N60200.AR.005220
NAS CECIL FIELD, FL
5090.3a

THIRD QUARTER FIRST YEAR GROUNDWATER MONITORING LETTER REPORT FOR BUILDING 82 TANK G82 NAS CECIL FIELD FL

5/8/2009

TETRA TECH NUS INC

TETRA TECH NUS, INC.
8640 Philips Highway, Suite 16 • Jacksonville, FL 32256
Tel 904.636.6125 • Fax 904.636.6165 • www.tetratech.com

Document Tracking Number 09JAX0016

May 8, 2009

Project Number 112GN4248

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 III Contract Number N62467-94-D-0888
Contract Task Order 0248

Subject: Groundwater Monitoring Report, 3rd Quarter, 1st Year – January 2009
Building 82, Tank G82
Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Grabka:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit this 3rd Quarter, 1st Year Groundwater Monitoring Report for the referenced Contract Task Order for Building 82, Tank G82. This Groundwater Monitoring Report was prepared for the United States Navy (Navy), Naval Facilities Engineering Command Southeast (NAVFAC SE) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) III Contract Number N62467-94-D-0888.

The primary objective of current activities at this site is to conduct quarterly monitoring of groundwater associated with the shallow and intermediate zones of the surficial aquifer. The sampling program is being conducted in accordance with the revised Natural Attenuation Monitoring Plan (NAMP) submitted by CH2M Hill to the Florida Department of Environmental Protection (FDEP) on May 29, 2008, based on Chapter 62-770.690, Florida Administrative Code. The NAMP is provided in Attachment A. This report summarizes the field operations and analytical results for the sampling event conducted on January 27 and 28, 2009, at the subject site. The work was performed in general accordance with FDEP Standard Operating Procedures (SOPs) under DEP-SOP-001/01.

BACKGROUND

Building 82 is the air traffic control tower, and underground storage tank (UST) G82 was used to store diesel fuel for emergency generators. The tank was removed in June 1997. The tank released an unknown volume of fuel into the surrounding environment, and soil and groundwater have been impacted near the UST due to these leaks. In 1998, a piezometer was sampled, and 1-methylnaphthalene and 2-methylnaphthalene were detected in the sample collected at concentrations greater than FDEP Groundwater Cleanup Target Levels (GCTLs). A confirmatory sampling investigation was performed in January 1999, and the Confirmatory Sampling Report recommended a Site Assessment (SA).

SA field activities were performed from October 1999 to July 2000. The SA Report (SAR) (August 2000) recommended a Remedial Action Plan (RAP) for soil and Monitoring Only for Natural Attenuation (MONA) for groundwater. The FDEP approved the recommendation for the RAP, but did not approve the MONA.

In October 2000, the Navy directed CH2M Hill to remove the contaminated soil from the site. Because of piping and the proximity to Building 82, all of the contaminated soil could not be removed. Additional sampling to evaluate the leachability of the contaminants remaining in the soil was performed to support a SAR Addendum (SARA). The SARA (dated March 2001) concluded that xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene could leach from the soil and result in groundwater concentrations greater than GCTLs. The presence of the concrete slabs and runways limits the amount of precipitation that can leach through the soil; therefore, the recommendation was to leave the soil in place with institutional controls to maintain the slabs and to only allow industrial uses (contaminant concentrations in the soil met industrial criteria, but not residential criteria).

In April 2002, soil samples were collected for total recoverable petroleum hydrocarbon (TRPH) subclassification. The results of the subclassification analyses showed that the residential Soil Cleanup Target Level was exceeded by only one fraction in one sample. The associated report (June 2002) concluded that a treatability study should be conducted to evaluate the suitability of air sparging to address site contaminants. The Navy instructed CH2M Hill to perform the treatability study.

In November 2006, monitoring wells were sampled and analyzed as a baseline for the treatability study. Only groundwater from wells CEF-G82-1S and CEF-G82-2S contained constituents at levels exceeding GCTLs (isopropyl benzene; naphthalene; 1-methylnaphthalene; 2-methylnaphthalene; benzo(a)anthracene; 1,2, 4-trimethylbenzene; 1,3,5-trimethylbenzene; and dibenz(a,h)anthracene).

CH2M Hill submitted an updated NAMP for both Building 82 (Tank G82) and the adjacent BP Wells site based on the results of the November 2006 sampling event. The NAMP stated that G82 should be sampled for chemical and natural attenuation parameters on a quarterly basis for the first 2 years.

FIELD OPERATIONS

Groundwater samples were collected from existing wells CEF-G82-1S, CEF-G82-2S, CEF-G82-2I, CEF-G82-3S, CEF-G82-4S, CEF-G82-5S, and CEF-G82-6S on January 27 and 28, 2009. Monitoring well locations are provided on Figure 1. The samples were placed on ice and subsequently hand-delivered under chain of custody to Accutest Laboratories in Orlando, Florida, for analysis. The laboratory analytical report is included as Attachment B.

The laboratory analyzed the samples from CEF-G82-1S, CEF-G82-2S, CEF-G82-2I, and CEF-G82-3S for the following:

- Volatile organic compounds (VOCs) including isopropyl benzene; 1,2,4-trimethylbenzene; and 1,3,5-trimethylbenzene using United States Environmental Protection Agency (USEPA) Method SW-846 8260B.
- Polynuclear aromatic hydrocarbons (PAHs) including 1-methylnaphthalene and 2-methylnaphthalene using USEPA Method 8270.
- TRPH using the Florida Petroleum Range Organics (FL-PRO) method.
- Sulfate, nitrate, and nitrite using USEPA Method 300.0.
- Sulfide using Method SM4500-S2F.
- Alkalinity using Method 310.2.

The laboratory analyzed the samples from CEF-G82-4S, CEF-G82-5S, and CEF-G82-6S for the following:

- VOCs including isopropyl benzene; 1,2,4-trimethylbenzene; and 1,3,5-trimethylbenzene using USEPA Method SW-846 8260B.
- PAHs including 1-methylnaphthalene and 2-methylnaphthalene using USEPA Method 8270.
- TRPH using the FL-PRO method.

Prior to obtaining groundwater samples, synoptic water levels and total well depths were measured and recorded on a site-specific groundwater measurement sheet for all wells located around Building 82. On January 26, 2009, the depth to water ranged from 7.39 feet below top of casing (btoc) (CEF-G82-1S) to 10.73 feet btoc (CEF-G82-6S). Depth to water measurements, top of casing elevations, and groundwater elevations are presented in Table 1.

It was observed that the top of well CEF-G82-6S had been raised approximately 3 feet due to the construction of a new ramp extending from Building 82; however, the new top of casing had not been resurveyed. In February 2009, TtNUS surveyed the top of casing of CEF-G82-6S relative to the tops of casings of all the G82 wells and calculated the top of casing elevation for CEF-G82-6S. The survey also showed that the top of casing elevations for CEF-G82-1S and CEF-G82-2I were also off by approximately 0.3 foot; therefore, the top of casing elevations of those two wells were also calculated. Attachment C includes the field log sheets. General sampling protocols were in accordance with FDEP SOPs and TtNUS SOP SA-1.1 – Groundwater Sample Acquisition and On-Site Water Quality Testing.

RESULTS

The groundwater elevation data and flow direction for the shallow zone across the Tank G82 site are shown on Figure 2. Based on the data, the general direction of shallow zone groundwater flow is east.

Groundwater analytical results from this sampling event were compared to FDEP GCTLs and Natural Attenuation Default Concentrations (NADCs). The data and standards are presented in Table 2, and the results based on chemical analyses are presented on Figure 3. During the January 2009 event, concentrations of naphthalene; isopropyl benzene; 1,2,4-trimethylbenzene; 1-methylnaphthalene; and 2-methylnaphthlene exceeded their respective GCTLs in CEF-G82-2S. Concentrations of naphthalene; isopropyl benzene; and 1,2,4-trimethylbenzene exceeded their respective GCTLs in CEF-G82-1S. None of these constituents exceeded their respective NADCs. In all other wells, analytes were either not detected or were detected at concentrations less than their GCTLs.

Geochemical data were evaluated to determine if natural attenuation is occurring in the groundwater. Field-measured parameters include dissolved oxygen (DO), dissolved carbon dioxide, and alkalinity. The fixed-base laboratory-measured parameters evaluated included methane, nitrate/nitrite, sulfate/sulfide, and alkalinity, and the results are presented in Table 2. Low-flow pumping and adherence to FDEP SOPs were conducted during these analyses. A discussion of the results for each parameter is presented below.

Dissolved Oxygen

Geochemical measurements of DO were made in the field using a CHEMetrics test kit (Model K-7501). The test kit can accurately measure DO at concentrations as low as 0.05 milligram per liter (mg/L) and as high as 12 mg/L.

DO acts as a primary substrate or co-substrate during the initial stages of metabolism and is the single most efficient electron acceptor responsible for the biodegradation of natural or anthropogenic organic carbon. During aerobic respiration, DO is used as an electron acceptor to mineralize natural organic

carbon (or hydrocarbons) into carbon dioxide and water. DO at concentrations less than background provides strong evidence of indigenous bacterial populations that are already established and actively degrading natural or anthropogenic carbon utilizing aerobic pathways. However, after the available oxygen has been utilized, these aerobic processes will cease and the core of the plume will become anaerobic.

DO concentrations in January 2009 ranged from 0.4 mg/L in CEF-G82-1S to 0.7 mg/L in CEF-G82-2I, CEF-G82-2S, and CEF-G82-3S and indicate anaerobic groundwater conditions across the site.

Dissolved Carbon Dioxide/Alkalinity

Dissolved carbon dioxide was measured in the field using CHEMetrics field kits (Models K-1910, K-1920, and K-1925). Carbon dioxide is produced during aerobic respiration (oxygen utilization), and during anaerobic processes (e.g., iron reduction, sulfate reduction, etc.). After oxygen, nitrate, manganese, ferric iron, and sulfate have been used as electron acceptors, bacteria will use carbon dioxide as an electron acceptor, generating methane as a byproduct. Therefore, carbon dioxide is both produced and used by different microbes during the biodegradation of a carbon source.

Dissolved carbon dioxide concentrations ranged from 32 mg/L (CEF-G82-2I) to 85 mg/L (CEF-G82-2S) and were greatest in areas with observed contaminants of concern (COCs) in groundwater.

Alkalinity is a measure of the acid-neutralizing capacity of water, usually expressed as mg/L of calcium carbonate ($CaCO_3$). Generally, alkalinity consists of three components, carbonate (CO_3^{2-}), bicarbonate (HCO_3^-), and hydroxide (OH^-). The field-measured alkalinity at the Tank G82 site ranged from 0 mg/L (CEF-G82-2I) to 130 mg/L (CEF-G82-2S).

Methane

Methanogenesis is an anaerobic biodegradation process during which methane-producing microbes utilize carbon dioxide as an electron acceptor and generate methane as a byproduct of fermentation. Because methane is not a chemical component of fuels or solvents, its presence provides strong evidence of methanogenic fermentation (and carbon dioxide utilization).

Methane was detected in two of four wells at concentrations of 0.0005 mg/L (CEF-G82-3S) and 4.88 mg/L (CEF-G82-2S). The presence of methane may be indicative of anaerobic microbial degradation of hydrocarbons at the site.

Sulfate/Sulfide

After DO, nitrate, and ferric iron have been used, anaerobic microbes will use sulfate (SO_4^{2-}) as an electron acceptor to anaerobically degrade hydrocarbons (sulfate reduction). The process of sulfate reduction results in the generation of sulfide and carbon dioxide. Sulfate was detected in all four wells analyzed, ranging from a maximum of 22.8 mg/L in CEF-G82-3S to 1.4 mg/L in the well CEF-G82-2S. Sulfide was detected in three of the four wells analyzed, ranging from 0.97 mg/L in CEF-G82-2I to 2.5 mg/L in CEF-G82-1S and CEF-G82-2S. The presence of sulfate in the areas of impacted groundwater at concentrations higher than background indicates that sulfate reduction is possible; however, the low sulfide concentrations indicate that conditions at the site are not favorable for sulfate reduction.

Nitrate/Nitrite

After DO has been depleted through aerobic respiration, anaerobes will use nitrate (NO_3^-) as an electron acceptor to anaerobically degrade hydrocarbons (denitrification). This process reduces nitrate to nitrite (NO_2^-) and generates carbon dioxide. Nitrate concentrations ranged from 1.4 mg/L in CEF-G82-3S to non-detect in CEF-G82-1S, CEF-G82-2S, and CEF-G82-2I. Concentrations of nitrite exceeded its GCTL of 1 mg/L in CEF-G82-1S, CEF-G82-2S, and CEF-G82-3S.

CONCLUSIONS AND RECOMMENDATIONS

The shallow groundwater flow direction in the area of Tank G82 site is to the east, which is a change from previous sampling events. The groundwater flow has been consistently to the east-southeast during previous sampling events.

During January 2009, concentrations of naphthalene; isopropyl benzene; and 1,2,4-trimethylbenzene were greater than their GCTLs in CEF-G82-1S and CEF-G82-2S. These contaminants had not been detected in CEF-G82-1S greater than their GCTLs since November 2006. 1-Methylnaphthalene and 2-methylnaphthalene concentrations were also greater than their GCTLs in CEF-G82-2S in January 2009.

No other analytes were detected in excess of their GCTLs in any of the other wells sampled per the NAMP. None of the analytes in any of the wells at the site exceeded their NADCs. The concentrations of isopropyl benzene and 1,2,4-trimethylbenzene in CEF-G82-2S were similar to concentrations measured during the previous sampling event in October 2008; however, 1-methylnaphthalene and 2-methylnaphthalene concentrations decreased in CEF-G82-2S since the October 2008 2nd quarter sampling event.

DO results during this monitoring event indicate generally anaerobic groundwater conditions across the site. Dissolved carbon dioxide concentrations are greatest in areas with observed constituents of concern in groundwater, indicating biodegradation activity in this area. The presence of methane may be indicative of anaerobic microbial degradation of hydrocarbons occurring at the site.

The presence of sulfate in the areas of impacted groundwater at concentrations higher than background indicates that sulfate reduction is possible; however, the low sulfide concentrations indicate that conditions at the site are not favorable for sulfate reduction. Because of the low levels of nitrate and nitrite in the areas of impacted groundwater, nitrate reduction is not a significant process at this site.

The 2008 NAMP identified that quarterly sampling would be conducted for 1 year followed by an evaluation of the data to determine if sampling should continue on a quarterly basis or whether a different sampling frequency is appropriate. The next quarterly sampling event is scheduled for April 2009. If concentrations remain less than NADCs during the 4th quarter sampling, analysis for natural attenuation parameters should be removed from the NAMP.

If you have any questions regarding this submittal, please feel free to contact Kara Wimble at (904) 730-4669, extension 217, or via e-mail at Kara.Wimble@tetratech.com.

Sincerely,

Mark A. Peterson, P.G.
Task Order Manager

Kara F. Wimble
Project Scientist

Enclosures (8)

c: A. Sanford, NAVFAC SE (1 copy)
S. Naik, CH2M Hill (electronic only)
D. Humbert, TtNUS (letter only)
M. Speranza, TtNUS (letter only)
M. Jonnet, TtNUS (Cecil DMS)
J. Logan, TtNUS
R. Simcik, TtNUS (Bookcase File)
J. Johnson, TtNUS (Information Repository)
M. Perry, TtNUS (unbound)
R. Miller, TtNUS (letter only)
CTO 0248 Project File

CERTIFICATION

The information contained herein is based on the investigation data and information obtained from previously submitted reports. 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 information described in this report. This Quarterly Groundwater Monitoring Report, 3rd Quarter, 1st Year – January 2009 is the 3rd quarterly report since the NAMP was submitted for Building 82, Tank G82, at Former Naval Air Station Cecil Field, Jacksonville, Florida, and should not be construed to apply to any other site.

