0	0.33J	<1.0	100	1000
Ethylbenzene	2.4	0.54J	<1.0	<1.0	<1.0	30	300
Total Xylenes	<2.0	0.43J	<1.0	<3.0	<3.0	20	200
Florida - Petroleum Range Organics (FL-PRO) (mg/L)							
TRPH	1.5	1.5	<1.0	0.23J	0.45J	5	50

Notes:

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

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

TRPH = Total Recoverable Petroleum Hydrocarbons

J = estimated

Bold values are above GCTLs

µg/L = micrograms per liter

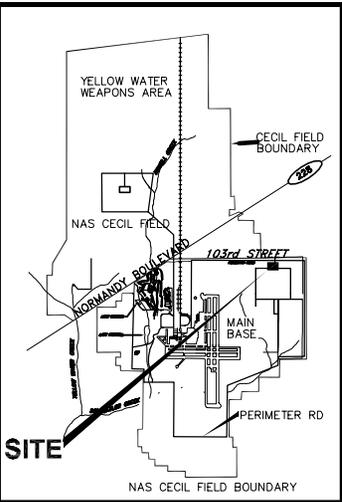
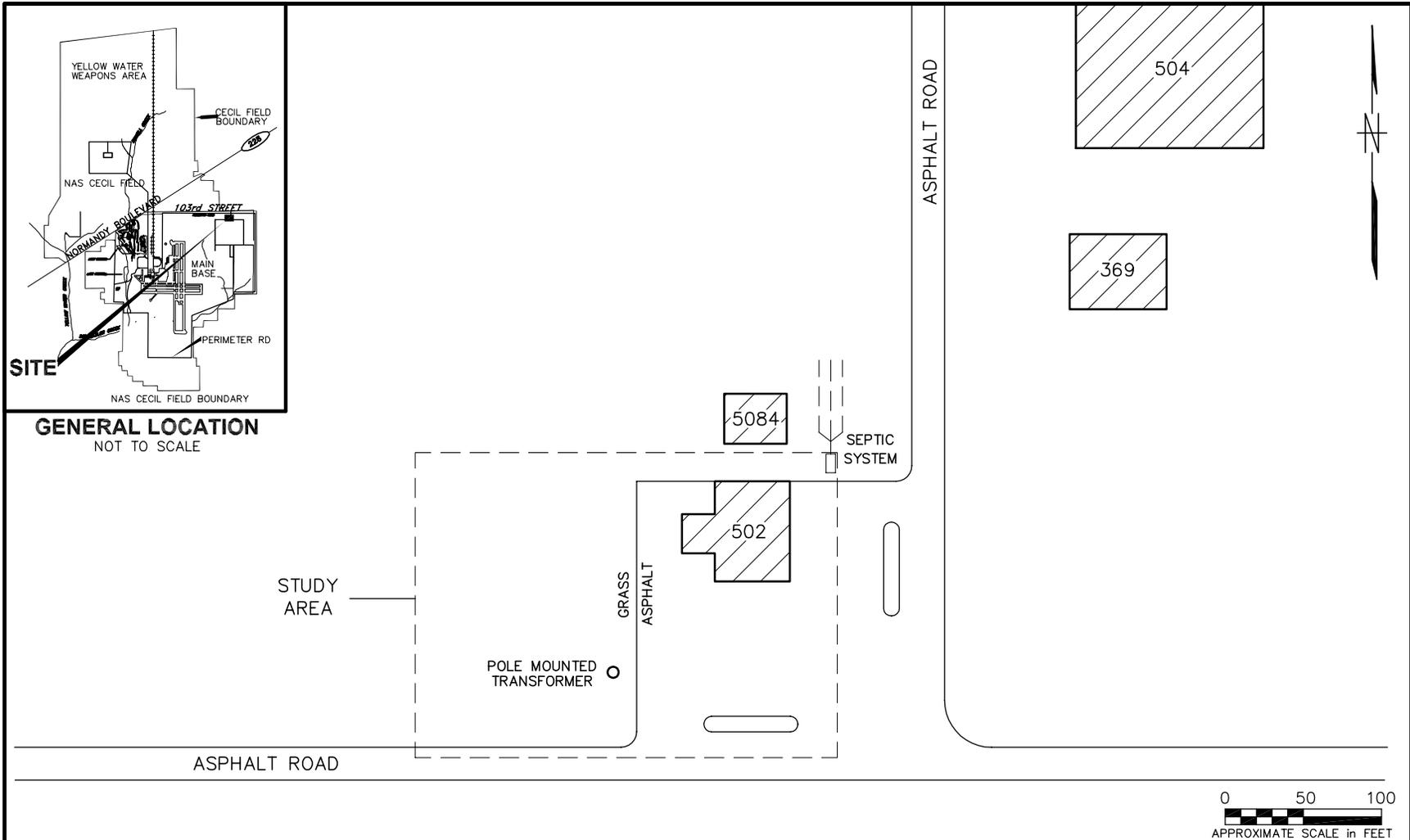
mg/L = milligrams per liter

Table 3
Recommended Milestone Objectives
For Monitoring Well CEF-502-6S (formerly CEF-502-2S)

Semi-Annual/Annual Groundwater Monitoring Report
 Building 502, Tank 502
 Naval Air Station Cecil Field
 Jacksonville, Florida

Compounds of Concern	Units	End Of				
		Year 1	Year 2	Year 3	Year 4	Year 5
Naphthalene	µg/L	55	45	35	25	<20
1-Methylnaphthalene	µg/L	55	45	35	25	<20
2-Methylnaphthalene	µg/L	74	61	46	31	<20
TRPH	mg/L	20	16	12	8	<5
Notes: µg/L = micrograms per liter. mg/L = milligrams per liter. < = less than. TRPH = total recoverable petroleum hydrocarbons.						