May 8, 2009
Mark A. Peterson, P.G.
Florida License Number PG-001852

TABLES

Table 1
Groundwater Elevation and Monitoring Well Construction Data

3rd Quarter, 1st Year (January 2009) Quarter Groundwater Monitoring Report
Building 82, Tank G82
Naval Air Station Cecil Field
Jacksonville, Florida

Well Number	Total Depth of Well (feet, btoc)	Top of Casing Elevation* (feet above NAVD)	July 24, 2008		October 20, 2008		January 26, 2009	
			Depth to Water (feet btoc)	Water Level Elevation (feet above NAVD)	Depth to Water (feet btoc)	Water Level Elevation (feet above NAVD)	Depth to Water (feet btoc)	Water Level Elevation (feet above NAVD)
CEF-G82-1S*	15	71.13	5.41	65.72	6.20	64.93	7.39	63.74
CEF-G82-2I*	35	71.28	5.68	65.60	6.63	64.65	8.05	63.23
CEF-G82-2S	14	71.23	5.68	65.55	6.45	64.78	7.56	63.67
CEF-G82-3S	14	71.20	5.27	65.93	6.18	65.02	7.42	63.78
CEF-G82-4S	15	71.74	6.24	65.50	7.05	64.69	8.37	63.37
CEF-G82-5S	15	71.53	6.87	64.66	7.21	64.32	8.16	63.37
CEF-G82-6S	15	74.44	9.19	65.25	9.92	64.52	10.73	63.71

* Top of Casing (TOC) elevations for G82-1S, G82-2I, and G82-6S were resurveyed and recalculated in February 2009. Water level elevations for all events shown on this table use the new TOC elevations.

msl = Mean sea level
NAVD = North American Vertical Datum 1988

Table 2
Summary of January 2009 Groundwater Data

3rd Quarter, 1st Year (January 2009) Groundwater Monitoring Report
Building 82, Tank G82
Naval Air Station Cecil Field
Jacksonville, Florida

Parameter	FDEP Criteria		CEF-G82-1S	CEF-G82-2S	CEF-G82-2I	CEF-G82-3S	CEF-G82-4S	CEF-G82-5S	CEF-G82-6S	
	GCTL	NADC							Sample	Duplicate
			1/27/2009	1/27/2009	1/27/2009	1/27/2009	1/28/2009	1/27/2009	1/28/2009	
VOCs (USEPA Method 8260B) (µg/L)										
Benzene	1	10	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Toluene	40	400	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
Ethylbenzene	30	300	5	18.1	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U
Total Xylenes	20	200	3	6.9	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Naphthalene	14	140	39.9	115	1 U	1 U	1 U	7.8	1 U	1 U
Isopropyl benzene	0.8	8	1.4	7.3	0.2 U	0.2 U	0.2 U	0.25 J	0.2 U	0.2 U
1,2,4-Trimethylbenzene	10	100	11	13.3	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
1,3,5-Trimethylbenzene	10	100	2	3.4	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PAHs (USEPA Method 8270C SIM) (µg/L)										
1-Methylnaphthalene	28	280	14.7	82.6	0.24 U	0.24 U	0.32 J	3.7	0.24 U	0.24 U
2-Methylnaphthalene	28	280	23	97	0.24 U	0.24 U	0.24 U	2.7	0.24 U	0.24 U
Acenaphthene	20	200	1.1	3.3	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U
Acenaphthylene	210	2100	0.48 U	0.59 J	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U
Benzo(a)pyrene	0.2	2	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
Benzo(a)anthracene	0.05	5	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
Dibenz(a,h)anthracene	0.005	0.05	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
Fluorene	280	2800	1.5	4	0.48 U	0.48 U	0.48 U	3.8	0.48 U	0.48 U
Phenanthrene	210	2100	0.53 J	1.4	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U

Table 2
Summary of January 2009 Groundwater Data

3rd Quarter, 1st Year (January 2009) Groundwater Monitoring Report
Building 82, Tank G82
Naval Air Station Cecil Field
Jacksonville, Florida

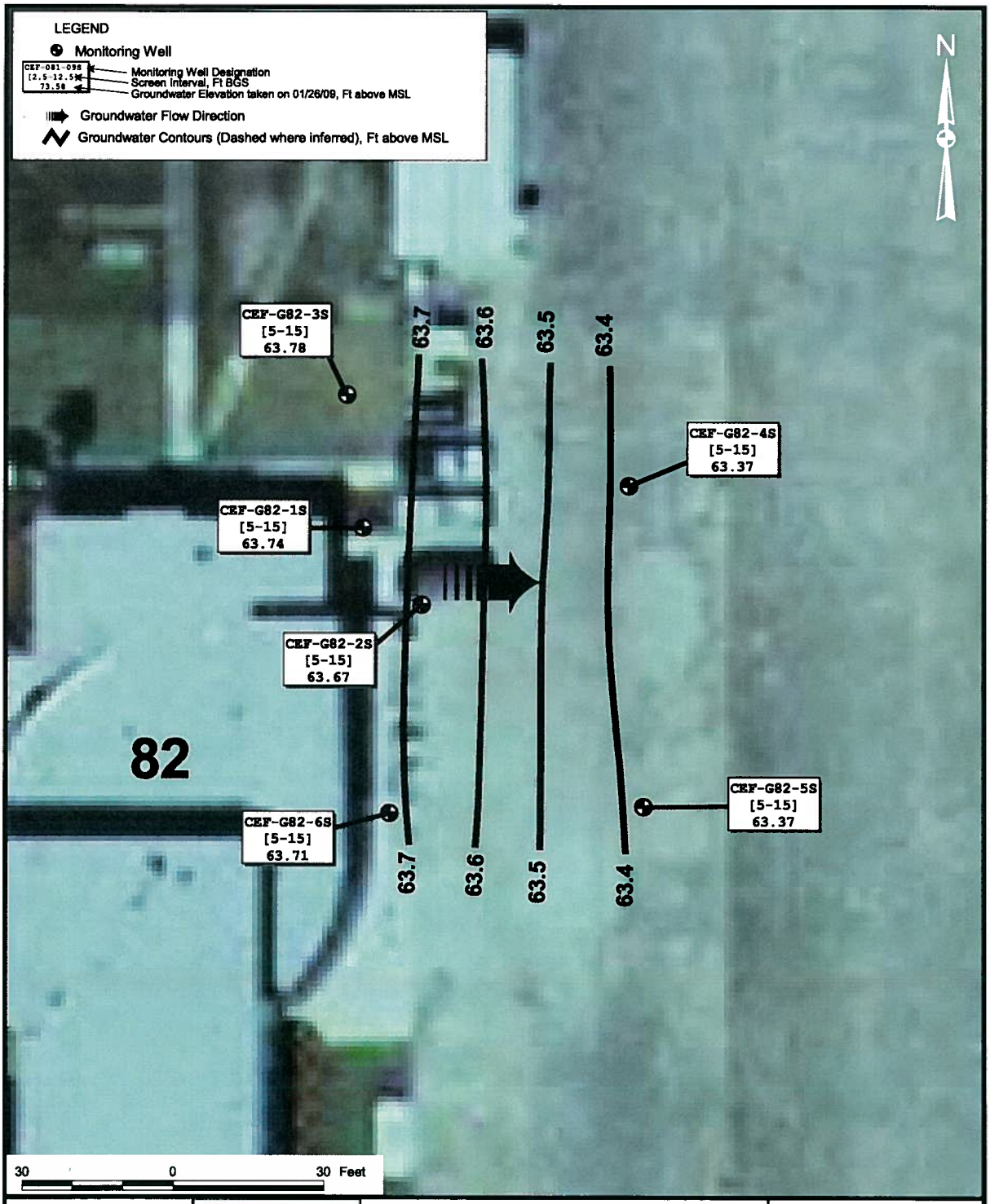
Parameter	FDEP Criteria		CEF-G82-1S	CEF-G82-2S	CEF-G82-2I	CEF-G82-3S	CEF-G82-4S	CEF-G82-5S	CEF-G82-6S	
	GCTL	NADC							Sample	Duplicate
			1/27/2009	1/27/2009	1/27/2009	1/27/2009	1/28/2009	1/27/2009	1/28/2009	
Miscellaneous Parameters (mg/L)										
TRPH	5	50	0.752	2.21	0.16 U	0.16 U	0.16 U	228 J	0.16 U	0.16 U
Methane	NA	NA	2.85	4.88	0.002	0.0005	NS	NS	NS	NS
Sulfate	250	NA	5.4	1.4 J	10.1	22.8	NS	NS	NS	NS
Sulfide	NA	NA	2.5	2.5	0.970 J	0.6 U	NS	NS	NS	NS
Nitrate as N	10	NA	0.05 U	0.05 U	0.05 U	1.4	NS	NS	NS	NS
Nitrite	1	NA	1.6	2.6	0.49	1.7	NS	NS	NS	NS
Alkalinity	NA	NA	55	130	0	50	NS	NS	NS	NS
Dissolved oxygen	NA	NA	0.4	0.7	0.7	0.7	NS	NS	NS	NS
Dissolved carbon dioxide	NA	NA	75	85	32	70	NS	NS	NS	NS

J - Estimated value
U = Not detected at detection limit shown
Shaded value indcates concentration greater than GCTL
mg/L = Milligrams per liter
µg/L = micrograms per liter
NA = Not Available
NS = Not sampled

FIGURES

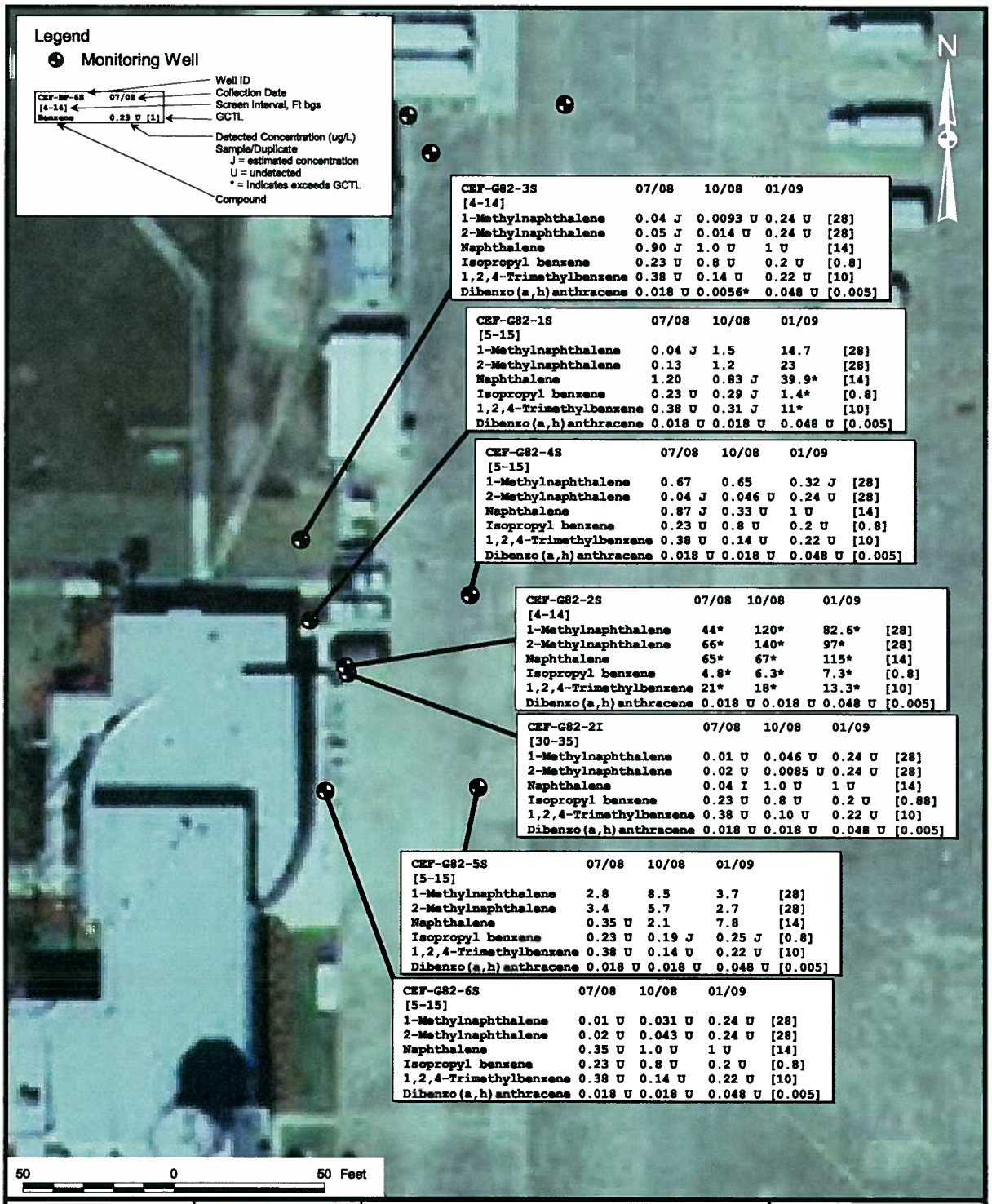
DRAWN BY MJJ	DATE 19Sept08	MONTORING WELL LOCATION MAP 3RD QUARTER, 1ST YEAR GROUNDWATER MONITORING REPORT BUILDING 82, TANK G82 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 4248
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1 / REV 0

P:\GIS\NAS_CecilField\bp-g82_20081202.apr 15Dec08 MJJ Layout03



DRAWN BY MJJ	DATE 30Mar09	GROUNDWATER FLOW MAP (01/26/09) 3RD QUARTER, 1ST YEAR GROUNDWATER MONITORING REPORT BUILDING 82, TANK G82 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 4248
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED	NAVFAC		DRAWING NO. FIGURE 2 / REV 0

P:\GIS\NAS_CecilField\bp-g82_20090100.apr 10Apr09 MJJ Layout05



CEF-G82-3S	07/08	10/08	01/09	
[4-14]				
1-Methylnaphthalene	0.04 J	0.0093 U	0.24 U	[28]
2-Methylnaphthalene	0.05 J	0.014 U	0.24 U	[28]
Naphthalene	0.90 J	1.0 U	1 U	[14]
Isopropyl benzene	0.23 U	0.8 U	0.2 U	[0.8]
1,2,4-Trimethylbenzene	0.38 U	0.14 U	0.22 U	[10]
Dibenzo(a,h)anthracene	0.018 U	0.0056*	0.048 U	[0.005]

CEF-G82-1S	07/08	10/08	01/09	
[5-15]				
1-Methylnaphthalene	0.04 J	1.5	14.7	[28]
2-Methylnaphthalene	0.13	1.2	23	[28]
Naphthalene	1.20	0.83 J	39.9*	[14]
Isopropyl benzene	0.23 U	0.29 J	1.4*	[0.8]
1,2,4-Trimethylbenzene	0.38 U	0.31 J	11*	[10]
Dibenzo(a,h)anthracene	0.018 U	0.018 U	0.048 U	[0.005]

CEF-G82-4S	07/08	10/08	01/09	
[5-15]				
1-Methylnaphthalene	0.67	0.65	0.32 J	[28]
2-Methylnaphthalene	0.04 J	0.046 U	0.24 U	[28]
Naphthalene	0.87 J	0.33 U	1 U	[14]
Isopropyl benzene	0.23 U	0.8 U	0.2 U	[0.8]
1,2,4-Trimethylbenzene	0.38 U	0.14 U	0.22 U	[10]
Dibenzo(a,h)anthracene	0.018 U	0.018 U	0.048 U	[0.005]

CEF-G82-2S	07/08	10/08	01/09	
[4-14]				
1-Methylnaphthalene	44*	120*	82.6*	[28]
2-Methylnaphthalene	66*	140*	97*	[28]
Naphthalene	65*	67*	115*	[14]
Isopropyl benzene	4.8*	6.3*	7.3*	[0.8]
1,2,4-Trimethylbenzene	21*	18*	13.3*	[10]
Dibenzo(a,h)anthracene	0.018 U	0.018 U	0.048 U	[0.005]

CEF-G82-2I	07/08	10/08	01/09	
[30-35]				
1-Methylnaphthalene	0.01 U	0.046 U	0.24 U	[28]
2-Methylnaphthalene	0.02 U	0.0085 U	0.24 U	[28]
Naphthalene	0.04 I	1.0 U	1 U	[14]
Isopropyl benzene	0.23 U	0.8 U	0.2 U	[0.88]
1,2,4-Trimethylbenzene	0.38 U	0.10 U	0.22 U	[10]
Dibenzo(a,h)anthracene	0.018 U	0.018 U	0.048 U	[0.005]

CEF-G82-5S	07/08	10/08	01/09	
[5-15]				
1-Methylnaphthalene	2.8	8.5	3.7	[28]
2-Methylnaphthalene	3.4	5.7	2.7	[28]
Naphthalene	0.35 U	2.1	7.8	[14]
Isopropyl benzene	0.23 U	0.19 J	0.25 J	[0.8]
1,2,4-Trimethylbenzene	0.38 U	0.14 U	0.22 U	[10]
Dibenzo(a,h)anthracene	0.018 U	0.018 U	0.048 U	[0.005]

CEF-G82-6S	07/08	10/08	01/09	
[5-15]				
1-Methylnaphthalene	0.01 U	0.031 U	0.24 U	[28]
2-Methylnaphthalene	0.02 U	0.043 U	0.24 U	[28]
Naphthalene	0.35 U	1.0 U	1 U	[14]
Isopropyl benzene	0.23 U	0.8 U	0.2 U	[0.8]
1,2,4-Trimethylbenzene	0.38 U	0.14 U	0.22 U	[10]
Dibenzo(a,h)anthracene	0.018 U	0.018 U	0.048 U	[0.005]

DRAWN BY	DATE
MJJ	27Sept08
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE	AS NOTED

NAVFAC

ANALYTICAL RESULTS
3RD QUARTER, 1ST YEAR
GROUNDWATER MONITORING REPORT
BUILDING 82, TANK G82
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

CONTRACT NUMBER	
4248	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3	REV 0

P:\GIS\NAS_CecilField\bp-g82_20090100.apr 10Apr09 MJJ Layout06

ATTACHMENT A

NATURAL ATTENUATION MONITORING PLAN

Natural Attenuation Monitoring Work Plan, Building G-82 (Tank G-82) and BP Wells Sites,

Former Naval Air Station Cecil Field, Jacksonville, Florida

PREPARED FOR:	Cecil Field Base Cleanup Team
PREPARED BY:	CH2M HILL Project Team
DATE:	May 29, 2008
PROJECT NUMBER:	271591

1.0 Introduction

This technical memorandum outlines the long-term monitored natural attenuation (MNA) program requirements to be implemented at the Building G-82 (Tank G-82) and the BP Wells Sites at the former Naval Air Station (NAS) Cecil Field, Jacksonville, Florida. Figure 1 shows the location of the sites within NAS Cecil Field.

CH2M HILL Constructors, Inc. (CH2M HILL) conducted a site-wide groundwater sampling event during November 2006. Geochemical data were evaluated to determine if natural attenuation was occurring in groundwater at the two sites and if parameter concentrations were decreasing in response to naturally occurring degradation processes. The evaluation involved comparing geochemical data from source area and downgradient monitoring wells to background values measured in upgradient wells. Based on these results, a long-term monitoring program for natural attenuation parameters was developed for implementation, as described below.

1.1 Site Background

The MNA program focuses on the Building G-82 and BP Wells Sites.

1.1.1 Building G-82 Site

The Building G-82 Site comprised an air traffic control tower and underground storage tank (UST) G-82 located at the former NAS Cecil Field in Jacksonville, Florida. Tank G-82 was used to store diesel fuel for emergency generators. Tank G-82 was removed in June 1997. Soil and groundwater have been impacted near the UST as a result of leaks originating from Tank G-82. The leaking tank released an unknown volume of fuel to the environment.

Following the removal of Tank G-82, a piezometer (CEF-G-82-1S, see Figure 2) was installed near the former location of the tank in January 1998. The hydrocarbon compounds 1-methylnaphthalene and 2-methylnaphthalene were detected in groundwater samples collected from CEF-G-82-1S at concentrations that exceeded Florida Department of Environmental Protection (FDEP) Groundwater Cleanup Target Levels (GCTLs). In January 1999, Harding Lawson Associates (HLA) performed additional sampling and prepared a

Confirmatory Sampling Report (CSR) recommending the completion of additional site assessment (SA) to determine the extent of hydrocarbons in the soil and groundwater.

Between October 1999 and July 2000, Tetra Tech NUS, Inc. (TtNUS) conducted the SA at Building G-82. Five shallow monitoring wells (CEF-G-82-2S through 6S) and one intermediate monitoring well (CEF-G-82-2I) were installed, and samples were collected to determine the extent of hydrocarbons in the soil and groundwater. TtNUS recommended excavation of 280 cubic yards (yd^3) of soil that contained volatile organic compounds (VOCs) and polynuclear aromatic hydrocarbons (PAHs) that exceeded FDEP Soil Cleanup Target Levels (SCTLs). Following soil removal, TtNUS recommended MNA as the remedial approach for groundwater.

During 2001, CH2M HILL was contracted by Southern Division Naval Facilities Engineering Command (NAVFAC) to perform the soil excavation work. The objective of the work was to excavate and dispose of the soil exceeding the FDEP SCTLs. Soil removal continued until either headspace readings using an organic vapor analyzer (OVA) were below 10 parts per million (ppm) or predetermined excavation boundaries (foundation boundaries and concrete aircraft apron) were reached. Approximately 148 tons of petroleum-impacted soil was removed. Following completion of the excavation activities, confirmation samples were collected from the north and south excavation walls to verify that remaining soil met the SCTLs. The analytical results from these samples indicated that the north and south excavation extent was complete. However, OVA readings from the east and west excavation walls indicated headspace concentrations exceeded 10 ppm, suggesting petroleum-impacted soil with concentrations above the SCTLs likely remained outside the limits of excavation. However, due to the close proximity of the excavation to the foundation of Building G-82 and the aircraft apron, excavation activities were terminated to prevent potential damage to the infrastructure.

Following the removal action in October 2001, TtNUS performed a supplemental assessment of the site. The results of the supplemental assessment and the associated sampling were presented in the Site Assessment Report Addendum (SARA) (TtNUS, 2001).

As part of the SARA, subsurface soil samples were collected from six locations along Building G-82 and along the flightline apron. These samples were collected outside the excavation area to evaluate residual contamination following the removal action. The samples were collected at a depth of 5 to 6 feet below land surface and were analyzed for VOCs, PAHs, and Total Recoverable Petroleum Hydrocarbons (TRPH). Based on the results of the original six samples, Synthetic Precipitation Leaching Procedure (SPLP) analyses were also performed. The SARA concluded that approximately 49 yd^3 of contaminated soil remained along Building G-82 and the flightline apron. TRPH was present above its SCTLs. Xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were detected in the leachate of the SPLP samples at concentrations that exceed their respective GCTLs.

In April, 2002, the Base Realignment and Closure (BRAC) team (BCT) recommended sampling of subsurface soil for the purpose of identifying the TRPH subclassification. Three samples were collected; however, one sample contained TRPH below the SCTLs and was not subclassified. Of the two samples that were analyzed for TRPH hydrocarbon-chain speciation, one sample contained concentrations of one fraction (C12 – C16, aliphatic) that exceeded its subclassification SCTLs. Based on these results, TtNUS recommended a

pilot-scale air sparging treatability study for the site. These findings were presented to the BCT at the May 15, 2002, meeting. The BCT agreed that an air sparging treatability pilot study should be performed.

No action was taken until a site-wide groundwater sampling event in November 2006. The results of the sampling event (discussed in Section 1.2) indicated that natural attenuation was occurring and the concentration of the contaminants of concern had been decreasing in the absence of active remediation.

A technical memorandum presenting the groundwater sampling results was prepared by CH2M HILL and presented to FDEP (CH2M HILL, 2007). A copy of this technical memorandum is included in Attachment 1. During the September 2007 BCT meeting, FDEP agreed that, based on the 2006 site-wide groundwater sampling results, no active remediation, such as air sparging, was needed at the Building G-82 Site.

1.1.2 BP Wells Site

The BP Wells Site is located on the north-south flightline, southeast of Building 880, on the west edge of the flightline apron. From 1999 to 2000, assessment activities were performed to determine the extent of hydrocarbons in soil and groundwater beneath the BP Wells Site. A due diligence investigation was conducted by Golder Associates, Inc. (1999) for the new property tenants (Jacksonville Airport Authority and Air Kaman). Four shallow wells (CEF-BP-1S through 4S, and CEF-BP-6S) and one intermediate well (CEF-BP-5I) were installed at the site (Figure 2). The reported results indicated the presence of hydrocarbons in groundwater beneath the site.

Subsequently, the Navy directed TtNUS to conduct an SA. The SA confirmed the presence of contaminated groundwater and identified the groundwater flow direction to the southeast. A Site Assessment Report (SAR) (2000) was submitted to the FDEP recommending that a natural attenuation monitoring plan be implemented at the site. The FDEP approved the plan and issued a Natural Attenuation Monitoring Plan Approval Order (NAMPAO) on August 31, 2000. In accordance with the NAMPAO, TtNUS performed the first two semiannual groundwater sampling events in April and October of 2001. Because the hydrocarbon concentrations at the source well were greater than the applicable natural attenuation default concentrations (NADCs) and because the contaminant concentrations appeared to be increasing, the second monitoring report recommended that the semiannual monitoring program be suspended and that a Remedial Action Plan (RAP) be prepared for the site. On February 20, 2002, the FDEP agreed that a RAP was warranted. Subsequently, TtNUS recommended that a treatability study be performed to evaluate the effectiveness of in-situ enhanced bioremediation at the site. In-situ Submerged Oxygen Curtain (iSOC™) technology was to be evaluated to perform this test. In April 2004, TtNUS submitted an Enhanced Natural Attenuation Treatability Study (ENATS) Work Plan for the BP Wells Site.

Similar to the Building G-82 Site, no action was taken until a site-wide groundwater sampling event was conducted in November 2006. The results of the sampling event, discussed in Section 1.2, indicate that natural attenuation was occurring at the site and the concentration of the contaminants of concern had been decreasing.

1.1.3 Remedial Action Objectives

The remedial action objective for the Building G-82 and BP Wells Sites is to achieve cleanup of groundwater contaminant concentrations to levels below the Florida GCTLs with a short-term remedial action objective to achieve reduction of contaminant concentrates to below the Florida NADCs.

1.2 Natural Attenuation Monitoring

1.2.1 Groundwater Contamination Summary

In November 2006, the following monitoring wells were sampled for contaminant characterization:

- Building G-82 Site: CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, CEF-G82-3S, CEF-G82-4S, CEF-G82-5S, and CEF-G82-6S.
- BP Wells Site: CEF-BP-1S, CEF-BP-2S, CEF-BP-3S, CEF-BP-4S, CEF-BP-5I, and CEF-BP-6S.

Groundwater samples from both sites were analyzed for VOCs (U.S. Environmental Protection Agency [EPA] Method 8260B), PAHs (EPA Method 8310), and TRPH (Florida Petroleum Residual Organic [FL-PRO] Method).

Building G-82 Site

In November 2006, the following compounds were detected at concentrations exceeding the GCTLs: isopropylbenzene (cumene), naphthalene, and 1-methylnaphthalene in wells CEF-G82-1S and CEF-G82-2S; 2-methylnaphthalene in well CEF-G82-2S; and benzo(a)pyrene and dibenz(a,h)anthracene in well CEF-G82-1S. The benzo(a)pyrene detection of 7.95 micrograms per liter (µg/L) and the dibenz(a,h)anthracene detection of 35.9 µg/L in well CEF-G82-1S also exceeded NADC criteria of 2 µg/L and 0.05 µg/L, respectively.

Only groundwater sampled from wells CEF-G82-1S and CEF-G82-2S contained constituents at levels exceeding GCTLs during the November 2006 sampling event. Groundwater sampled from the surrounding monitoring wells (CEF-G82-3S, CEF-G82-4S, CEF-G82-5S, and CEF-G82-6S) and the well screened below the shallow monitoring wells (CEF-G82-2I) did not contain constituents of concern at elevated levels.

The following parameters were historically detected at concentrations above the GCTLs in well CEF-BP-2S: benzene, ethylbenzene, total xylenes, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene. In general, the concentrations of VOCs (benzene, ethylbenzene, and total xylenes) in well CEF-G82-2S decreased in concentration when compared to previous sampling events, suggesting that biodegradation of these compounds is occurring. Concentrations of the PAH compounds 1-methylnaphthalene, 2-methylnaphthalene, benzo(a)pyrene, and dibenz(a,h)anthracene increased slightly compared to historical results. However, because PAHs are less mobile and tend to be more persistent than VOCs, it is expected that future monitoring will indicate that PAHs decrease over time, similarly to the VOCs, at this site. A summary of the historical analytical results from the Building G-82 Site is presented as the third attachment in Attachment 1.

BP Wells Site

In November 2006, the following compounds were detected at concentrations exceeding the GCTLs: isopropylbenzene (cumene), ethylbenzene, total xylenes, 1,3,5-trimethylbenzene, and 1,2,4- trimethylbenzene. All exceedances occurred in well CEF-BP-1S; however, one of these detections exceeded NADC criteria. The remaining wells at the BP Wells Site did not show any exceedances of either the GCTLs or NADC criteria.

Comparison of the November 2006 test data with historical sampling data collected in 2003 (2003 data is presented as the second attachment in Attachment 1) indicates that hydrocarbon concentrations in groundwater beneath the BP Wells Site have decreased in concentration.

1.2.2 Future Remedial Action

Future remedial action at the Building G-82 and BP Wells Sites includes long-term monitoring of natural attenuation in groundwater for an initial period of 3 years. Additional monitoring requirements will be evaluated at the end of the third year of monitoring.

1.3 Long-Term Monitoring for Natural Attenuation

1.3.1 Objectives

The objective of long-term monitoring for natural attenuation at the Building G-82 and BP Wells Sites is to collect the physical and chemical data necessary to monitor changes in dissolved hydrocarbon concentrations and verify that conditions continue to be favorable for natural attenuation to occur. Remediation for groundwater will be complete when dissolved hydrocarbon concentrations naturally attenuate to concentration below the Florida GCTLs.

1.3.2 Significance of Natural Attenuation Parameters for Long-Term Monitoring

Monitoring key natural attenuation parameters will help determine if water quality conditions remain favorable for biological degradation of hydrocarbons to occur and if parameter concentrations continue to decrease in response to the degradation processes. The following parameters will be evaluated during each sampling event: dissolved oxygen (DO), Oxidation Reduction Potential (ORP), pH, nitrates/nitrite, sulfate, sulfide, and methane. Groundwater quality in background wells will be compared to wells containing parameters in exceedance of GCTLs. A discussion of the MNA measurements made during the November 2006 sampling event is provided below.

Dissolved Oxygen (DO)

DO measurements were made to determine the distribution of DO in groundwater relative to the distribution of dissolved hydrocarbons. In the absence of hydrocarbons, DO concentrations in groundwater typically range from 1.0 to 1.5 milligrams per liter (mg/L) depending on water temperature (i.e., DO concentrations are higher in cold water and lower in warm water). DO is often depleted in groundwater contaminated with hydrocarbons as a result of in-situ biodegradation. Oxygen is consumed and carbon dioxide is produced in the biodegradation process.

In groundwater beneath the Building G-82 Site, DO concentrations ranged from 0.36 mg/L (CEF-G82-2I) to 0.84 mg/L (CEF-G82-5S). The DO concentrations measured in wells CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, CEF-G82-4S, and CEF-G82-6S were below those in the background well CEF-G82-3S. These data suggest that subsurface conditions are

suboptimal for aerobic hydrocarbon biodegradation. However, general reductions in VOC concentrations over time suggest that anaerobic biodegradation of contaminants may be occurring.

DO concentrations at the BP Wells Site ranged from 0.6 mg/L (CEF-BP-1S) to 1.50 mg/L (CEF-BP-3S) as measured using the Chemetrics® field test kits during the November 2006 sampling event. The DO concentration of 0.6 mg/L in well CEF-BP-1S was slightly below the DO measured in the upgradient (background) well CEF-BP-2S at 0.8 mg/L. With the exception of well CEF-BP-1S, which showed slightly elevated VOCs, the DO readings at the site were generally similar to background levels. These data suggest that subsurface conditions are suboptimal for aerobic hydrocarbon biodegradation. However, contaminant concentration reductions suggest that anaerobic biodegradation of contaminants may be occurring.

Oxidation Reduction Potential (ORP)

ORP is a measure of the relative tendency of ions in solution to transfer electrons. As electron acceptors are utilized, the ORP of the groundwater decreases. As DO is consumed, the ORP will decline and perhaps become negative.

ORP across the BP Wells Site ranged from -126.0 millivolts (mV) to 186.7 mV. Negative ORP levels were measured at only two well locations: CEF-BP-1S (-117.9 mV) and CEF-BP-6S (-126.0 mV). The negative ORP detected in groundwater sampled from these locations suggests that reducing conditions are prevalent in the vicinity of well CEF-BP-1S. This was the only well with parameter concentrations above GCTLs.

ORP across the Building G-82 Site ranged from -127.2 mV to 233.8 mV. ORP levels were similar in wells CEF-G82-1S (-127.2 mV) and CEF-G82-2S (-126.0 mV). These were the only monitoring wells with significantly negative ORP, and they were also the only wells with contaminant concentrations above GCTLs. Similar to the BP Wells Site, these results suggest that reducing conditions are prevalent in the vicinity of the wells showing elevated contaminant concentrations in groundwater.

pH

The pH of groundwater has an effect on the presence and activity of microbial populations in groundwater. Microbes capable of degrading petroleum hydrocarbons generally prefer pH values varying from 6 to 8 standard units.

At the BP Wells Site, groundwater pH values ranged from 5.13 (CEF-BP-5I) to 6.49 (CEF-BP-1S) with a background value of 6.37 (CEF-BP-2S), generally within the preferred range of values for microbial activity. Further, pH in groundwater sampled from monitoring well CEF-BP-1S, the only well with parameter concentrations above GCTLs, was 6.49.