FIGURES



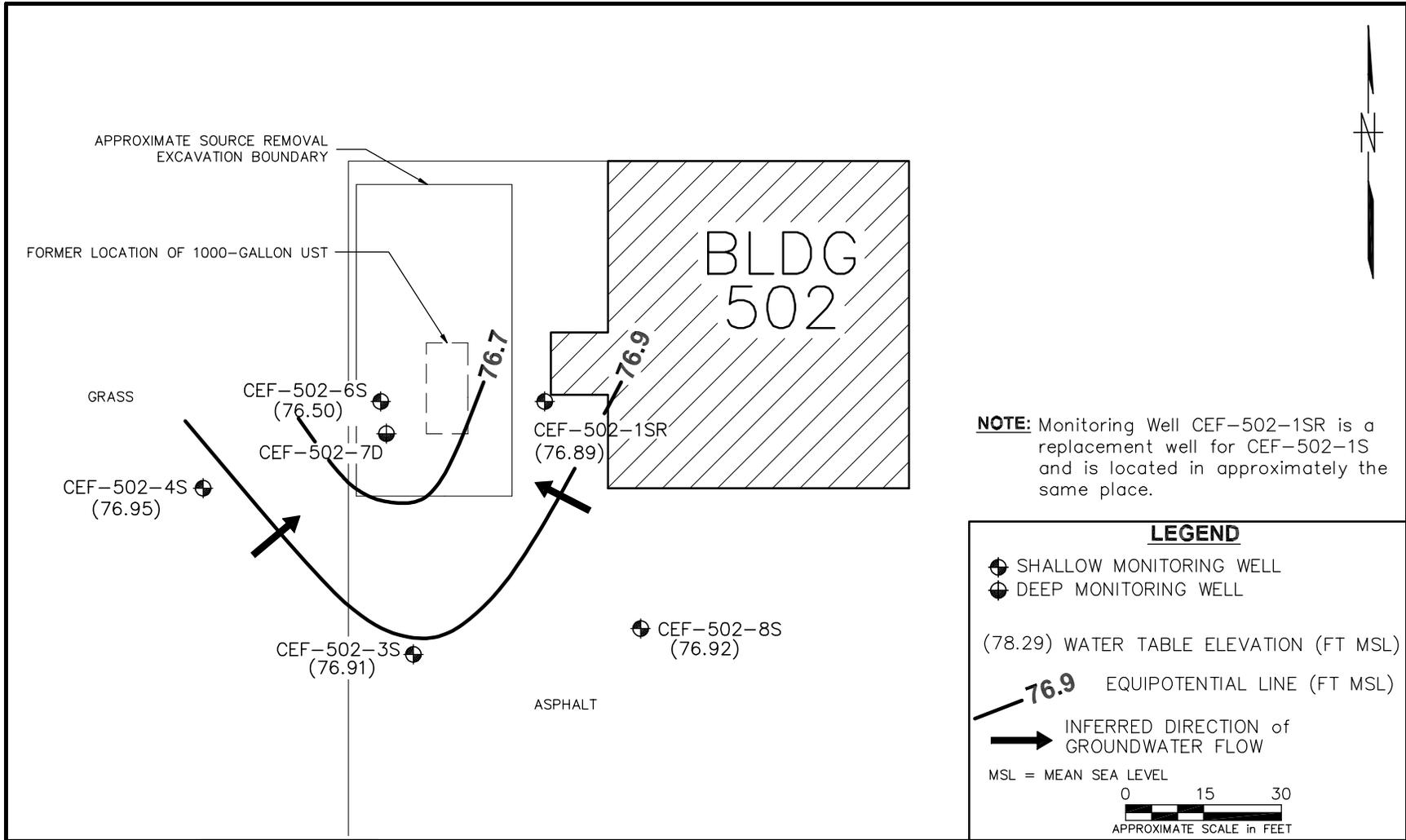
GENERAL LOCATION
NOT TO SCALE

DRAWN BY LLK	DATE 6/13/01
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



SITE LOCATION MAP
BUILDING 502
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

CONTRACT NO.	0486	
APPROVED BY	DATE	
APPROVED BY	DATE	
DRAWING NO.	FIGURE 1	REV. 0



NOTE: Monitoring Well CEF-502-1SR is a replacement well for CEF-502-1S and is located in approximately the same place.

LEGEND

- ⊕ SHALLOW MONITORING WELL
- ⊙ DEEP MONITORING WELL
- (78.29) WATER TABLE ELEVATION (FT MSL)
- 76.9 EQUIPOTENTIAL LINE (FT MSL)
- ➔ INFERRED DIRECTION of GROUNDWATER FLOW
- MSL = MEAN SEA LEVEL

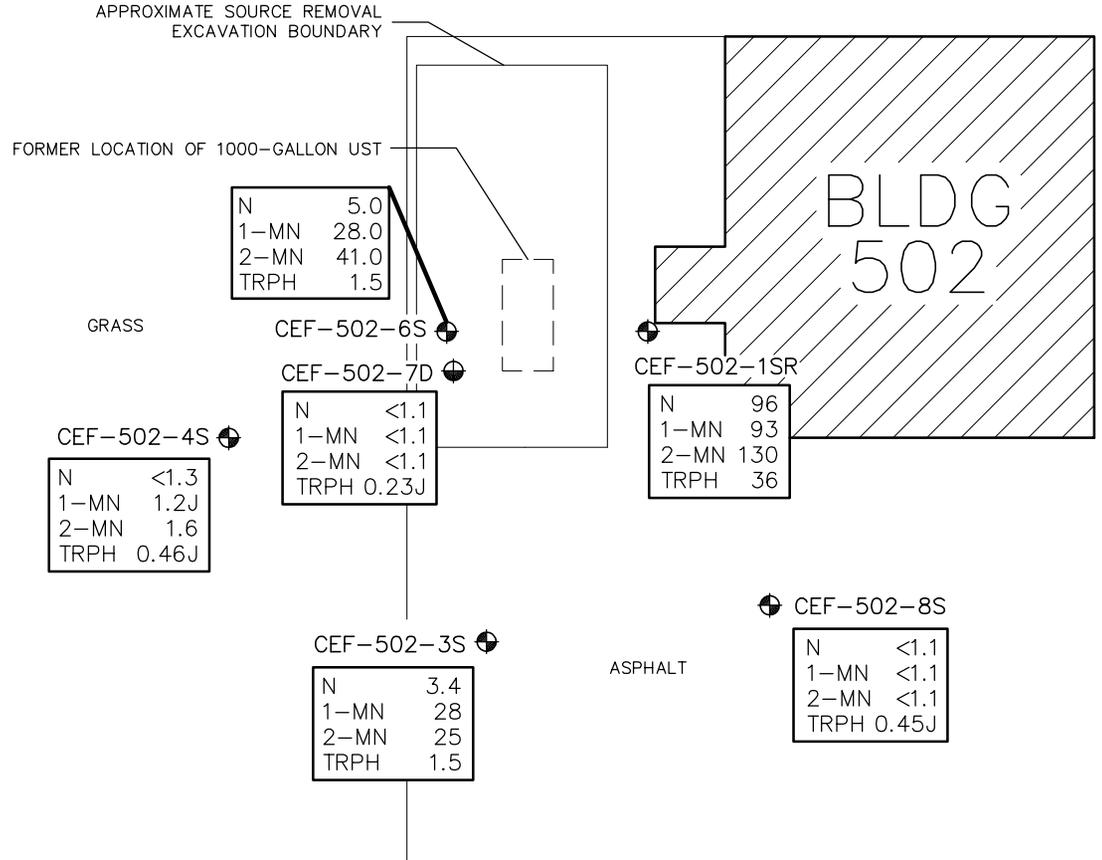
0 15 30
 ───────────
 APPROXIMATE SCALE in FEET

DRAWN BY LLK	DATE 2/25/02
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



GROUNDWATER FLOW MAP
 DECEMBER 11, 2001
 BUILDING 502
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

CONTRACT NO.	0486	
APPROVED BY	DATE	
APPROVED BY	DATE	
DRAWING NO.	FIGURE 2	REV. 0



LEGEND

SHALLOW MONITORING WELL
 DEEP MONITORING WELL

CONSTITUENTS OF CONCERN	UNITS	
N	▶ Naphthalene	µg/L
1-MN	▶ 1-Methylnaphthalene	µg/L
2-MN	▶ 2-Methylnaphthalene	µg/L
TRPH	▶ Total Recoverable Petroleum Hydrocarbons	mg/L
µg/L	Micrograms per Liter	
mg/L	Milligrams per Liter	
UST	Underground Storage Tank	
J	Estimated Value	

0 15 30
APPROXIMATE SCALE in FEET

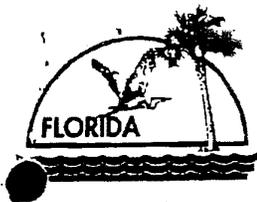
DRAWN BY	DATE
LLK	2/25/02
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE	AS NOTED



NAPHTHALENES AND TRPH CONCENTRATIONS IN GROUNDWATER
 DECEMBER 11, 2001
 BUILDING 502
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

CONTRACT NO.	0486
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO.	FIGURE 3
REV.	0

ATTACHMENT A
FDEP MONA APPROVAL ORDER



Jeb Bush
Governor

Department of Environmental Protection

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

David B. Struhs
Secretary

July 13, 1999

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Commanding Officer
Mr. Bryan Kizer, Code 1842
SOUTHNAVFACENGCOM
Post Office Box 190010
North Charleston, SC 29419-9010

RE: Site Assessment Report and Monitoring Only Proposal for
Facility 502, Tank 502, Naval Air Station Cecil Field,
Florida.