At the Building G-82 Site, the pH values ranged from 4.97 (CEF-G82-4S) to 6.02 (CEF-G82-2S) with a background value of 5.81 (CEF-G82-3S), indicating that optimal pH conditions for microbial activity were not present at all locations at this site. However, pH values in the vicinity of CEF-G82-1S and CEF-G82-2S (the two wells with contaminant concentrations exceeding GCTLs) were 5.96 and 6.02, respectively, indicating that in this area of the site, pH is generally within the range optimal for microbial activity.

Nitrates/Nitrite

After DO has been depleted, biodegradation of hydrocarbons may continue anaerobically using total nitrate/nitrite as electron acceptors (denitrification). Nitrate/nitrite concentrations will be lower in the wells containing hydrocarbons (such as benzene, toluene, ethylbenzene, and xylenes [BTEX]), if biodegradation is occurring. Nitrate and nitrite were detected in seven of the eight monitoring wells in which the parameters were analyzed.

At the BP Wells Site, nitrate and nitrite were detected in three of the four monitoring wells in which the parameter was analyzed. The nitrate and nitrite concentrations, ranging from non-detect to 561 µg/L in the downgradient wells, were lower than the concentration of the background well CEF-BP-2S (733 µg/L). No nitrate/nitrite was detected in groundwater sampled from CEF-BP-1S, the only monitoring well with contaminant concentrations exceeding GCTLs, suggesting that reducing conditions are favorable for denitrification in this area.

At the Building G-82 Site, the nitrate and nitrite concentrations ranging from 44 to 66 µg/L in the downgradient wells were similar to the concentration in background well CEF-G82-3S (72 µg/L). The presence of nitrate and nitrite in the areas of impacted groundwater suggests that conditions are unfavorable for denitrification..

Sulfate/Sulfide

After DO and total nitrogen have been depleted in the aquifer, sulfate may be used as an electron acceptor for anaerobic biodegradation. This process is termed sulfate reduction, and results in the production of sulfide. Portions of the hydrocarbon plume undergoing anaerobic biodegradation may have depleted sulfate concentrations and caused elevated sulfide concentrations. Sulfate reducing conditions are favorable at redox potentials of -200 mV and pH of 7.

Sulfate was detected in each of the four wells that were monitored for the parameter at the BP Wells Site. The concentrations of sulfate were higher in the downgradient wells than in the background well. The presence of sulfate in the areas of impacted groundwater at concentrations higher than background and low sulfide concentrations suggest that conditions favorable for sulfate reduction are not present.

Sulfate was detected in two of the four wells that were monitored for the parameter at the Building G-82 Site. The concentrations of sulfate were lower in the downgradient wells than the background well. Sulfate was not present in groundwater sampled from CEF-G82-1S, (the area of highest levels of contaminants of concern) and was detected at levels below those detected in the background sample in groundwater sampled from CEF-G82-2S (the only other site monitoring well to contain contaminants at levels exceeding GCTLs); additionally, sulfide was detected in groundwater sampled from CEF-G82-1S and CEF-G82-2S at levels exceeding those detected in the background sample. The absence or limited presence of sulfate in the areas of impacted groundwater at concentrations lower than background, coupled with the presence of sulfide at concentrations higher than background, suggests that subsurface conditions at the site may be favorable for sulfate reduction in these areas.

Methane

The presence of methane in groundwater at concentrations above background is a good indicator that methanogenesis is occurring. During methanogenesis, carbon dioxide is used as an electron acceptor and methane is formed. The presence of methane in groundwater is also indicative of strong reducing conditions.

Dissolved methane was detected in three of the four wells analyzed at the BP Wells Site. The concentration of methane exceeded background concentrations in wells CEF-BP-1S, CEF-BP-5I, and CEF-BP-6S. The presence of methane above background concentrations may be indicative of anaerobic microbial degradation of hydrocarbons occurring at the site.

Dissolved methane was detected in each of the four wells analyzed at the Building G-82 Site. The concentration of methane exceeded background (estimated 1.63 µg/L) significantly in wells CEF-G82-1S (1,340 µg/L) and CEF-G82-2S estimated 680 µg/L), suggesting anaerobic microbial degradation of hydrocarbons is occurring in these source areas.

2.0 Sampling and Analysis Plan for Natural Attenuation Monitoring

This section describes the sampling procedures that will be followed during execution of the work scope. Analytical methods, data quality objectives, protocol for equipment decontamination, and procedures used for the collection of samples for waste characterization are discussed in this section.

2.1 Sampling Objectives

The objective of long-term monitoring for natural attenuation at the Building G-82 and BP Wells Sites is to collect the physical and chemical data necessary to monitor changes in dissolved hydrocarbon concentrations and verify that conditions continue to be favorable for natural attenuation to occur. Remediation for groundwater will be complete when dissolved hydrocarbon concentrations naturally attenuate to concentration below the Florida GCTLs. In order to achieve these objectives, the following tasks will be performed:

- Measure water levels quarterly to obtain the data required to prepare potentiometric surface maps and to evaluate fluctuations in groundwater elevation.
- Collect the following water quality measurements from 13 wells (CEF-BP-1S, CEF-BP-2S, CEF-BP-3S, CEF-BP-4S, CEF-BP-5I, CEF-BP-6S, CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, CEF-G82-3S, CEF-G82-4S, CEF-G82-5S, and CEF-G82-6S) during the well purging process to evaluate the physical parameters of the aquifer: pH, conductivity, turbidity, DO, ORP, and temperature.
- Collect groundwater samples from 13 wells (CEF-BP-1S, CEF-BP -2S, CEF-BP-3S, CEF-BP-4S, CEF-BP-5I, CEF-BP-6S, CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, CEF-G82-3S, CEF-G82-4S, CEF-G82-5S, and CEF-G82-6S) for the analysis of BTEX and naphthalene by EPA Method 8260B, PAHs (16 PAHs including both 1-methylnaphthalene and 2-methylnaphthalene) by EPA Method 8270SIM, and TPH by the FL-PRO Method.
- Collect groundwater samples from eight wells (CEF-BP-1S, CEF-BP-2S, CEF-BP-5I, CEF-BP-6S, CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, and CEF-G82-3S) for the analysis of sulfate/sulfide, alkalinity, nitrate/nitrite, and methane.

Details regarding completion of these tasks are described below.

2.2 Monitoring Well Network

The following eight wells will be analyzed for the MNA parameters: dissolved methane (Method RSK 175), nitrate/nitrite and sulfate (EPA Method 300.0), and sulfide (Method SM4500-S_2 F):

- BP Wells Site: CEF-BP-1S, CEF-BP-2S, CEF-BP-5I, and CEF-BP-6S.
- Building G-82 Site: CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, and CEF-G82-3S.

The following 13 wells will be analyzed for BTEX and naphthalene by EPA Method 8260B, PAHs (including 1-methylnaphthalene and 2-methylnaphthalene) by EPA Method 8270SIM, and TRPH by the FL-PRO Method:

- BP Wells Site: CEF-BP-1S, CEF-BP-2S, CEF-BP-3S, CEF-BP-4S, CEF-BP-5I, and CEF-BP-6S.
- Building G-82 Site: CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, CEF-G82-3S, CEF-G82-4S, CEF-G82-5S, and CEF-G82-6S.

Requirements for sample collection, preservation, and analysis are listed in Table 1.

2.3 Frequency of Monitoring

Based on discussions during the January 2008 NASCF BCT Meeting, groundwater will be monitored on a quarterly basis for the first year of long-term monitoring for the Building G-82 Site and on a semiannually basis for the BP Wells Site. During the second year, semiannual groundwater will be performed at both sites. During the third year, annual groundwater monitoring will performed at both sites. After the completion of the third year of monitoring, the natural attenuation progress will be evaluated to determine if additional monitoring is necessary.

2.4 Data Quality Levels for Measurement Data

The samples will be collected in accordance with the EPA Region IV Field Branches Quality System and Technical Procedures, November 2007, and the FDEP Standard Operating Procedures (SOPs).

The sampling team will be qualified under the Navy Installation Restoration Chemical Data Quality Manual (IRCDQM), 1999 sampling requirements. A Navy-, U.S. Army Corps of Engineers (USACE)-, or Air Force Center for Engineering and the Environment (AFCEE)- and FDEP-approved laboratory will be used for all sample analyses.

TABLE 1
Requirements for Sample Collection, Preservation, and Analysis

Sample Task	Sample Point	Matrix	Sampling Frequency (Note 1)	Approx Sample No	Sampling Method	Sampling Equipment	TAT	DQO Level/ Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservation	Containers
Groundwater Sampling													
Groundwater Sampling	Monitoring Wells (6 wells – BP Wells Site; 7 wells – Bldg G-82 Site)	Water	1st & 3rd Quarter – 1st yr; Semiannually 2nd yr; Annually 3rd yr	13 + 2 DUP + 1 MS/MSD = 17 (per event); 85 total	Grab	Hand Bailer	14 days	DQO Level IV, CCI Level C	BTEX and naphthalene	8260B	14 days	HCl pH< 2; Cool to 4°C	(2) 40 mL vials
	Monitoring Wells (7 wells – Bldg G-82 Site)		2nd & 4th Quarter – 1st yr;	7 + 1 DUP + 1 MS/MSD = 10; 20 total					PAH including 1- & 2-methylnapthalene	8270SIM	7 days ext; 40-days analysis	Cool to 4°C	(2) 1-L amber glass
									TRPH	FL-PRO	7 days ext; 40-days analysis	HCl pH< 2; Cool to 4°C	(2) 1-L amber glass
	Monitoring Wells (4 wells – BP Wells Site; 4 wells – Bldg G-82 Site)	Water	1st & 3rd Quarter – 1 yr; Semiannually 2nd yr; Annually 3rd yr	8 + 1 DUP + 1 MS/MSD = 11 (per event) – 55 total	Grab	Hand Bailer	14 days		Sulfate	300.0 / 300.1	28 days	Cool to 4°C	(1) 500-mL plastic
	Monitoring Wells (4 wells – Bldg G-82 Site)		2nd & 4th Quarter – 1st yr;	4 + 1 DUP + 1 MS/MSD = 7; 14 total					Sulfide	SM 4500-S2-F	7 days	Cool to 4°C, pH>9 w/NaOH; add Zinc Acetate	(1) 1000-mL plastic
									Nitrate	300.0	48 hours	Cool to 4°C	(1) 500-mL plastic
									Nitrite	300.0	48 hours	Cool to 4°C	(1) 500-mL plastic
									Methane	RSK-175	14 days	Cool to 4°C, pH <2 w/HCl, no headspace	(2) 40 mL vials

TABLE 1
Requirements for Sample Collection, Preservation, and Analysis

Sample Task	Sample Point	Matrix	Sampling Frequency (Note 1)	Approx Sample No	Sampling Method	Sampling Equipment	TAT	DQO Level/ Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservation	Containers
	Equipment Rinsate Blank	Water	1 per 10% of sampling	1 per event	Prepared in Field	Analyte-free water, SS funnel	14 days		BTEX and naphthalene	8260B	14 days	HCl pH< 2; Cool to 4°C	(2) 40 mL vials
									PAH including 1- & 2-methylnapthalene	8270SIM	7 days ext; 40-days analysis	Cool to 4°C	(2) 1-L amber glass
									TRPH	FL-PRO	7 days ext; 40-days analysis	HCl pH< 2; Cool to 4°C	(2) 1-L amber glass
									Sulfate	300.0 / 300.1	28 days	Cool to 4°C	(1) 500-mL plastic
									Sulfide	SM 4500-S2-F	7 days	Cool to 4°C, pH>9 w/NaOH; add Zinc Acetate	(1) 1000-mL plastic
									Nitrate	300.0 / 300.1	48 hours	Cool to 4°C	(1) 500-mL plastic
									Nitrite	300.0 / 300.1	48 hours	Cool to 4°C	(1) 500-mL plastic
									Methane	RSK-175	14 days	Cool to 4°C, pH <2 w/HCl, no headspace	(2) 40 mL vials
	Trip Blank	Water	1 per cooler containing volatile samples	7	Prepared by Lab	N/A	14 days		BTEX and naphthalene	8260B	14 days	HCl pH< 2; Cool to 4°C	(2) 40 mL vials
Waste Characterization Sampling													
Disposal of Liquid Waste from well development, purge water, etc.	55-gallon drums containing liquid waste	Water	One per event	7	Grab	Drum thief or dip jar	7 days	DQO Level III, CCI Level B	TCL Volatiles	8260B	14 days	HCl pH< 2; Cool to 4°C	(2) 40 ml vial
									TCL Semi-volatiles	8270C	7 days ext; 40-days analysis	Cool to 4°C	(2) 1-L amber glass

TABLE 1
Requirements for Sample Collection, Preservation, and Analysis

Sample Task	Sample Point	Matrix	Sampling Frequency (Note 1)	Approx Sample No	Sampling Method	Sampling Equipment	TAT	DQO Level/ Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservation	Containers
									TCL Pesticides	8081A	7 days ext; 40-days analysis		(2) 1-L amber glass
									Herbicides	8151A	7 days ext; 40-days analysis		(2) 1-L amber glass
									PCBs	8082	7 days ext; 40-days analysis		(2) 1-L amber glass
									TAL Metals	6010B/7470 A	180 days; Hg = 28 days	HNO_3 pH< 2; Cool to 4°C	(1) 500ml HDPE
									Ignitability	1010A/1030	ASAP	Cool to 4°C	(1) 500ml HDPE
									Corrosivity	9040B	ASAP		

Note 1: BTEX + Naphthalene, PAHs, TRPH, and MNA parameters will be collected from wells at both sites during the 1st and 3rd quarterly events in the first year; during both semiannual events in the second year; and annually during the 3rd year. Only the wells at the Building G-82 Site will be collected for these parameters during the 2nd and 4th quarterly events in the first year.

DQO – Data Quality Objective
MS/MSD – Matrix Spike/Matrix Spike Duplicate
PCBs – polychlorinated biphenyls
TAL – Target Analyte List
TCL – Target Compound List

2.5 Groundwater Sampling and Analyses

Samples will be collected from all BP Wells Site and Building G-82 Site wells and analyzed for BTEX and naphthalene, PAHs, and TRPH. In addition, samples will be collected from four wells at each site (eight total) for MNA analyses. Groundwater samples will be collected following the EPA's procedures for low-flow groundwater sampling. The procedure outlined below is based on the EPA's report entitled, "Ground Water Issue: Low-Flow (Minimal-Drawdown) Ground-Water Sampling Procedures," (EPA, 1996) and is as follows:

1. Slowly lower the decontaminated pump or pump intake to the middle of the screened interval to minimize excessive mixing of the stagnant water in the casing above the screen with water within screened zone and to minimize re-suspension of solids that may have accumulated at the bottom of the well.

2. Once the pump is positioned in the well, an airtight flow-through cell (equipped with a YSI-type water quality meter) will be connected to the water discharge line.

3. A water level meter will then be lowered into the well to monitor changes in water level during pumping. Once purging begins, water level measurements will be monitored, and pumping rates will be adjusted so that the rate is between 0.1 to 0.3 liter per minute (L/min) to maintain minimal drawdown.

4. While purging, field parameters (DO, pH, temperature, conductivity, salinity, turbidity, and ORP) will be measured every 3 to 5 minutes using a YSI-type meter and will be recorded until all parameters have stabilized for 3 consecutive readings. Once field parameter stabilization is achieved, the sample bottles will be filled.

5. Water samples will be collected by directing the groundwater discharge stream from the pump so that it runs down the inside of the sample bottle with a minimum amount of splashing. To minimize VOC loss, samples to be analyzed for BTEX and naphthalene will be collected first, followed by the analyses for PAHs, TRPH, sulfate/sulfide, alkalinity, nitrate/nitrite, total organic carbon, and ferrous iron. The sample bottles for each analysis are as follows:

   - BTEX and naphthalene by EPA Method 8260B: Three 40-milliliter (mL) volatile organic analytic (VOA) vials containing a hydrochloric acid (HCl) preservative. Fill bottles so there is no headspace within the bottles.

   - PAHs by EPA Method 8270SIM: Two 1-liter amber bottles. Fill to the top of the bottle.

   - TRPH by the FL-PRO Method: Two 1-liter amber bottles containing either hydrochloric acid (HCl) or sulfuric acid (H_2SO_4) preservative. Fill to the top of the bottle.

   - Sulfide by Method SM 4500S_2-F: One 1,000-mL bottle containing sodium hydroxide (NaOH) and zinc acetate preservative for sulfide. Fill to the top of each bottle.

   - Nitrate, nitrite, and sulfate by EPA Method 300.0: One 1000-mL plastic bottle. Fill to the top of the bottle.

- Methane by RSK-175: Two 40-mL VOA vials or amber glass bottle containing either HCl preservative. Fill with no headspace.

6. Cap each bottle and affix label to the bottle. Label information will include laboratory, project name and number, sample identification, station identification, preservative, analysis, sampler's initials, sample date, and time. Place samples in appropriate containers and pack with ice in coolers.

Requirements for sample collection, preservation, and analysis are listed in Table 1. Samples will be delivered to the laboratory as soon as possible to allow the samples to be analyzed within the specified holding times. Requirements for quality assurance/quality control (QA/QC) samples are listed in Table 1.

Residual purge water collected during sampling will be transferred to a 55-gallon drum and will be characterized in accordance with this Sampling and Analysis Plan and disposed of based on the results of sampling analyses.

2.6 Waste Characterization and Incidental Waste Stream Sampling and Analyses

Waste characterization samples will be collected to evaluate the handling and treatment and disposal requirements of accumulated decontamination water and purge water. Water characterization samples will be collected from containment drums prior to disposal. One composite sample (and one grab for VOC analysis) will be collected per event. Water samples will be collected as follows and analyzed for the parameters listed in Table 1:

1. Use a bailer or dip jar and collect a water sample from its containment.
2. Fill the sample containers for volatile analyses first (grab sample). The 40-mL vials will be filled so that there is no headspace in each vial.
3. Then fill the sample containers for the remaining analyses.
4. Label and package the samples for shipment to the laboratory.

2.7 Equipment Decontamination

Sampling methods and equipment have been selected to minimize decontamination requirements and the possibility of cross-contamination. The following procedure will be used for all sampling equipment used to collect routine samples undergoing trace organic or inorganic analyses.

Reusable sampling equipment will be decontaminated before the initial sample is collected and between sampling locations using the following procedure:

1. Clean with potable water and Alconox® or equivalent laboratory grade detergent using a brush, if necessary, to remove particulate matter and surface films.
2. Rinse thoroughly with potable water.
3. Rinse thoroughly with analyte-free water.
4. Rinse thoroughly with isopropanol (pesticide-grade). Do not rinse polyvinyl chloride or plastic items with isopropanol.

5. Rinse thoroughly with organic/analyte-free water.
6. Allow equipment to air dry completely.

2.8 Sample Documentation

Sampling documentation will include the following:

- Numbered Chain-of-Custody Forms
- Sample log book, which includes the following information:
  - Name of laboratories and contacts to which the samples were sent, turnaround time requested, and data results, when possible
  - Termination of a sample point or parameter and reasons
  - Unusual appearance or odor of a sample
  - Measurements, volume of flow, temperature, and weather conditions
  - Details of QC samples obtained
  - Field analytical equipment, and equipment utilized to make physical measurements
  - Calculations, results, and calibration data for field sampling, field analytical, and field physical measurement equipment
  - Sampling station identification
  - Date and time of sample collection
  - Sampler(s)' name(s) and company
  - How the sample was collected
  - Weather conditions that may affect the sample (e.g., rain, extreme heat or cold, wind, etc.)
- Sample Labels
- Custody Seals

2.9 Field Quality Control

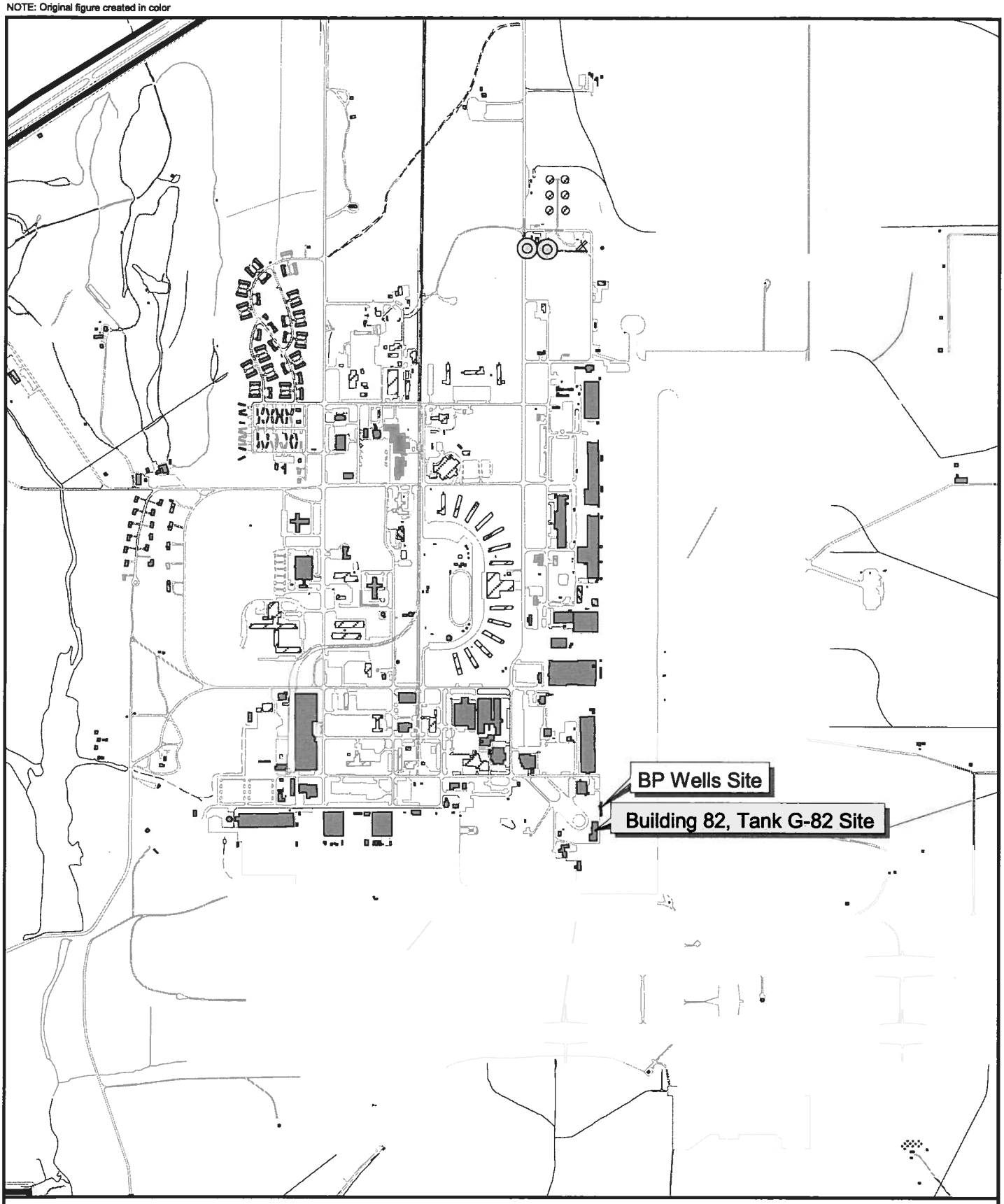
Field duplicate samples and equipment blank samples will be collected at a minimum frequency of 10 percent times the total number of samples (rounded to nearest whole number) collected for an analysis. One trip blank sample will be provided at a frequency of one per sample cooler containing volatile samples. MS/MSDs will be required at a frequency of one per sample event or a minimum of 5 percent of the total number (rounded to nearest whole number) of samples collected for an analysis. QC samples are not required for waste characterization. Quantity and frequency are detailed in Table 1.

2.10 Reporting

A report will be compiled at the completion of each of the monitoring events. Each performance monitoring report will include a description of the field sampling event, field data, updated potentiometric surface maps, validated analytical data from the monitoring event, a discussion of the MNA parameters, and charts showing trends of contaminants of concern concentrations over the period of the MNA long-term monitoring.

Figures

NOTE: Original figure created in color



N

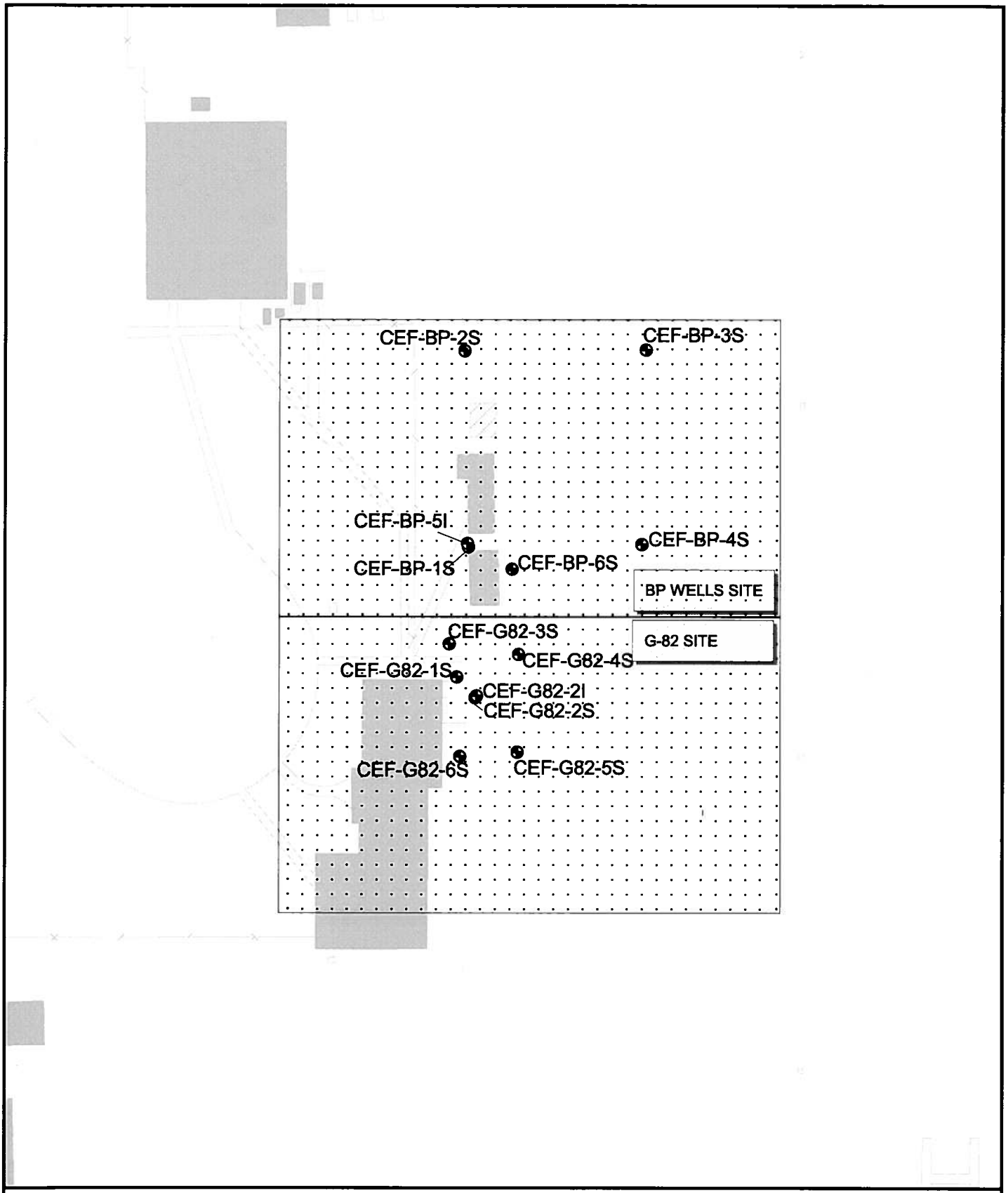
0 1000 2000 Feet

1 inch = 1376.99 feet

Figure 1
Site Location
Bldg. G-82 and BP Wells Sites
Former NAS Cecil Field, Jacksonville, FL

CH2MHILL

File Path: c:\gis\nas_cecilfield.apr, Date: 30 Oct 2006 14:38, User: SNAIK1, NAS Cecil Field Area [Florida State Plane Coordinate System NAD 83 Units Feet] - Figure 1-1 Site Location



N

0 80 160 Feet

1 inch = 124 feet

Figure 2
Locations of Groundwater Monitoring Wells
Building G-82 and BP Wells Sites
Former NAS Cecil Field, Jacksonville, FL

CH2MHILL

File Path: c:\gis\nas_cecilfield.apr, Date: 05 May 2008 13:35, User: SNAIK1, NAS Cecil Field Area [Florida State Plane Coordinate System NAD 83 Units Feet] - Figure 2 Locations of Groundwater Monitoring Wells

Attachment 1

2007 CH2M HILL Technical Memorandum

Evaluation of Groundwater Analytical Results from BP Wells Site and Building 82 (Tank G82) Former Naval Air Station Cecil Field, Jacksonville, Florida

PREPARED FOR: Mark Davidson/BRAC PMO-SE
David Grabka/FDEP

PREPARED BY: David Beverly/CH2M HILL

COPIES: Sam Naik/CH2M HILL
CTO 0086 Project File

DATE: April 27, 2007

1.0 Introduction

This technical memorandum summarizes the findings from the sitewide groundwater monitoring conducted by CH2M HILL Constructors, Inc. (CH2M HILL) at the BP Wells Site and Building 82 Site (Tank G-82) at the former Naval Air Station (NAS) Cecil Field, Jacksonville, Florida. This site-wide groundwater monitoring effort was conducted to assess current groundwater quality conditions and to evaluate whether natural attenuation of site contaminants is occurring at these two sites. This work was conducted based on the methodology described in the *Work Plan Addendum No. 18, CTO 86, NAS Cecil Field, Jacksonville, Florida* (CH2M HILL, November 2006).

2.0 Groundwater Monitoring

Figure 1 shows the locations of the BP Wells site and the Building G-82 site. Figure 2 shows the locations of the monitoring wells at these two sites.

The following monitoring wells at the BP well site and the Building G-82 Site were sampled in November 2006 for contaminant characterization:

- **BP Wells Site**: CEF-BP-1S, CEF-BP -2S, CEF-BP -3S, CEF-BP -4S, CEF-BP -5I, and –6S
- **Building G82 Site**: CEF-G82-1S, CEF-G82 -2I, CEF-G82-2S, CEF-G82-3S, CEF-G82-4S, CEF-G82-5I, and CEF-G82–6S

The groundwater samples from both sites were analyzed for the following parameters: volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Method 8260B, polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8310, and total recoverable petroleum hydrocarbons (TRPH) by the Florida Petroleum Residual Organic (FL PRO) method. The analytical results of these samples are summarized in Table 1.

The following groundwater monitoring wells were sampled for the monitored natural attenuation (MNA) parameters:

- **BP Wells Site:** CEF-BP-1S, CEF-BP -2S, CEF-BP -5I, and CEF-BP –6S
- **Building G82 Site:** CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, and CEF-G82–3S

The groundwater samples were analyzed for the following MNA parameters: dissolved methane by EPA Method 8315, nitrate and nitrite by EPA Method 353.2, sulfate by EPA Method 375.4, sulfide by EPA Method 376.2, total organic carbon (TOC) by EPA Method 415.1 and total inorganic carbon (TIC) by EPA Method 415.1. The MNA groundwater analytical results are summarized in Table 2.

The groundwater in each monitoring well was tested in the field for pH, conductivity, turbidity, dissolved oxygen (DO), oxidation reducing potential (ORP) and temperature, as part of the sampling protocol. The results of the field tests are included in Table 2. The analytical laboratory and data validation reports for the groundwater sampling event are included in Attachment 1.

3.0 Summary of Findings from Groundwater Sampling

3.1 Contaminant Characterization Sampling Results

BP Wells Site

The following parameters were detected concentrations above the Florida Groundwater Cleanup Target Levels (GCTLs) during the November 2006 sampling event: isopropyl-benzene (cumene), ethylbenzene, total xylenes, 1,3,5-trimethylbenzene, and 1,2,4-trimethylbenzene. All reported exceedances were in well CEF-BP-1S. None of these detections exceeded the Florida Natural Attenuation Default Concentration (NADC) criteria. The remaining wells at the BP Wells site did not show any exceedances of either the GCTLs or NADC criteria.

A summary of the 2003 historical analytical results from the BP Well Site is included in Attachment 2. The following parameters were detected historically at concentrations above the GCTLs in well CEF-BP-1S: ethylbenzene, total xylenes, 1,3,5-trimethylbenzene, and 1,2,4-trimethylebenzene. In general, these site groundwater constituents at the BP Wells Site have decreased in concentrations when compared to the previous sampling events conducted during 2003.