Dear Mr. Kizer:

I have reviewed the Site Assessment Report Revision and
Monitoring Only Proposal for Natural Attenuation dated April 1999
(received April 23, 1999), submitted for this site. Based upon
my review and comments, the enclosed Monitoring Only Plan for
Natural Attenuation was signed by Mr. John M. Ruddell, Director
of the Division of Waste Management.

If I can be of any further assistance with this matter,
please contact me at (850) 921-9991.

Sincerely,

Michael J. Deliz, P.G.
Remedial Project Manager

13-July-99

Date

CC: Debbie Vaughn-Wright, USEPA
John Flowe, City of Jacksonville
Scott Glass, SOUTHNAVFACENGCOM
Dave Kruzicki, NAS Cecil Field
Eric Blomberg, HLA - Tallahassee

TJB B JJC *[initials]* ESN *[initials]* EW

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Jeb Bush
Governor

Department of Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
July 13, 1999

David B. Struhs
Secretary

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

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

Subject: Monitoring Only Plan Approval
Order Facility 502, Tank 502,
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 April 1999 (received April 23, 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-502-1S, CEF-502-2S, CEF-502-4S, and CEF-502 5D	602, 8310, and FL-PRO	Semi-annual

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Mr. Bryan Kizer
Page Two
July 13, 1999

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 resampling confirm the initial sampling results, then a proposal must be submitted, as described in Rule 62-70.690(7)(f), F.A.C.

Contaminated wells:

CEF-502-1S and CEF-502-2S: 100 µg/l Benzene; 200 µg/l Xylene; 300 µg/l Ethylbenzene; 400 µg/l Toluene; 200 µg/l Naphthalene; and 50 mg/l TRPH.

Perimeter wells:

CEF-502-4S and CEF-502-5D: 1 µg/l Benzene; 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>Benzene</u>	<u>MW-CEF- 502-2S</u>
End of year 1	26
End of year 2	13
End of year 3	6
End of year 4	3
End of year 5	<1

<u>Ethylbenzene</u>	<u>MW-CEF- 502-2S</u>
End of year 1	60
End of year 2	50
End of year 3	40
End of year 4	30
End of year 5	<30

Mr. Bryan Kizer
Page Three
July 13, 1999

<u>Xylene</u>	<u>MW-CEF-</u> <u>502-2S</u>
End of year 1	150
End of year 2	100
End of year 3	50
End of year 4	20
End of year 5	<20

<u>Naphthalene</u>	<u>MW-CEF-</u> <u>502-2S</u>
End of year 1	150
End of year 2	100
End of year 3	50
End of year 4	20
End of year 5	<20

<u>TRPH</u>	<u>MW-CEF-</u> <u>502-2S</u>
End of year 1	10
End of year 2	8
End of year 3	6
End of year 4	5
End of year 5	<5

If the applicable No Further Action criteria in Rule 62-70.680, 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).

Persons affected by this Order have the following options:

If you choose to accept the above decision by the Department you do not have to do anything. This Order is final and effective as of the date on the top of the first page of this Order.

If you disagree with the decision, you may do one of the following:

ATTACHMENT B

BORING LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



BORING LOG

PROJECT NAME: Bldg. 502 BORING NUMBER: CEF-502-8S
 PROJECT NUMBER: N 3996 DATE: 12.5.01
 DRILLING COMPANY: TRANSAMERICAN GEOLOGIST: L. KNIGHT
 DRILLING RIG: GEOPROBE (ADVANCE 66 DT) DRILLER: D. NEARNE

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION			U S C S	Remarks	PID/FID Reading (ppm)								
					Soil Density/Consistency or Rock Hardness	Color	Material Classification			Sample	Sampler BZ	Borehole*	Driller BZ**					
				0.1			ASPHALT ROAD BASE											
				0.5														
							SAND: f/vf; brown-grey, yellow-brown, med brown, v. dk. brown											
				13			EOB = 13'61S											

* When rock coring, enter rock brokenness.
 ** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response read.
 Remarks: _____ Drilling Area Background (ppm): 7.6

Converted to Well: Yes No Well I.D. #: CEF-502-8S

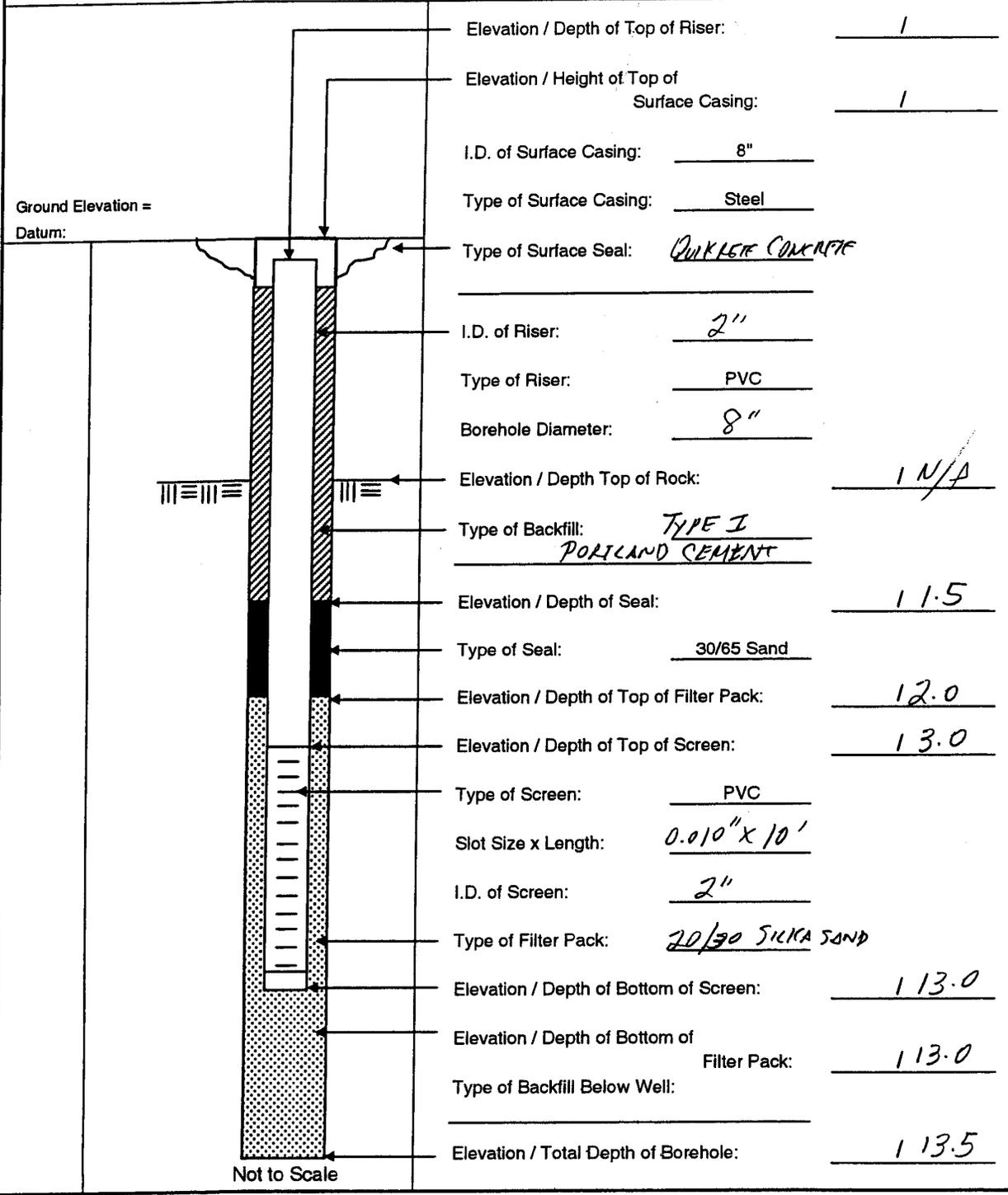


Tetra Tech NUS, Inc.

WELL No.: CEP-502-88

MONITORING WELL SHEET

PROJECT: Bldg. 502 DRILLING Co.: TRANS AMERICAN BORING No.: CEP-502-88
 PROJECT No.: N3996 DRILLER: D. HEARNE DATE COMPLETED: 12.5.01
 SITE: Bldg. 502 (PISTOL RANGE) DRILLING METHOD: HSA NORTHING: _____
 GEOLOGIST: L. KNIGHT DEV. METHOD: PERISTALTIC EASTING: _____





**MONITORING WELL MATERIALS
CERTIFICATE OF CONFORMANCE**

Well Designation: CEF-502-8'S
 Site Name: Bldg-502
 Date Installed: 12-5-01
 Project Name: Bldg-502 MOP

Site Geologist: LOUIS KNIGHT
 Drilling Company: TRANSAMERICAN
 Driller: D. HEARNE
 Project Number: N 394K

Material	Brand/Description	Source/Supplier	Sample Collected ?
Well Casing	2" SCH 40 PVC	TONY DRILLING SUPPLIES / ORLANDO, FL	NO
Well Screen	2" SCH 40 PVC	TONY DRILLING SUPPLIES / ORLANDO, FL	
End Cap	2" SCH 40 PVC	TONY DRILLING SUPPLIES / ORLANDO, FL	
Drilling Fluid	N/A	N/A	
Drilling Fluid Additives	N/A	N/A	
Backfill Material	N/A	N/A	
Annular Filter Pack	STANDARD / 20/30 SILICA SAND	STANDARD SAND CO.	
Bentonite Seal CHOLE SAND	STANDARD / 30-65 SILICA SAND	STANDARD SAND CO.	
Annular Grout	QUIKRETS - TYPE I PORTLAND CEMENT	FLORIDA IRRIGATION	
Surface Cement	QUIKRETE - CONCRETE	FLORIDA IRRIGATION	
Protective Casing	N/A	N/A	
Paint	N/A	N/A	
Rod Lubricant	N/A	N/A	
Compressor Oil	N/A	N/A	
MANHOLE (8" DIAM)	PETROLEUM EQUIPMENT MANUFACTURING Co (PEMCO)	TONY DRILLING SUPPLIES / ORLANDO, FL	✓

To the best of my knowledge, I certify that the above described materials were used during installation of this monitoring well.

Signature of Site Geologist: *Louis Knight*

ATTACHMENT C

SURVEY DATA

bldg502_17dec01

TETRA TECH NUS
CECIL FIELD BUILDING 502
EXISTING WELL LOCATIONS
SURVEY DATE 12/17/2001
ARC JOB No. 01-12-06

DESCRIPTION	NORTHING(Y)	EASTING(X)	ELEVATION
CEF-502-1SR	2149455.408	386278.277	TOP OF CASING 82.16
			CONCRETE 82.50
			ASPHALT 82.39
CEF-502-3S	2149395.705	386253.924	TOP OF CASING 80.68
			CONCRETE 81.15
			ASPHALT 81.08
CEF-502-4S	2149439.690	386209.531	TOP OF CASING 80.68
			CONCRETE 80.80
			GROUND 80.8
CEF-502-6S	2149464.526	386251.949	TOP OF CASING 81.70
			CONCRETE 81.96
			ASPHALT 81.95
CEF-502-7D	2149460.793	386251.867	TOP OF CASING 81.65
			CONCRETE 81.97
			ASPHALT 81.95
CEF-502-8S	2149411.406	386296.096	TOP OF CASING 81.75
			CONCRETE 82.00
			ASPHALT 81.94

ATTACHMENT D

GROUNDWATER ANALYTICAL REPORT – DECEMBER 2001

ACCURA ANALYTICAL LABORATORY, INC.

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LABORATORY REPORT

Accura Sample ID #:	AC23277	Accura Project #:	29244
Client:	Tetra Tech Nus -Tallahassee	Date Sampled:	12/11/01
Client Contact:	PAUL CALLIGAN	Date Received:	12/12/01
Client Project Number:	N0486GHO050825 / CTO 121	Date Reported:	2/26/02
Client Project Name:	NAS CECIL FIELD-BLDG 502	Sample Matrix:	WATER
Client Sample ID:	CEF-502-GW-1SR-03		

ANALYSIS: PAH's - Low Level

Date Ext/Dig/Prep:	12/12/01	Date Analyzed:	1/2/02	Method Ref:	8270C
				Result Units:	ug/L
<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>		
1-Methylnaphthalene	93		1.1		
2-Methylnaphthalene	130		1.1		
Acenaphthene	5.9		1.1		
Acenaphthylene	<RL		1.1		
Anthracene	<RL		1.1		
Benzo(a)anthracene	<RL		1.1		
Benzo(a)pyrene	<RL		1.1		
Benzo(b)fluoranthene	<RL		1.1		
Benzo(g,h,i)perylene	<RL		1.1		
Benzo(k)fluoranthene	<RL		1.1		
Chrysene	<RL		1.1		
Dibenz(a,h)anthracene	<RL		1.1		
Fluoranthene	<RL		1.1		
Fluorene	5.5		1.1		
Indeno(1,2,3-cd)pyrene	<RL		1.1		
Naphthalene	96		1.1		
Phenanthrene	3.3		1.1		
Pyrene	<RL		1.1		

ANALYSIS: Petroleum Range Organics (PRO)

Date Ext/Dig/Prep:	12/15/01	Date Analyzed:	1/2/02	Method Ref:	FL-PRO
				Result Units:	mg/L
<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>		
Petroleum Range Organics (PRO)	36		18		

ANALYSIS: VOC's (25mL purge) 602 list

Date Ext/Dig/Prep:	12/18/01	Date Analyzed:	12/18/01	Method Ref:	8260B
				Result Units:	ug/L
<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>		
1,2-Dichlorobenzene	<RL		1.0		
1,3-Dichlorobenzene	<RL		1.0		
1,4-Dichlorobenzene	<RL		1.0		
Benzene	<RL		1.0		
Chlorobenzene	<RL		1.0		
Ethyl benzene	5.9		1.0		
MTBE	<RL		1.0		
Toluene	<RL		1.0		

Xylenes, Total 1.2 J 3.0

ANALYSIS: X B/N Sample Surrogates (Waters)

Method Ref: 8270C

Date Ext/Dig/Prep: 12/12/01 Date Analyzed: 1/2/02

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 40-106)	83		
Nitrobenzene-d5 (Range 11-135)	74		
p-Terphenyl-d14 (Range 34-128)	45		

ANALYSIS: X PRO Sample Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/15/01 Date Analyzed: 1/2/02

Result Units: %

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

ANALYSIS: X VOC Sample Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/18/01 Date Analyzed: 12/18/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (81-132)	91		
4-Bromofluorobenzene (80-120)	95		
Toluene-d8 (80-119)	99		