Building G-82 Site

The following parameters were detected at concentrations above the GCTLs during the November 2006 monitoring well sampling event: isopropylbenzene (cumene), naphthalene and 1-methylnaphthalene in wells CEF-G82-1S and CEF-G82-2S; 2-methylnaphthalene in well CEF-G82-2S; and benzo(a)pyrene and dibenz(a,h)anthracene in well CEF-G82-1S. The benzo(a)pyrene detection of 7.95 micrograms per liter (µg/L) and the dibenz(a,h)anthracene detection of 35.9 µg/L in well CEF-G82-1S also exceeded NADC standards of 2 µg/L and 0.05 µg/L, respectively.

A summary of the historical analytical results from the Building 82 Site is presented in Attachment 3. No parameters were detected historically at concentrations above the GCTLs in well CEF-G82-1S. The following parameters were historically detected at concentrations above the GCTLs in well CEF-BP-2S: benzene, ethylbenzene, total xylenes, 1-methyl-naphthalene, 2-methylnaphthalene, and naphthalene. In general, the concentrations of VOCs (benzene, ethylbenzene, and total xylenes) in well CEF-G82-2S from the November 2006 sampling event decreased in concentrations when compared to the previous sampling events. However, the concentrations of PAHs 1-methylnaphthalene, 2-methylnaphthalene, benzo(a)pyrene and dibenz(a,h)anthracene increased slightly when compared with historical results.

3.2 MNA Analytical Results

Geochemical data were evaluated to determine if natural attenuation is continuing to occur in groundwater at the two sites and if parameter concentrations are decreasing in response to naturally-occurring degradation processes. The evaluation involves comparing geochemical data from source area and downgradient monitoring wells to background values measured in upgradient wells. The parameters evaluated included DO, ORP, pH, nitrate and nitrite, sulfate and sulfide, and dissolved methane. A discussion of the results of each parameter is presented below.

3.2.1 BP Wells Site

Dissolved Oxygen

DO measurements were recorded in each monitoring well during the November 2006 groundwater sampling event. Typically, DO concentrations below 1.0 milligram per liter (mg/L) indicate conditions are anoxic and a reducing environment is present. DO concentrations at the BP Wells Site ranged from 0.6 mg/L (CEF-BP-1S) to 1.50 mg/L (CEF-BP-3S) as measured using the Chemetrics® field test kits. The DO concentration of 0.6 mg/L in well CEF-BP-1S was slightly below the DO measured in the upgradient (background) well CEF-BP-2S at 0.8 mg/L. With the exception of well CEF-BP-1S, which showed slightly elevated VOCs, the DO readings at the site are generally similar to background levels. These data suggest that subsurface conditions are suboptimal for aerobic hydrocarbon biodegradation. However, contaminant concentration reductions indicate that anaerobic biodegradation of contaminants could be occurring.

Oxidation/Reduction Potential (Redox potential)

Redox potential is a measure of the relative tendency of ions in solution to transfer electrons. As electron acceptors are utilized, the redox potential of the groundwater decreases. As DO is consumed, the redox potential will decline and become negative. Redox potentials across the BP Well Site ranged from –126 millivolts (mV) to 186.7 mV. The lowest redox level was measured in CEF BP-6S. Negative redox potentials were also measured in source area monitoring well CEF-BP-1S, which suggests that reducing conditions are favorable for biodegradation in the vicinity of CEF-BP-1S. This is the only well with parameter concentrations above GCTLs.

pH

The pH of groundwater has an effect on the presence and activity of microbial populations in groundwater. Microbes capable of degrading petroleum hydrocarbons generally prefer pH values varying from 6 to 8 standard units. The pH values range from 5.13 (CEF-BP-5I) to 6.49 (CEF-BP-1S) with a background value of 6.37 (CEF-BP-2S), generally within the preferred range of values for microbial activity.

Nitrate/Nitrite

After DO has been depleted, biodegradation of hydrocarbons may continue anaerobically using total nitrate and nitrite as electron acceptors (denitrification). Nitrate and nitrite concentrations will be lower in the wells containing hydrocarbons if biodegradation is occurring. Nitrate and nitrite were detected in three of the four monitoring wells in which the parameter was analyzed. The nitrate and nitrite concentrations, ranging from non-detect to 561 ug/L in the downgradient wells, were lower than the concentrations of the background well CEF-BP-2S (733 ug/L). The presence of nitrate/nitrite in the areas of impacted groundwater suggests that reducing conditions favorable for denitrification are not present.

Sulfate/Sulfide

After DO and total nitrogen have been depleted in the aquifer, sulfate may be used as an electron acceptor for anaerobic biodegradation. This process is termed sulfate reduction and results in the production of sulfide. Portions of the plume containing hydrocarbons and undergoing anaerobic biodegradation may have depleted the sulfate concentrations and elevated the sulfide concentrations. Sulfate reducing conditions are favorable at redox potentials of –200 mV and ph of 7. Sulfate was detected in each of the four wells that were monitored for the parameter. The concentrations of sulfate were higher in the downgradient wells than in the background well. The presence of sulfate in the areas of impacted groundwater at concentrations higher than background and low sulfide concentrations suggest that conditions favorable for sulfate reduction are not present.

Dissolved Methane

The presence of methane in groundwater at concentrations above background is a good indicator that methanogenesis is occurring. During methanogenesis, carbon dioxide is used as an electron acceptor and methane is formed. The presence of methane in groundwater is indicative of strong reducing conditions. Methane was detected in three of the four wells analyzed. The concentration of methane exceeded background concentrations in wells CEF-BP-1S, CEF-BP -5I, and CEF-BP-6S. The presence of methane above background concentrations may be indicative of anaerobic microbial degradation of hydrocarbons occurring at the site.

3.2.2 Building G-82 Site

Dissolved Oxygen

DO concentrations in groundwater at the Building G-82 site ranged from 0.36 mg/L (in well CEF-G82-2I) to 0.84 mg/L (in well CEF-G82-5S). The DO concentrations measured in wells CEF-G82-1S, CEF-G82-2I, CEF-G82-2S, CEF-G82-4S, and CEF-G82–6S were below those in

the background well CEF-G82-3S. These data suggest that subsurface conditions are suboptimal for aerobic hydrocarbon biodegradation. However, general reductions in VOC concentrations over time indicate that biological degradation of contaminants is occurring.

Oxidation/Reduction Potential

Redox potentials across the Building G-82 Site ranged from –127.2 mV to 233.8 mV. The lowest redox level was measured in well CEF-G82-2S at -127.2 mV. Significantly negative redox potentials were measured only in monitoring wells CEF-G82-1S and CEF-G82–2I, suggesting that reducing conditions are prevalent in the vicinity of these wells, which are the only wells with contaminant concentrations above GCTLs.

pH

The pH of groundwater has an effect on the presence and activity of microbial populations in groundwater. Microbes capable of degrading petroleum hydrocarbons generally prefer pH values varying from 6 to 8 standard units. The pH values range from 4.97 (CEF-G82-4S) to 6.02 (CEF-G82-2S) with a background value of 5.81 (CEF-G82-3S), indicating that optimal pH conditions for microbial activity are not present at all locations at this site.

Nitrate/Nitrite

Nitrate and nitrite were detected in each of the four monitoring wells in which the parameter was analyzed. The nitrate and nitrite concentrations ranging from 44 to 66 ug/L in the downgradient wells were similar to the concentration in background well CEF-G82-3S (72 µg/L). The presence of nitrate and nitrite in the areas of impacted groundwater suggests that reducing conditions favorable for denitrification are not present.

Sulfate/Sulfide

Sulfate was detected in two of the four wells that were monitored for the parameter. The concentrations of sulfate were lower in the downgradient wells than the background well. The presence of sulfate in the areas of impacted groundwater at concentrations higher than background suggests that subsurface conditions at the site may not be favorable for sulfate reduction.

Dissolved Methane

Dissolved methane was detected in each of the four wells analyzed. The concentration of methane exceeded background in wells CEF-G82-1S, CEF-G82-2I, and CEF-G82-2S. Because methane is not present in gasoline or diesel fuel, the presence of methane above background concentrations may be indicative of anaerobic microbial degradation of hydrocarbons.

4.0 Conclusions

At the BP Wells Site, the following parameters were detected at concentrations above the GCTLs during the November 2006 sampling event: isopropylbenzene (cumene), ethylbenzene, total xylenes, 1,3,5-trimethylbenzene, and 1,2,4-trimethylebenzene in well CEF-BP-1S. Contaminant concentrations exceeded the GCTLs at only one monitoring well (CEF-BP-1S). Based on the laboratory analytical results, site contaminant concentrations in remaining wells at the BP Well site did not exceed GCTLs, and none of the detected

concentrations at this site exceed the NADC criteria. In general, the November 2006 site groundwater contaminant concentrations at the BP Wells site have decreased when compared to the historical sampling events. The MNA sampling data indicate that anaerobic degradation processes may be prevalent at the site.

Based on the analytical results, the residual groundwater contamination at this site appears to remain localized around the source area well CEF-BP-1S and does not appear to have migrated downgradient since the last sampling event in October 2003. Additionally, the impervious paved surface at the site acts as a barrier against the infiltration of precipitation, thus reducing the contaminant migration potential.

At the Building G-82 Site, the following parameters were detected at concentrations above the GCTLs during the well November 2006 sampling event: isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, benzo(a)pyrene and dibenz(a,h)-anthracene. Only the dibenz(a,h)anthracene detection in well CEF-G82-1S exceeded the NADC criteria.

In summary, the concentrations of VOCs (benzene, ethylbenzene, and xylenes) in the source area well CEF-G82-2S have decreased in concentrations when compared to the previous sampling events, and the concentrations of PAHs have remained similar in CEF-G82-2S and increased slightly in well CEF-G82-1S, when compared to the historical results.

The single NADC exceedance in the source well CEF-G82-1S of dibenz(a,h)anthracene and the appearance of benzo(a)pyrene (two compounds which were not previously detected at the site above laboratory detection limits) appear to be anomalous. The PAH concentrations in CEF-G82-1S should be monitored further to establish concentration trends over time.

Tables

TABLE 1
Groundwater Analytical Results
Bldg. G82 and BP Site Groundwater

Parameter			BP WELL SITE							Building 82 Tank G82 Site							
	Station ID		CEF-BP-1S	CEF-BP-2S	CEF-BP-3S	CEF-BP-4S		CEF-BP-5I	CEF-BP-6S	CEF-G82-1S	CEF-G82-2I		CEF-G82-2S	CEF-G82-3S	CEF-G82-4S	CEF-G82-5S	CEF-G82-6S
	Sample ID		86BP1SW061108	86BP2SW061107	86BP3SW061102	86BP4SW061102	86BPDPW061102	86BP5IW061107	86BP6SW061108	86G821SW061108	86G822IW061106	86G82DPW061106	86G822SW061106	86G823SW061106	86G824SW061102	86G825SW061102	86G826SW061102
	Sample Date		11/8/2006	11/7/2006	11/2/2006	11/2/2006	11/2/2006	11/7/2006	11/8/2006	11/8/2006	11/6/2006	11/6/2006	11/6/2006	11/6/2006	11/2/2006	11/2/2006	11/2/2006
	GCTL[1]	NADC					FIELD DUP					FIELD DUP					
SW8260B	Units in ug/L																
1,1,2-trichloro-1,2,2-trifluoroethane	210000	2100000	1.15 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trichlorobenzene	70	700	3.34 JB	5 U	5 U	5 U	5 U	5 U	3.39 JB	3.44 JB	1.08 J	5 U	5 U	5 U	3.55 J	3.57 J	5 U
1,2,4-Trimethylbenzene	10	100	**60.8 JB**	5 U	0.201 J	5 U	5 U	5 U									
1,3,5-Trimethylbenzene (Mesitylene)	10	100	**19 JB**	5 U	0.224 J	5 U	5 U	5 U									
1,2-Dichlorobenzene	600	6000	5 UJ	5 U	0.277 J	5 U	5 U	5 U	5 UJ	5 UJ	5 U	0.35 J	5 U	5 UJ	5 U	5 U	5 U
1,3-Dichlorobenzene	210	2100	5 U	5 U	0.25 JB	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	6300	63000	5.42 JB	89	25 UJ	25 UJ	25 UJ	25 U	25 JB	32.8 JB	3.25 J	6.72 B	18 J	15.9 B	7.38 JB	17.1 JB	25 U
Benzene	1	10	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.447 J	5 U	5 U	5 U	5 U	5 U
Bromomethane	9.8	98	5 U	5 UJ	5 U	5 U	5 U	5 UJ	0.924 JB	5 U	5 UJ	0.74 B	5 UJ	0.926 B	5 U	5 U	5 U
cyclohexane	NE	NE	5.74	5 U	5 U	5 U	5 U	5 U	5 U	3.97 J	5 U	5 U	2.62 J	5 U	5 U	5 U	5 U
Ethylbenzene	30	300	**53.1**	5 U	5 U	5 U	5 U	5 U	0.458 J	6.21	5 U	5 U	11.1	5 U	0.433 J	5 U	5 U
Isopropylbenzene (Cumene)	0.8	8	**5.61**	5 U	0.179 J	5 U	5 U	5 U	5 U	**3.66 J**	5 U	5 U	**4.02 J**	5 U	5 U	5 U	5 U
methylcyclohexane	NE	NE	9.53	5 U	0.173 J	5 U	5 U	5 U	3.95 J	4.04 J	5 U	5 U	3.23 J	5 U	5 U	5 U	5 U
Methylene chloride	5	50	10 U	10 U	1.74 JB	1.58 JB	1.46 JB	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene (PCE)	3	30	5 UJ	5 U	0.406 J	0.233 J	5 U	5 U	5 UJ	5 UJ	5 U	5 UJ	5 U	5 UJ	5 U	5 U	5 U
Toluene	40	400	3.16 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Xylenes, total	20	200	**101 J**	10 U	0.61 J	10 U	10 U	10 U	10 UJ	12.1 J	10 U	10 UJ	5.89 J	10 UJ	10 U	10 U	10 U
SW8310																	
1-methylnaphthalene	28	280	8.66 J	1 U	1 U	1 U	1 U	1 U	1 U	**48.8**	1 U	1 U	**138 J**	1 U	6.11 J	1 U	1 U
2-Methylnaphthalene	28	280	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	**65.9 J**	1 U	1 U	1 U	1 U
Acenaphthylene	210	2100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	5.54 J	1 U	1 U	1 U	1 U
Benzo(a)pyrene	0.2	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**7.95 J**	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
Dibenz(a,h)anthracene	0.005	0.05	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**35.9 J**	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
Fluorene	280	2800	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.51 J	0.5 U	0.5 U	3.98 J	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	14	140	6.47	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**40.7 J**	0.5 U	0.5 U	**56.5 J**	0.5 U	0.5 U	0.5 U	0.5 U
FLPRO																	
Petroleum hydrocarbons	5000	50000	459 B	126 B	86.4 B	112 B	114 B	69 JB	133 B	613 B	59 JB	59 JB	878 JB	54 JB	202 B	274 B	86 B

Notes:
All concentrations reported in micrograms per liter (ug/L).
GCTL - Groundwater Cleanup Target Level
NADC - Natural Attenuation Default Concentration
1 = Ch 62-777 FAC GCTLs reported in µg/L
U - The analyte was analyzed for, but not detected.
J - Result is estimated
UJ- Value non-detect, estimated.
JB- Estimated value; the analyte was detected in the associated method and/or calibration blank.
NE - Not Established at time of rule adoption
Bold indicates concentration exceeds GCTL.
Shaded indicates concentration exceeds NADC.