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LABORATORY REPORT

Accura Sample ID #:	AC23278	Accura Project #:	29244
Client:	Tetra Tech Nus -Tallahassee	Date Sampled:	12/11/01
Client Contact:	PAUL CALLIGAN	Date Received:	12/12/01
Client Project Number:	N0486GHO050825 / CTO 121	Date Reported:	2/26/02
Client Project Name:	NAS CECIL FIELD-BLDG 502	Sample Matrix:	WATER
Client Sample ID:	CEF-502-GW-3S-03		

ANALYSIS: PAH's - Low Level

Date Ext/Dig/Prep:	12/12/01	Date Analyzed:	1/2/02	Method Ref:	8270C
				Result Units:	ug/L
<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>		
1-Methylnaphthalene	28		1.1		
2-Methylnaphthalene	25		1.1		
Acenaphthene	1.1	J	1.1		
Acenaphthylene	<RL		1.1		
Anthracene	<RL		1.1		
Benzo(a)anthracene	<RL		1.1		
Benzo(a)pyrene	<RL		1.1		
Benzo(b)fluoranthene	<RL		1.1		
Benzo(g,h,i)perylene	<RL		1.1		
Benzo(k)fluoranthene	<RL		1.1		
Chrysene	<RL		1.1		
Dibenz(a,h)anthracene	<RL		1.1		
Fluoranthene	<RL		1.1		
Fluorene	0.70	J	1.1		
Indeno(1,2,3-cd)pyrene	<RL		1.1		
Naphthalene	3.4		1.1		
Phenanthrene	<RL		1.1		
Pyrene	<RL		1.1		

ANALYSIS: Petroleum Range Organics (PRO)

Date Ext/Dig/Prep:	12/15/01	Date Analyzed:	12/28/01	Method Ref:	FL-PRO
				Result Units:	mg/L
<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>		
Petroleum Range Organics (PRO)	1.5		1.0		

ANALYSIS: VOC's (25mL purge) 602 list

Date Ext/Dig/Prep:	12/18/01	Date Analyzed:	12/18/01	Method Ref:	8260B
				Result Units:	ug/L
<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>		
1,2-Dichlorobenzene	<RL		1.0		
1,3-Dichlorobenzene	<RL		1.0		
1,4-Dichlorobenzene	<RL		1.0		
Benzene	<RL		1.0		
Chlorobenzene	<RL		1.0		
Ethyl benzene	<RL		1.0		
MTBE	<RL		1.0		
Toluene	<RL		1.0		

Xylenes, Total <RL 3.0

ANALYSIS: X B/N Sample Surrogates (Waters)

Method Ref: 8270C

Date Ext/Dig/Prep: 12/12/01 Date Analyzed: 1/2/02

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 40-106)	91		
Nitrobenzene-d5 (Range 11-135)	83		
p-Terphenyl-d14 (Range 34-128)	118		

ANALYSIS: X PRO Sample Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/15/01 Date Analyzed: 12/28/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
C(39) (Range 42-193)	1	Z	
o-Terphenyl (Range 82-142)	81	Z	

ANALYSIS: X VOC Sample Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/18/01 Date Analyzed: 12/18/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (81-132)	84		
4-Bromofluorobenzene (80-120)	90		
Toluene-d8 (80-119)	94		

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LABORATORY REPORT

Accura Sample ID #:	AC23279	Accura Project #:	29244
Client:	Tetra Tech Nus -Tallahassee	Date Sampled:	12/11/01
Client Contact:	PAUL CALLIGAN	Date Received:	12/12/01
Client Project Number:	N0486GHO050825 / CTO 121	Date Reported:	2/26/02
Client Project Name:	NAS CECIL FIELD-BLDG 502	Sample Matrix:	WATER
Client Sample ID:	CEF-502-GW-4S-03		

ANALYSIS: PAH's - Low Level

Date Ext/Dig/Prep:	12/12/01	Date Analyzed:	1/2/02	Method Ref:	8270C
				Result Units:	ug/L
<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>		
1-Methylnaphthalene	1.2	J	1.3		
2-Methylnaphthalene	1.6		1.3		
Acenaphthene	<RL		1.3		
Acenaphthylene	<RL		1.3		
Anthracene	<RL		1.3		
Benzo(a)anthracene	<RL		1.3		
Benzo(a)pyrene	<RL		1.3		
Benzo(b)fluoranthene	<RL		1.3		
Benzo(g,h,i)perylene	<RL		1.3		
Benzo(k)fluoranthene	<RL		1.3		
Chrysene	<RL		1.3		
Dibenz(a,h)anthracene	<RL		1.3		
Fluoranthene	<RL		1.3		
Fluorene	<RL		1.3		
Indeno(1,2,3-cd)pyrene	<RL		1.3		
Naphthalene	<RL		1.3		
Phenanthrene	<RL		1.3		
Pyrene	<RL		1.3		

ANALYSIS: Petroleum Range Organics (PRO)

Date Ext/Dig/Prep:	12/15/01	Date Analyzed:	12/28/01	Method Ref:	FL-PRO
				Result Units:	mg/L
<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>		
Petroleum Range Organics (PRO)	0.46	J	1.0		

ANALYSIS: VOC's (25mL purge) 602 list

Date Ext/Dig/Prep:	12/18/01	Date Analyzed:	12/18/01	Method Ref:	8260B
				Result Units:	ug/L
<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>		
1,2-Dichlorobenzene	<RL		1.0		
1,3-Dichlorobenzene	<RL		1.0		
1,4-Dichlorobenzene	<RL		1.0		
Benzene	<RL		1.0		
Chlorobenzene	<RL		1.0		
Ethyl benzene	<RL		1.0		
MTBE	<RL		1.0		
Toluene	<RL		1.0		

Xylenes, Total <RL 3.0

ANALYSIS: X B/N Sample Surrogates (Waters)

Method Ref: 8270C

Date Ext/Dig/Prep: 12/12/01 Date Analyzed: 1/2/02

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 40-106)	81		
Nitrobenzene-d5 (Range 11-135)	56		
p-Terphenyl-d14 (Range 34-128)	64		

ANALYSIS: X PRO Sample Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/15/01 Date Analyzed: 12/28/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
C(39) (Range 42-193)	1	Z	
o-Terphenyl (Range 82-142)	75	Z	

ANALYSIS: X VOC Sample Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/18/01 Date Analyzed: 12/18/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (81-132)	87		
4-Bromofluorobenzene (80-120)	93		
Toluene-d8 (80-119)	99		

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LABORATORY REPORT

Accura Sample ID #:	AC23280	Accura Project #:	29244
Client:	Tetra Tech Nus -Tallahassee	Date Sampled:	12/11/01
Client Contact:	PAUL CALLIGAN	Date Received:	12/12/01
Client Project Number:	N0486GHO050825 / CTO 121	Date Reported:	2/26/02
Client Project Name:	NAS CECIL FIELD-BLDG 502	Sample Matrix:	WATER
Client Sample ID:	CEF-502-GW-6S-03		

ANALYSIS: PAH's - Low Level

Date Ext/Dig/Prep:	12/12/01	Date Analyzed:	1/2/02	Method Ref:	8270C
				Result Units:	ug/L
<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>		<u>Reported Detection Limits</u>	
1-Methylnaphthalene	28			1.1	
2-Methylnaphthalene	41			1.1	
Acenaphthene	3.8			1.1	
Acenaphthylene	<RL			1.1	
Anthracene	<RL			1.1	
Benzo(a)anthracene	<RL			1.1	
Benzo(a)pyrene	<RL			1.1	
Benzo(b)fluoranthene	<RL			1.1	
Benzo(g,h,i)perylene	<RL			1.1	
Benzo(k)fluoranthene	<RL			1.1	
Chrysene	<RL			1.1	
Dibenz(a,h)anthracene	<RL			1.1	
Fluoranthene	<RL			1.1	
Fluorene	2.3			1.1	
Indeno(1,2,3-cd)pyrene	<RL			1.1	
Naphthalene	5.0			1.1	
Phenanthrene	0.89	J		1.1	
Pyrene	<RL			1.1	

ANALYSIS: Petroleum Range Organics (PRO)

Date Ext/Dig/Prep:	12/15/01	Date Analyzed:	12/28/01	Method Ref:	FL-PRO
				Result Units:	mg/L
<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>		<u>Reported Detection Limits</u>	
Petroleum Range Organics (PRO)	1.5			1.0	

ANALYSIS: VOC's (25mL purge) 602 list

Date Ext/Dig/Prep:	12/18/01	Date Analyzed:	12/18/01	Method Ref:	8260B
				Result Units:	ug/L
<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>		<u>Reported Detection Limits</u>	
1,2-Dichlorobenzene	<RL			1.0	
1,3-Dichlorobenzene	<RL			1.0	
1,4-Dichlorobenzene	<RL			1.0	
Benzene	<RL			1.0	
Chlorobenzene	<RL			1.0	
Ethyl benzene	0.54	J		1.0	
MTBE	<RL			1.0	
Toluene	<RL			1.0	

Xylenes, Total 0.43 J 3.0

ANALYSIS: X B/N Sample Surrogates (Waters)

Method Ref: 8270C

Date Ext/Dig/Prep: 12/12/01 Date Analyzed: 1/2/02

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 40-106)	91		
Nitrobenzene-d5 (Range 11-135)	84		
p-Terphenyl-d14 (Range 34-128)	114		

ANALYSIS: X PRO Sample Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/15/01 Date Analyzed: 12/28/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
C(39) (Range 42-193)	1	Z	
o-Terphenyl (Range 82-142)	85		

ANALYSIS: X VOC Sample Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/18/01 Date Analyzed: 12/18/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (81-132)	84		
4-Bromofluorobenzene (80-120)	89		
Toluene-d8 (80-119)	104		

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LABORATORY REPORT

Accura Sample ID #:	AC23281	Accura Project #:	29244
Client:	Tetra Tech Nus -Tallahassee	Date Sampled:	12/11/01
Client Contact:	PAUL CALLIGAN	Date Received:	12/12/01
Client Project Number:	N0486GHO050825 / CTO 121	Date Reported:	2/26/02
Client Project Name:	NAS CECIL FIELD-BLDG 502	Sample Matrix:	WATER
Client Sample ID:	CEF-502-GW-7D-03		

ANALYSIS: PAH's - Low Level

Method Ref: 8270C

Date Ext/Dig/Prep: 12/12/01 Date Analyzed: 12/27/01 Result Units: ug/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1-Methylnaphthalene	<RL		1.1
2-Methylnaphthalene	<RL		1.1
Acenaphthene	<RL		1.1
Acenaphthylene	<RL		1.1
Anthracene	<RL		1.1
Benzo(a)anthracene	<RL		1.1
Benzo(a)pyrene	<RL		1.1
Benzo(b)fluoranthene	<RL		1.1
Benzo(g,h,i)perylene	<RL		1.1
Benzo(k)fluoranthene	<RL		1.1
Chrysene	<RL		1.1
Dibenz(a,h)anthracene	<RL		1.1
Fluoranthene	<RL		1.1
Fluorene	<RL		1.1
Indeno(1,2,3-cd)pyrene	<RL		1.1
Naphthalene	<RL		1.1
Phenanthrene	<RL		1.1
Pyrene	<RL		1.1

ANALYSIS: Petroleum Range Organics (PRO)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/15/01 Date Analyzed: 12/28/01 Result Units: mg/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
Petroleum Range Organics (PRO)	0.23	J	1.0

ANALYSIS: VOC's (25mL purge) 602 list

Method Ref: 8260B

Date Ext/Dig/Prep: 12/18/01 Date Analyzed: 12/18/01 Result Units: ug/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichlorobenzene	<RL		1.0
1,3-Dichlorobenzene	<RL		1.0
1,4-Dichlorobenzene	<RL		1.0
Benzene	<RL		1.0
Chlorobenzene	0.33	J	1.0
Ethyl benzene	<RL		1.0
MTBE	<RL		1.0
Toluene	<RL		1.0

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<RL = Less than Reporting Limit

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Client Sample ID: CEF-502-GW-7D-03

AALSample ID #: AC23281

Accura Project #: 29244

Xylenes, Total <RL 3.0

ANALYSIS: X B/N Sample Surrogates (Waters)

Method Ref: 8270C

Date Ext/Dig/Prep: 12/12/01 Date Analyzed: 12/27/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 40-106)	85		
Nitrobenzene-d5 (Range 11-135)	82		
p-Terphenyl-d14 (Range 34-128)	81		

ANALYSIS: X PRO Sample Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/15/01 Date Analyzed: 12/28/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
C(39) (Range 42-193)	1	Z	
o-Terphenyl (Range 82-142)	80	Z	

ANALYSIS: X VOC Sample Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/18/01 Date Analyzed: 12/18/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (81-132)	89		
4-Bromofluorobenzene (80-120)	97		
Toluene-d8 (80-119)	101		

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LABORATORY REPORT

Accura Sample ID #:	AC23282	Accura Project #:	29244
Client:	Tetra Tech Nus -Tallahassee	Date Sampled:	12/11/01
Client Contact:	PAUL CALLIGAN	Date Received:	12/12/01
Client Project Number:	N0486GHO050825 / CTO 121	Date Reported:	2/26/02
Client Project Name:	NAS CECIL FIELD-BLDG 502	Sample Matrix:	WATER
Client Sample ID:	CEF-502-GW-8S-03		

ANALYSIS: PAH's - Low Level

Method Ref: 8270C

Date Ext/Dig/Prep: 12/12/01 Date Analyzed: 12/27/01 Result Units: ug/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1-Methylnaphthalene	<RL		1.1
2-Methylnaphthalene	<RL		1.1
Acenaphthene	<RL		1.1
Acenaphthylene	<RL		1.1
Anthracene	<RL		1.1
Benzo(a)anthracene	<RL		1.1
Benzo(a)pyrene	<RL		1.1
Benzo(b)fluoranthene	<RL		1.1
Benzo(g,h,i)perylene	<RL		1.1
Benzo(k)fluoranthene	<RL		1.1
Chrysene	<RL		1.1
Dibenz(a,h)anthracene	<RL		1.1
Fluoranthene	<RL		1.1
Fluorene	<RL		1.1
Indeno(1,2,3-cd)pyrene	<RL		1.1
Naphthalene	<RL		1.1
Phenanthrene	<RL		1.1
Pyrene	<RL		1.1

ANALYSIS: Petroleum Range Organics (PRO)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/15/01 Date Analyzed: 12/28/01 Result Units: mg/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
Petroleum Range Organics (PRO)	0.45	J	1.0

ANALYSIS: VOC's (25mL purge) 602 list

Method Ref: 8260B

Date Ext/Dig/Prep: 12/18/01 Date Analyzed: 12/18/01 Result Units: ug/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichlorobenzene	<RL		1.0
1,3-Dichlorobenzene	<RL		1.0
1,4-Dichlorobenzene	<RL		1.0
Benzene	<RL		1.0
Chlorobenzene	<RL		1.0
Ethyl benzene	<RL		1.0
MTBE	<RL		1.0
Toluene	<RL		1.0