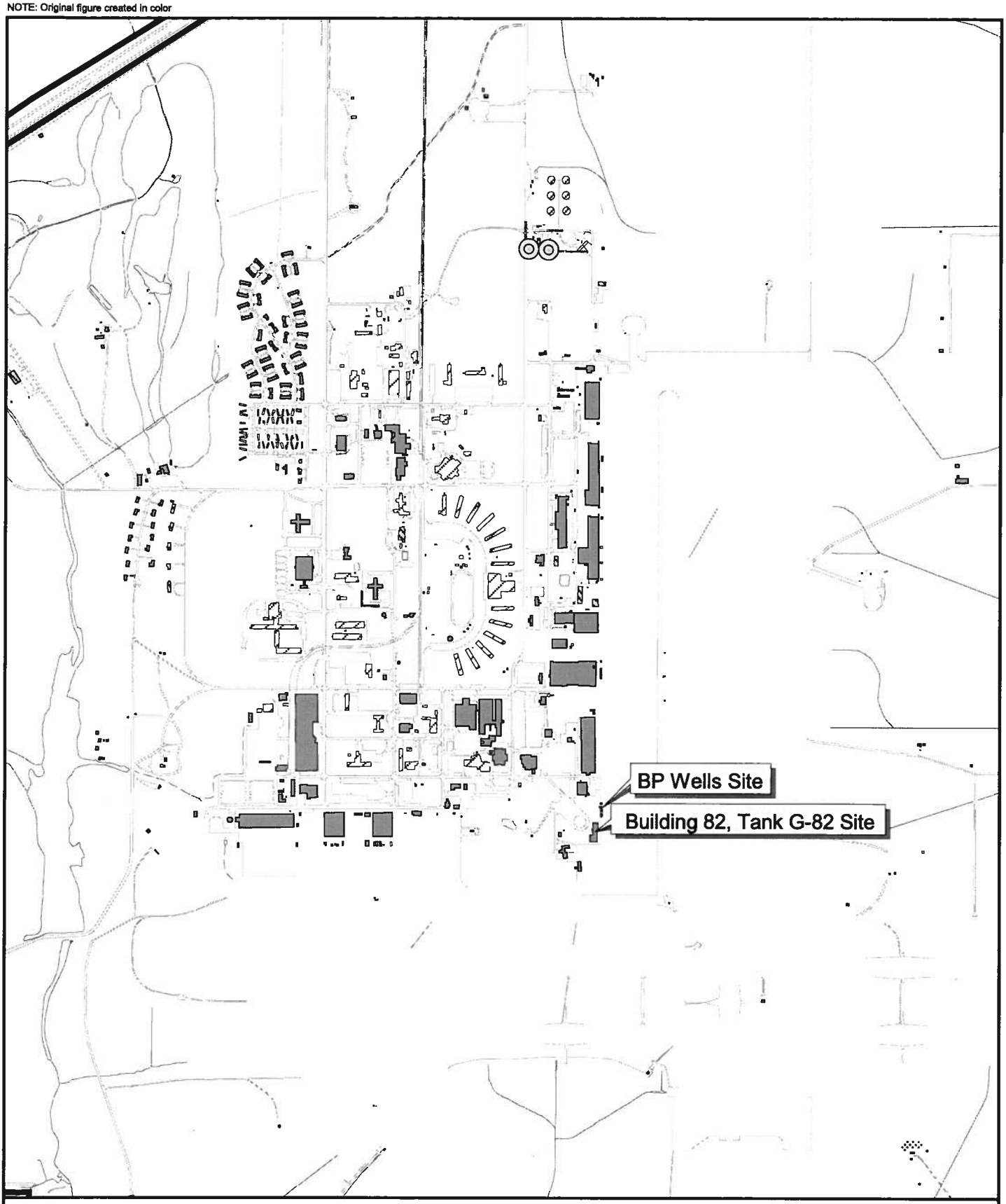
TABLE 2
MNA Parameter Results
Bldg. G82 and BP Site Groundwater

Station ID	CEF-BP-1S	CEF-BP-2S	CEF-BP-3S	CEF-BP-4S		CEF-BP-5I	CEF-BP-6S	CEF-G82-1S	CEF-G82-2I		CEF-G82-2S	CEF-G82-3S	CEF-G82-4S	CEF-G82-5S	CEF-G82-6S
Sample ID	86BP1SW061108	86BP2SW061107	86BP3SW061102	86BP4SW061102	86BPDPW061102	86BP5IW061107	86BP6SW061108	86G821SW061108	86G822IW061106	86G82DPW061106	86G822SW061106	86G823SW061106	86G824SW061102	86G825SW061102	86G826SW061102
Sample Date	11/8/2006	11/7/2006	11/2/2006	11/2/2006	11/2/2006	11/7/2006	11/8/2006	11/8/2006	11/6/2006	11/6/2006	11/6/2006	11/6/2006	11/2/2006	11/2/2006	11/2/2006
					FIELD DUP					FIELD DUP					
Parameter	Units in ug/L														
Nitrogen, nitrate (as n)	10 U	709 B	NA	NA	NA	561 B	10 U	10 U	10 U	10 U	36	65	NA	NA	NA
Nitrogen, nitrite	10 U	24	NA	NA	NA	10 U	3 J	44	66	59	18	7 J	NA	NA	NA
Sulfate (as SO4)	6300	4200 J	NA	NA	NA	10400	8600	5000 U	5000 J	5400	6800	31600	NA	NA	NA
E376.1															
Sulfide	4000 U	1600 J	NA	NA	NA	3200 J	4000 U	8000	3200 JB	3200 JB	5200 JB	2800 JB	NA	NA	NA
E415.1															
Total Inorganic Carbon	9400	6000	NA	NA	NA	24600	6800	6500	9600 JB	8400 JB	24900 JB	20000 JB	NA	NA	NA
Total organic carbon	9000	2300	NA	NA	NA	1000 U	8100	16700	910 J	1100	9900	7700	NA	NA	NA
RSK-175															
Methane	7.8	2 U	NA	NA	NA	1.26 J	1230	1340	2.27 JB	2.09 JB	680 JB	1.63 JB	NA	NA	NA
Field Parameteters															
pH	6.49	6.37	6.24	6.43	6.43	5.13	5.96	5.96	5.08	5.08	6.02	5.81	4.97	5.25	5
Cond. (mmhos/cm)	399	199	176	248	248	87	210	210	54	54	262	265	93	129	97
Dissolved Oxygen (mg/L) Field	0.3	0.53	1.97	0.69	0.69	1.07	0.37	0.37	0.36	0.36	0.51	0.78	0.64	0.84	0.65
Dissolved Oxygen (mg/L) Chemets	0.6	0.8	1.5	1	1	1	0.8	0.6	0.3	0.3	0.6	0.8	0.6	1	1
Dissolved Oxygen (mg/L) Hach	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.8	1
ORP (mV)	-117.9	129.9	186.7	76.5	76.5	261	-126	-126	-7	-7	-127.2	200.4	99.4	69.7	233.8
Temp. (°C)	24.4	25.5	28.5	28.2	28.2	23.79	23.28	23.2	23.6	23.6	24.5	24.4	28.5	26.9	24.5
Turbidity (NTUs)	0.33	7.6	7.57	29.7	29.7	0.73	3.67	61.7	99.3	99.3	21.1	3.92	4.3	5.83	24

J - Result is estimated.
UJ- Value non-detect, estimated.
JB- Estimated value; the analyte was detected in the associated method and/or calibration blank.
mS/cm = millisiemans per centimeter
NTU = nephelometric turbidity units
mg/L = milligrams per liter
°C = degrees Celsius
ORP = oxygen reducing potential
mV = millivolts
NA - Not analyzed

Figures

NOTE: Original figure created in color



N

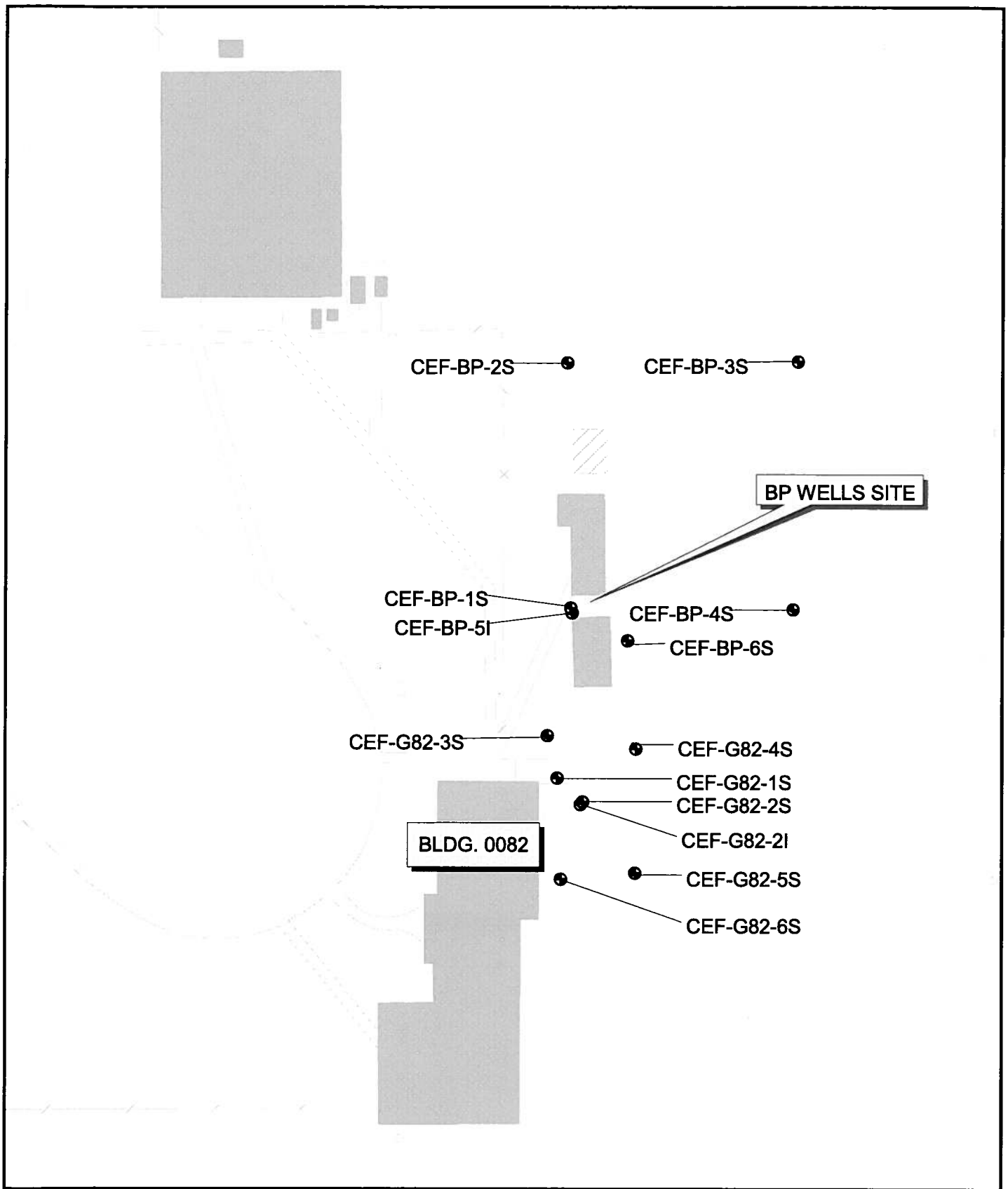
0 1000 2000 Feet

1 inch = 1376.99 feet

Figure 1
Site Location
Bldg. G-82 and BP Wells Sites
Former NAS Cecil Field, Jacksonville, FL

CH2MHILL

File Path: c:\gis\nas_cecilfield.apr, Date: 30 Oct 2006 14:38, User: SNAIK1, NAS Cecil Field Area [Florida State Plane Coordinate System NAD 83 Units Feet] - Figure 1-1 Site Location



● Monitoring Wells

N

0 60 120 Feet

1 inch = 78 feet

Figure 2
Locations of Groundwater Monitoring Wells
BP Wells and Bldg. G-82 Sites
Former NAS Cecil Field, Jacksonville, FL

CH2MHILL

File Path: c:\gis\nas_cecilfield.apr, Date: 25 Apr 2007 19:18, User: SNAIK1, NAS Cecil Field Area [Florida State Plane Coordinate System NAD 83 Units Feet] - Figure 1-2 Locations of Groundwater Monitoring Wells

Attachment 1

Laboratory Analytical Reports (provided on CD)

Attachment 2

BP Well Site Historical Analytical Results

Historical Detects in BP Wells - NAS Cecil Field

LOCID	SAMPLEID	QCTYPE	CAS	PARAMETER	RESULT	UNIT	QUALIFIER	FRACTION	MATI	SAMPLEDATE	SAMPLECODE
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	71-43-2	BENZENE	0.56	UG/L	J	OV	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	TTNUS001	TOTAL PETROLEUM HYDROCA	0.561	MG/L		PET	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	208-96-8	ACENAPHTHYLENE	2	UG/L		OS	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	7439-95-4	MAGNESIUM	9420	UG/L		M	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	7440-23-5	SODIUM	2430	UG/L		M	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	7439-97-6	MERCURY	0.11	UG/L		M	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	7440-66-6	ZINC	45.5	UG/L		M	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	91-20-3	NAPHTHALENE	3.9	UG/L		OS	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	108-88-3	TOLUENE	38.5	UG/L		OV	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	1330-20-7	TOTAL XYLENES	114	UG/L		OV	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	7440-09-7	POTASSIUM	2260	UG/L		M	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	100-41-4	ETHYLBENZENE	20.9	UG/L		OV	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	7439-89-6	IRON	209	UG/L		M	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	7440-39-3	BARIUM	5.6	UG/L		M	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	7440-70-2	CALCIUM	26800	UG/L		M	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	95-63-6	1,2,4-TRIMETHYLBENZENE	45.9	UG/L		OV	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	108-67-8	1,3,5-TRIMETHYLBENZENE	16.1	UG/L		OV	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-01	NM	91-57-6	2-METHYLNAPHTHALENE	2.7	UG/L		OS	GW	02/03/2000	NORMAL
CEF-BP-1S	CEF-BP1-GW-01S-02-D	FD	TTNUS054	M+P-XYLENES	67.1	UG/L		OV	GW	03/27/2000	DUP
CEF-BP-1S	CEF-BP1-GW-01S-02-D	FD	108-67-8	1,3,5-TRIMETHYLBENZENE	13.5	UG/L		OV	GW	03/27/2000	DUP
CEF-BP-1S	CEF-BP1-GW-01S-02-D	FD	95-63-6	1,2,4-TRIMETHYLBENZENE	39.7	UG/L		OV	GW	03/27/2000	DUP
CEF-BP-1S	CEF-BP1-GW-01S-02-D	FD	100-41-4	ETHYLBENZENE	15	UG/L		OV	GW	03/27/2000	DUP
CEF-BP-1S	CEF-BP1-GW-01S-02-D	FD	95-47-6	O-XYLENE	19.1	UG/L		OV	GW	03/27/2000	DUP
CEF-BP-1S	CEF-BP1-GW-01S-02-D	FD	108-88-3	TOLUENE	30.1	UG/L		OV	GW	03/27/2000	DUP
CEF-BP-1S	CEF-BP-GW-01S-01-D	FD	95-63-6	1,2,4-TRIMETHYLBENZENE	144	UG/L		OV	GW	04/11/2001	DUP
CEF-BP-1S	CEF-BP-GW-01S-01-D	FD	108-67-8	1,3,5-TRIMETHYLBENZENE	49.9	UG/L		OV	GW	04/11/2001	DUP
CEF-BP-1S	CEF-BP-GW-01S-01-D	FD	1330-20-7	TOTAL XYLENES	432	UG/L		OV	GW	04/11/2001	DUP
CEF-BP-1S	CEF-BP-GW-01S-01A	NM	95-63-6	1,2,4-TRIMETHYLBENZENE	156	UG/L		OV	GW	05/22/2001	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-01A	NM	108-67-8	1,3,5-TRIMETHYLBENZENE	53.8	UG/L		OV	GW	05/22/2001	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-01A	NM	1330-20-7	TOTAL XYLENES	634	UG/L		OV	GW	05/22/2001	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-02A	NM	95-63-6	1,2,4-TRIMETHYLBENZENE	360	UG/L		OV	GW	11/06/2001	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-02A	NM	108-67-8	1,3,5-TRIMETHYLBENZENE	124	UG/L		OV	GW	11/06/2001	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-02A	NM	1330-20-7	TOTAL XYLENES	894	UG/L		OV	GW	11/06/2001	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-03	NM	95-63-6	1,2,4-TRIMETHYLBENZENE	262	UG/L		OV	GW	10/03/2002	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-03	NM	100-41-4	ETHYLBENZENE	117	UG/L		OV	GW	10/03/2002	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-03	NM	1330-20-7	TOTAL XYLENES	658	UG/L		OV	GW	10/03/2002	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-04	NM	95-63-6	1,2,4-TRIMETHYLBENZENE	224	UG/L		OV	GW	01/06/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-04	NM	108-67-8	1,3,5-TRIMETHYLBENZENE	71.5	UG/L		OV	GW	01/06/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-04	NM	100-41-4	ETHYLBENZENE	161	UG/L		OV	GW	01/06/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-04	NM	1330-20-7	TOTAL XYLENES	811	UG/L		OV	GW	01/06/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-04A	NM	14797-55-8	NITRATE	0.41	MG/L		MISC	GW	01/30/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-04A	NM	TTNUS003	TOTAL ORGANIC CARBON	12	MG/L		MISC	GW	01/30/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-04A	NM	74-82-8	METHANE	14	UG/L		OV	GW	01/30/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01S-05-D	FD	74-82-8	METHANE	6.55	UG/L		OV	GW	04/17/2003	DUP
CEF-BP-1S	CEF-BP-GW-01S-05-D	FD	14797-55-8	NITRATE	0.12	MG/L		MISC	GW	04/17/2003	DUP