Xylenes, Total <RL 3.0

ANALYSIS: X B/N Sample Surrogates (Waters)

Method Ref: 8270C

Date Ext/Dig/Prep: 12/12/01 Date Analyzed: 12/27/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 40-106)	89		
Nitrobenzene-d5 (Range 11-135)	85		
p-Terphenyl-d14 (Range 34-128)	112		

ANALYSIS: X PRO Sample Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/15/01 Date Analyzed: 12/28/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
C(39) (Range 42-193)	1	Z	
o-Terphenyl (Range 82-142)	77	Z	

ANALYSIS: X VOC Sample Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/18/01 Date Analyzed: 12/18/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (81-132)	87		
4-Bromofluorobenzene (80-120)	98		
Toluene-d8 (80-119)	99		

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LABORATORY REPORT

Accura Sample ID #:	AC23283	Accura Project #:	29244
Client:	Tetra Tech Nus -Tallahassee	Date Sampled:	12/11/01
Client Contact:	PAUL CALLIGAN	Date Received:	12/12/01
Client Project Number:	N0486GHO050825 / CTO 121	Date Reported:	2/26/02
Client Project Name:	NAS CECIL FIELD-BLDG 502	Sample Matrix:	WATER
Client Sample ID:	CEF-502-DU01-GW-03		

ANALYSIS: PAH's - Low Level

Method Ref: 8270C

Date Ext/Dig/Prep: 12/12/01 Date Analyzed: 12/27/01 Result Units: ug/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1-Methylnaphthalene	26		1.1
2-Methylnaphthalene	38		1.1
Acenaphthene	3.4		1.1
Acenaphthylene	<RL		1.1
Anthracene	<RL		1.1
Benzo(a)anthracene	<RL		1.1
Benzo(a)pyrene	<RL		1.1
Benzo(b)fluoranthene	<RL		1.1
Benzo(g,h,i)perylene	<RL		1.1
Benzo(k)fluoranthene	<RL		1.1
Chrysene	<RL		1.1
Dibenz(a,h)anthracene	<RL		1.1
Fluoranthene	<RL		1.1
Fluorene	2.1		1.1
Indeno(1,2,3-cd)pyrene	<RL		1.1
Naphthalene	4.9		1.1
Phenanthrene	0.86	J	1.1
Pyrene	<RL		1.1

ANALYSIS: Petroleum Range Organics (PRO)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/15/01 Date Analyzed: 1/2/02 Result Units: mg/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
Petroleum Range Organics (PRO)	1.8		1.0

ANALYSIS: VOC's (25mL purge) 602 list

Method Ref: 8260B

Date Ext/Dig/Prep: 12/18/01 Date Analyzed: 12/18/01 Result Units: ug/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichlorobenzene	<RL		1.0
1,3-Dichlorobenzene	<RL		1.0
1,4-Dichlorobenzene	<RL		1.0
Benzene	<RL		1.0
Chlorobenzene	<RL		1.0
Ethyl benzene	<RL		1.0
MTBE	<RL		1.0
Toluene	<RL		1.0

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<RL = Less than Reporting Limit

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Client Sample ID: CEF-502-DU01-GW-03

AALSample ID #: AC23283

Accura Project #: 29244

Xylenes, Total <RL 3.0

ANALYSIS: X B/N Sample Surrogates (Waters)

Method Ref: 8270C

Date Ext/Dig/Prep: 12/12/01 Date Analyzed: 12/27/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 40-106)	91		
Nitrobenzene-d5 (Range 11-135)	72		
p-Terphenyl-d14 (Range 34-128)	107		

ANALYSIS: X PRO Sample Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/15/01 Date Analyzed: 1/2/02 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
C(39) (Range 42-193)	2	Z	
o-Terphenyl (Range 82-142)	95		

ANALYSIS: X VOC Sample Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/18/01 Date Analyzed: 12/18/01 Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (81-132)	84		
4-Bromofluorobenzene (80-120)	92		
Toluene-d8 (80-119)	97		

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LABORATORY REPORT

Accura Sample ID #:	AC23284	Accura Project #:	29244
Client:	Tetra Tech Nus -Tallahassee	Date Sampled:	12/11/01
Client Contact:	PAUL CALLIGAN	Date Received:	12/12/01
Client Project Number:	N0486GHO050825 / CTO 121	Date Reported:	2/26/02
Client Project Name:	NAS CECIL FIELD-BLDG 502	Sample Matrix:	WATER
Client Sample ID:	CEF-502-MD01-GW-03		

ANALYSIS: PAH's - Low Level

Method Ref: 8270C

Date Ext/Dig/Prep: 12/17/01 Date Analyzed: 12/27/01 Result Units: ug/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1-Methylnaphthalene	85		1.1
2-Methylnaphthalene	120		1.1
Acenaphthene	4.8		1.1
Acenaphthylene	<RL		1.1
Anthracene	<RL		1.1
Benzo(a)anthracene	<RL		1.1
Benzo(a)pyrene	<RL		1.1
Benzo(b)fluoranthene	<RL		1.1
Benzo(g,h,i)perylene	<RL		1.1
Benzo(k)fluoranthene	<RL		1.1
Chrysene	<RL		1.1
Dibenz(a,h)anthracene	<RL		1.1
Fluoranthene	<RL		1.1
Fluorene	4.3		1.1
Indeno(1,2,3-cd)pyrene	<RL		1.1
Naphthalene	47		1.1
Phenanthrene	2.6		1.1
Pyrene	<RL		1.1

ANALYSIS: Petroleum Range Organics (PRO)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/15/01 Date Analyzed: 1/2/02 Result Units: mg/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
Petroleum Range Organics (PRO)	35		18

ANALYSIS: VOC's (25mL purge) 602 list

Method Ref: 8260B

Date Ext/Dig/Prep: 12/18/01 Date Analyzed: 12/18/01 Result Units: ug/L

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichlorobenzene	<RL		1.0
1,3-Dichlorobenzene	<RL		1.0
1,4-Dichlorobenzene	<RL		1.0
Benzene	<RL		1.0
Chlorobenzene	<RL		1.0
Ethyl benzene	6.5		1.0
MTBE	<RL		1.0
Toluene	<RL		1.0

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<RL = Less than Reporting Limit

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Client Sample ID: CEF-502-MD01-GW-03

AALSample ID #: AC23284

Accura Project #: 29244

Xylenes, Total 1.4 J 3.0

ANALYSIS: X B/N Sample Surrogates (Waters)

Method Ref: 8270C

Date Ext/Dig/Prep: 12/17/01 Date Analyzed: 12/27/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 40-106)	86		
Nitrobenzene-d5 (Range 11-135)	80		
p-Terphenyl-d14 (Range 34-128)	34		

ANALYSIS: X PRO Sample Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/15/01 Date Analyzed: 1/2/02

Result Units: %

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

ANALYSIS: X VOC Sample Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/18/01 Date Analyzed: 12/18/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (81-132)	90		
4-Bromofluorobenzene (80-120)	98		
Toluene-d8 (80-119)	103		

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LABORATORY REPORT

Accura Sample ID #:	AC23285	Accura Project #:	29244
Client:	Tetra Tech Nus -Tallahassee	Date Sampled:	12/12/01
Client Contact:	PAUL CALLIGAN	Date Received:	12/12/01
Client Project Number:	N0486GHO050825 / CTO 121	Date Reported:	2/26/02
Client Project Name:	NAS CECIL FIELD-BLDG 502	Sample Matrix:	WATER
Client Sample ID:	METHOD BLANK		

ANALYSIS: PAH's - Low Level

Date Ext/Dig/Prep:	12/12/01	Date Analyzed:	1/2/02	Method Ref:	8270C
				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)

Date Ext/Dig/Prep:	12/15/01	Date Analyzed:	12/28/01	Method Ref:	FL-PRO
				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 (25mL purge) 602 list

Date Ext/Dig/Prep:	12/18/01	Date Analyzed:	12/18/01	Method Ref:	8260B
				Result Units:	ug/L
<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>		
1,2-Dichlorobenzene	<RL		1.0		
1,3-Dichlorobenzene	<RL		1.0		
1,4-Dichlorobenzene	<RL		1.0		
Benzene	<RL		1.0		
Chlorobenzene	<RL		1.0		
Ethyl benzene	<RL		1.0		
MTBE	<RL		1.0		
Toluene	<RL		1.0		

Xylenes, Total <RL 3.0

ANALYSIS: X Base Neutral QC Surrogates (W)

Method Ref: 8270C

Date Ext/Dig/Prep: 12/12/01 Date Analyzed: 1/2/02

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
2-Fluorobiphenyl (Range 42-114)	89		
Nitrobenzene-d5 (Range 44-114)	81		
p-Terphenyl-d14 (Range 56-130)	123		

ANALYSIS: X PRO QC Surrogates (Water)

Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/15/01 Date Analyzed: 12/28/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
C(39) (Range 42-193)	1	Z	
o-Terphenyl (Range 82-142)	82		

ANALYSIS: X VOC QC Surrogates-Waters

Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/18/01 Date Analyzed: 12/18/01

Result Units: %

<u>Analyte Name</u>	<u>Analytical Results</u>	<u>Qualifier</u>	<u>Reported Detection Limits</u>
1,2-Dichloroethane-d4 (83-124)	91		
4-Bromofluorobenzene (81-118)	110		
Toluene-d8 (84-115)	110		



PROJECT NO: N01806GH0050825	SITE NAME: Bldg. 502	PROJECT MANAGER AND PHONE NUMBER: PAUL CALLIGAN 850-385-9899	LABORATORY NAME AND CONTACT: ACCURA D. FULLER
SAMPLERS SIGNATURE: 		FIELD OPERATIONS LEADER AND PHONE NUMBER: MERY DALE 904 251 0400	ADDRESS: 6017 FINANCIAL DRIVE
		CARRIER/WAYBILL NUMBER: Fedex 8287 2074 1016/	CITY, STATE: NORCROSS, GA 30071

STANDARD TAT
RUSH TAT
 24 hr. 48 hr. 72 hr. 7 day 14 day

DATE YEAR	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)					PRESERVATIVE USED	TYPE OF ANALYSIS	COMMENTS
						VOCs	TRPA	PHs	COOLERS-Blue	COOLERS-Red			
12/11	1130	CEF 502-GW-15R-03	GW	G	7	3	2	2			R		Cool to 4°C
12/11	1530	CEF-502-GW-35-03	GW	G	7	3	2	2	B				Dist
12/11	1755	CEF-502-GW-45-03	GW	G	7	3	2	2	B				FLOR-0486-
12/11	1050	CEF-502-GW-65-03	GW	G	7	3	2	2					P377(Dr)
12/11	1256	CEF-502-GW-7D-03	GW	G	7	3	2	2			B		
12/11	1345	CEF-502-GW-85-03	GW	G	7	3	2	2	B				* Report only
12/11	0000	CEF-502-GW-03	GW	G	7	3	2	2					EPA 602
12/11	1130	CEF-502-MD01-GW-03	GW	G	14	G	4	4			R		compounds.

1. RELINQUISHED BY: 	DATE 12/11/01	TIME 1800	1. RECEIVED BY:	DATE	TIME
2. RELINQUISHED BY:	DATE	TIME	2. RECEIVED BY:	DATE	TIME
3. RELINQUISHED BY:	DATE	TIME	3. RECEIVED BY:	DATE	TIME

COMMENTS

ATTACHMENT E

GROUNDWATER ANALYTICAL REPORT – MARCH 2002



Client : Tetra Tech Nus -Tallahassee, ,
Client Project Name: CECIL FIELD BLDG 502

Client Project #: N0486GHO050825 / CTO 121

Client Contact: PAUL CALLIGAN

Project Location: Florida

Quote Number:

Email / Fax Number:

Date Received in Lab: 03/05/02 10:00

Report Date: 04/26/02 11:49

AAL Contact: David Fuller

e-Mail: david@accura.com

<i>Analysis Requested</i>	<i>Lab ID :</i> <i>Field ID :</i> <i>Depth :</i> <i>Matrix :</i> <i>Sampled :</i>	1525-001 CEF502-GW-3S-03B N/A WATER 03/04/02 10:30					
SVOCs by SW846 8270C PAH LL FS	<i>Prep Date:</i> <i>Analyzed:</i> <i>Units:</i>	03/06/02 17:00 03/12/02 13:04 ug/L	Results	RL			
1-Methylnaphthalene		11	1.0				
2-Methylnaphthalene		U	1.0				
Acenaphthene		U	1.0				
Acenaphthylene		U	1.0				
Anthracene		U	1.0				
Benzo(a)anthracene		U	1.0				
Benzo(a)pyrene		U	1.0				
Benzo(b)fluoranthene		U	1.0				
Benzo(g,h,i)perylene		U	1.0				
Benzo(k)fluoranthene		U	1.0				
Chrysene		U	1.0				
Dibenz(a,h)anthracene		U	1.0				
Fluoranthene		U	1.0				
Fluorene		U	1.0				
Indeno(1,2,3-c,d)Pyrene		U	1.0				
Naphthalene		U	1.0				



AAL Certificate of Analysis Summary WO# 1525

Client : Tetra Tech Nus -Tallahassee ,
Client Project Name: CECIL FIELD BLDG 502

Client Project #: N0486GHO050825 / CTO 121
Client Contact: PAUL CALLIGAN
Project Location: Florida
Quote Number:
Email / Fax Number:

Date Received in Lab: 03/05/02 10:00
Report Date: 04/26/02 11:49
AAL Contact: David Fuller
e-Mail: david@accura.com

Analysis Requested	Lab ID : 1525-001 Field ID : CEF502-GW-3S-03B Depth : N/A Matrix : WATER Sampled : 03/04/02 10:30					
SVOCs by SW846 8270C PAH LL FS	Prep Date: 03/06/02 17:00 Analyzed: 03/12/02 13:04 Units: ug/L					
	Results RL					
Phenanthrene	U 1.0					
Pyrene	U 1.0					



Form 2 - Surrogate Recoveries

Project Name: CECIL FIELD BLDG 502

Report Date: 04/26/02 11:49

Work Order #: 1525

Project ID: N0486GHO050825 / CTO 121

Lab Batch #: 11214

Sample: 1525-001 / SMP

Batch: 1 Matrix: WATER

Units: mg/L

Client-Id: CEF502-GW-3S-03B

SURROGATE RECOVERY STUDY

SVOCs by SW846 8270C PAH LL FS Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	0.05148	0.05000	103	18-136	

Lab Batch #: 11214

Sample: QDW0306024 BLK / BLK

Batch: 1 Matrix: WATER

Units: mg/L

Client-Id:

SURROGATE RECOVERY STUDY

SVOCs by SW846 8270C PAH LL FS Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	0.05066	0.05000	101	58-108	

Lab Batch #: 11214

Sample: QDW0306025 BKS / BKS

Batch: 1 Matrix: WATER

Units: mg/L

Client-Id:

SURROGATE RECOVERY STUDY

SVOCs by SW846 8270C PAH LL FS Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	0.04745	0.05000	95	58-108	

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.