Historical Detects in BP Wells - NAS Cecil Field

LOCID	SAMPLEID	QCTYPE	CAS	PARAMETER	RESULT	UNIT	QUALIFIER	FRACTION	MAT	SAMPLEDATE	SAMPLECODE
CEF-BP-1S	CEF-BP-GW-01S-05-D	FD	TTNUS003	TOTAL ORGANIC CARBON	11.7	MG/L		MISC	GW	04/17/2003	DUP
CEF-BP-1S	CEF-BP-GW-01S-05-D	FD	95-63-6	1,2,4-TRIMETHYLBENZENE	273	UG/L		OV	GW	04/17/2003	DUP
CEF-BP-1S	CEF-BP-GW-01S-05-D	FD	108-67-8	1,3,5-TRIMETHYLBENZENE	144	UG/L		OV	GW	04/17/2003	DUP
CEF-BP-1S	CEF-BP-GW-01S-05-D	FD	100-41-4	ETHYLBENZENE	184	UG/L		OV	GW	04/17/2003	DUP
CEF-BP-1S	CEF-BP-GW-01S-05-D	FD	1330-20-7	TOTAL XYLENES	542	UG/L		OV	GW	04/17/2003	DUP
CEF-BP-1S	CEF-BP-GW-01-06	NM	74-82-8	METHANE	24.5	UG/L		OV	GW	07/17/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01-06	NM	108-67-8	1,3,5-TRIMETHYLBENZENE	38.4	UG/L		OV	GW	07/17/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01-06	NM	95-63-6	1,2,4-TRIMETHYLBENZENE	118	UG/L		OV	GW	07/17/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01-06	NM	100-41-4	ETHYLBENZENE	48	UG/L		OV	GW	07/17/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01-06	NM	1330-20-7	TOTAL XYLENES	236	UG/L		OV	GW	07/17/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-01-06	NM	TTNUS003	TOTAL ORGANIC CARBON	13	MG/L		MISC	GW	07/17/2003	NORMAL
CEF-BP-1S	CEF-BP-GW-1S-07-D	FD	1330-20-7	TOTAL XYLENES	1040	UG/L		OV	GW	10/16/2003	DUP
CEF-BP-1S	CEF-BP-GW-1S-07-D	FD	TTNUS003	TOTAL ORGANIC CARBON	12.4	MG/L		MISC	GW	10/16/2003	DUP
CEF-BP-1S	CEF-BP-GW-1S-07-D	FD	74-82-8	METHANE	28.3	UG/L		OV	GW	10/16/2003	DUP
CEF-BP-1S	CEF-BP-GW-1S-07-D	FD	108-67-8	1,3,5-TRIMETHYLBENZENE	130	UG/L		OV	GW	10/16/2003	DUP
CEF-BP-1S	CEF-BP-GW-1S-07-D	FD	95-63-6	1,2,4-TRIMETHYLBENZENE	460	UG/L		OV	GW	10/16/2003	DUP
CEF-BP-1S	CEF-BP-GW-1S-07-D	FD	100-41-4	ETHYLBENZENE	207	UG/L		OV	GW	10/16/2003	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7429-90-5	ALUMINUM	1790	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7440-70-2	CALCIUM	41200	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7439-95-4	MAGNESIUM	1010	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7440-39-3	BARIUM	11.5	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7440-50-8	COPPER	1.2	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7439-89-6	IRON	758	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7439-97-6	MERCURY	0.19	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7440-66-6	ZINC	8.6	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7440-23-5	SODIUM	12100	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7440-62-2	VANADIUM	9.2	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP1-GW-02S-01-D	FD	7440-09-7	POTASSIUM	3270	UG/L		M	GW	02/03/2000	DUP
CEF-BP-2S	CEF-BP-GW-02S-04A	NM	74-82-8	METHANE	1.4	UG/L		OV	GW	01/30/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-02S-04A	NM	14797-55-8	NITRATE	0.88	MG/L		MISC	GW	01/30/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-02S-04A	NM	TTNUS003	TOTAL ORGANIC CARBON	4	MG/L		MISC	GW	01/30/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-02S-05	NM	14797-55-8	NITRATE	0.34	MG/L		MISC	GW	04/17/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-02S-05	NM	TTNUS003	TOTAL ORGANIC CARBON	4.7	MG/L		MISC	GW	04/17/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-02S-05	NM	74-82-8	METHANE	5.76	UG/L		OV	GW	04/17/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-02S-06	NM	TTNUS003	TOTAL ORGANIC CARBON	4.8	MG/L		MISC	GW	07/17/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-2S-07	NM	TTNUS003	TOTAL ORGANIC CARBON	4.6	MG/L		MISC	GW	10/16/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-2S-07	NM	14797-55-8	NITRATE	0.33	MG/L		MISC	GW	10/16/2003	NORMAL
CEF-BP-2S	CEF-BP-GW-2S-07	NM	74-82-8	METHANE	12.9	UG/L		OV	GW	10/16/2003	NORMAL
CEF-BP-6S	CEF-BP1-GW-06S-01	NM	67-64-1	ACETONE	26.3	UG/L		OV	GW	03/27/2000	NORMAL
CEF-BP-6S	CEF-BP1-GW-06S-01	NM	67-66-3	CHLOROFORM	1.1	UG/L		OV	GW	03/27/2000	NORMAL
CEF-BP-6S	CEF-BP-GW-06S-04A	NM	14797-55-8	NITRATE	0.13	MG/L		MISC	GW	01/30/2003	NORMAL
CEF-BP-6S	CEF-BP-GW-06S-04A	NM	TTNUS003	TOTAL ORGANIC CARBON	9	MG/L		MISC	GW	01/30/2003	NORMAL
CEF-BP-6S	CEF-BP-GW-06S-04A	NM	74-82-8	METHANE	136	UG/L		OV	GW	01/30/2003	NORMAL
CEF-BP-6S	CEF-BP-GW-06S-05	NM	14797-55-8	NITRATE	0.71	MG/L		MISC	GW	04/17/2003	NORMAL
CEF-BP-6S	CEF-BP-GW-06S-05	NM	TTNUS003	TOTAL ORGANIC CARBON	6.1	MG/L		MISC	GW	04/17/2003	NORMAL

Historical Detects in BP Wells - NAS Cecil Field

LOCID	SAMPLEID	QCTYPE	CAS	PARAMETER	RESULT	UNIT	QUALIFIER	FRACTION	MAT	SAMPLEDATE	SAMPLECODE
CEF-BP-6S	CEF-BP-GW-06S-05	NM	100-41-4	ETHYLBENZENE	1.2	UG/L		OV	GW	04/17/2003	NORMAL
CEF-BP-6S	CEF-BP-GW-06S-05	NM	74-82-8	METHANE	149	UG/L		OV	GW	04/17/2003	NORMAL
CEF-BP-6S	CEF-BP-GW-06S-06-D	FD	100-41-4	ETHYLBENZENE	0.51	UG/L	J	OV	GW	07/17/2003	DUP
CEF-BP-6S	CEF-BP-GW-06S-06-D	FD	TTNUS003	TOTAL ORGANIC CARBON	6.6	MG/L		MISC	GW	07/17/2003	DUP
CEF-BP-6S	CEF-BP-GW-06S-06-D	FD	14797-55-8	NITRATE	0.33	MG/L		MISC	GW	07/17/2003	DUP
CEF-BP-6S	CEF-BP-GW-06S-06-D	FD	74-82-8	METHANE	87.2	UG/L		OV	GW	07/17/2003	DUP
CEF-BP-6S	CEF-BP-GW-6S-07	NM	TTNUS003	TOTAL ORGANIC CARBON	8.5	MG/L		MISC	GW	10/16/2003	NORMAL
CEF-BP-6S	CEF-BP-GW-6S-07	NM	14797-55-8	NITRATE	0.34	MG/L		MISC	GW	10/16/2003	NORMAL
CEF-BP-6S	CEF-BP-GW-6S-07	NM	74-82-8	METHANE	738	UG/L		OV	GW	10/16/2003	NORMAL

Attachment 3

Building G82 Site Historical Analytical Results

TABLE 3-1

SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER
SITE ASSESSMENT REPORT BUILDING 82, TANK G82
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA
PAGE 1 OF 2

Location Sample Number Sample Date Well Depth, Feet	FDEP GCTL, FAC 62-777	CEF-G82-1S CEF-G82-GW-1S-01 07-Oct-99 15	CEF-G82-2S CEF-G82-GW-2S-01 07-Oct-99 14	CEF-G82-3S CEF-G82-GW-3S-01 07-Oct-99 14	CEF-G82-2I CEF-G82-GW-2I-02 22-Feb-00 35
Volatile Organic Compounds (ug/L)					
BENZENE	1	1 U	19	1 U	1 U
CHLOROFORM	5.7	1 U	2 U	1 U	1.2
ETHYLBENZENE	30	3.3	50	1 U	1 U
TOLUENE	40	1 U	6.8	1 U	1 U
XYLENES,TOTAL	20	3.8	196	3 U	3 U
Semivolatile Organic Compounds (ug/L)					
1-METHYLNAPHTHALENE	20	8.7 J	53.4 J	1.1 UJ	2.4 U
2-METHYLNAPHTHALENE	20	11.6 J	53.9 J	1.1 UJ	2.4 U
ACENAPHTHENE	20	1 UJ	1.8 J	1.1 UJ	2.4 U
ACENAPHTHYLENE	210	1 UJ	1.8 J	1.1 UJ	2.4 U
FLUORANTHENE	280	1 UJ	2.3 J	1.1 UJ	2.4 U
FLUORENE	280	1.9 J	6.3 J	1.1 UJ	2.4 U
NAPHTHALENE	20	6.8 J	24.5 J	1.1 UJ	2.4 U
PHENANTHRENE	210	4 J	18.7 J	1.1 UJ	2.4 U
Total Petroleum Hydrocarbons (mg/L)					
TRPH (C8-C40)	5	1.19	3.57	0.5 U	NM

Notes:

GCTL- Groundwater Cleanup Target Level
Shaded values are greater than criteria.
µg/L - migrogram per liter
mg/L - milligram per liter
NM - Not measured
U - Not detected at detection limit shown
J - Estimated value

ATTACHMENT B

GROUNDWATER ANALYTICAL REPORT
JANUARY 2009

Southeast ACCUTEST Laboratories

IT'S ALL IN THE CHEMISTRY

04/10/09

Technical Report for

Tetra Tech NUS

NAS Cecil Field-CTO-248

112GN4248

Accutest Job Number: F63008

Sampling Date: 01/27/09

Report to:

Tetra Tech, NUS

kara.wimble@tetratech.com

ATTN: Kara Wimble

Total number of pages in report: 35

ACCUTEST LABORATORIES 50 YEARS 1956-2006

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Harry Behzadi, Ph.D.
Laboratory Director

Client Service contact: Heather Wandrey 407-425-6700

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.

Test results relate only to samples analyzed.

Note: This report is password protected to disallow document modification or assembly.
A password to unlock this report is available from your client service representative.

Sections: 1 2 3 4

Table of Contents

-1-

Section 1: Sample Summary 3
Section 2: Case Narrative/Conformance Summary 4
Section 3: Sample Results 6
3.1: F63008-1: CEF-BP-2S-20090127 7
3.2: F63008-2: CEF-G82-3S-20090127 12
3.3: F63008-3: CEF-G82-1S-20090127 17
3.4: F63008-4: CEF-G82-2S-20090127 22
3.5: F63008-5: CEF-G82-2I-20090127 27
3.6: F63008-6: TRIP BLANK 32
Section 4: Misc. Forms 33
4.1: Chain of Custody 34

Accutest LabLink@88121 09:13 10-Apr-2009

Sample Summary

Tetra Tech NUS

Job No: F63008

NAS Cecil Field-CTO-248
Project No: 112GN4248

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
F63008-1	01/27/09	10:00 JK	01/28/09	AQ	Ground Water	CEF-BP-2S-20090127
F63008-2	01/27/09	11:15 JK	01/28/09	AQ	Ground Water	CEF-G82-3S-20090127
F63008-3	01/27/09	13:22 JK	01/28/09	AQ	Ground Water	CEF-G82-1S-20090127
F63008-4	01/27/09	14:25 JK	01/28/09	AQ	Ground Water	CEF-G82-2S-20090127
F63008-5	01/27/09	15:55 JK	01/28/09	AQ	Ground Water	CEF-G82-2I-20090127
F63008-6	01/27/09	00:00 JK	01/28/09	AQ	Trip Blank Water	TRIP BLANK

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** F63008

Site: NAS Cecil Field-CTO-248 **Report Date:** 2/16/2009 2:58:38 PM

5 Samples and 1 Trip Blank were collected on 01/27/2009 and were received at Accutest SE on 01/28/2009 properly preserved, at 2 Deg. C and intact. These Samples received an Accutest job number of F63008. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS by Method SW846 8260B

Matrix: AQ **Batch ID:** VN1346

All samples were analyzed within the recommended method holding time.

Samples F63008-3MS, F63008-3MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Matrix: AQ **Batch ID:** VN1347

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Samples F63061-7MS, F63061-7MSD were used as the QC samples indicated.

Extractables by GCMS by Method SW846 8270C BY SIM

Matrix: AQ **Batch ID:** OP27906

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Samples F63008-4MS, F63008-4MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Matrix Spike and Matrix Spike Duplicate Recoverys for Naphthalene, 2-Methylnaphthalene are outside control limits. Outside control limits due to high level in sample relative to spike amount.

OP27906-MB for Nitrobenzene-d5, 2-Fluorobiphenyl, Terphenyl-d14: Surrogate recoveries corrected for actual spike amount.

Volatiles by GC by Method RSKSOP-147/175

Matrix: AQ **Batch ID:** GXY1487

All samples were analyzed within the recommended method holding time.

Samples F63014-3DUP, F63014-3MS were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Extractables by GC by Method FLORIDA-PRO

Matrix: AQ **Batch ID:** OP27915

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Samples F63015-2MS, F63015-2MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Monday, February 16, 2009

Wet Chemistry by Method EPA 300/SW846 9056

Matrix: AQ **Batch ID:** GP12444

All samples were prepped within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Samples F63008-1DUP, F63008-1MS were used as the QC samples for Nitrogen, Nitrate, Nitrogen, Nitrite, Sulfate.

Matrix Spike Recoverys for Nitrogen, Nitrate, Nitrogen, Nitrite are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

Wet Chemistry by Method SM20 4500S F

Matrix: AQ **Batch ID:** GN33618

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Insufficient sample for matrix QC.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

Date: February 16, 2009

Ellen Pampel, Inorganic QA (signature on file)

Monday, February 16, 2009

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	CEF-BP-2S-20090127		
Lab Sample ID:	F63008-1	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0032775.D	1	02/04/09	MM	n/a	n/a	VN1346
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.40 U	1.0	0.40	ug/l	
108-88-3	Toluene	0.35 U	1.0	0.35	ug/l	
100-41-4	Ethylbenzene	0.43 U	1.0	0.43	ug/l	
1330-20-7	Xylene (total)	1.2 U	3.0	1.2	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	
98-82-8	Isopropylbenzene	0.20 U	1.0	0.20	ug/l	
95-63-6	1,2,4-Trimethylbenzene	0.22 U	2.0	0.22	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.20 U	2.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		87-116%
17060-07-0	1,2-Dichloroethane-D4	90%		76-127%
2037-26-5	Toluene-D8	103%		86-112%
460-00-4	4-Bromofluorobenzene	110%		84-120%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-BP-2S-20090127		
Lab Sample ID:	F63008-1	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W044603.D	1	02/03/09	RB	01/29/09	OP27906	SW2266
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.48 U	0.95	0.48	ug/l	
208-96-8	Acenaphthylene	0.48 U	0.95	0.48	ug/l	
120-12-7	Anthracene	0.48 U	0.95	0.48	ug/l	
56-55-3	Benzo(a)anthracene	0.048 U	0.19	0.048	ug/l	
50-32-8	Benzo(a)pyrene	0.048 U	0.19	0.048	ug/l	
205-99-2	Benzo(b)fluoranthene	0.048 U	0.19	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.048 U	0.19	0.048	ug/l	
207-08-9	Benzo(k)fluoranthene	0.048 U	0.19	0.048	ug/l	
218-01-9	Chrysene	0.095 U	0.19	0.095	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.048 U	0.19	0.048	ug/l	
206-44-0	Fluoranthene	0.24 U	0.95	0.24	ug/l	
86-73-7	Fluorene	0.48 U	0.95	0.48	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.048 U	0.19	0.048	ug/l	
90-12-0	1-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-57-6	2-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-20-3	Naphthalene	0.24 U	0.95	0.24	ug/l	
85-01-8	Phenanthrene	0.24 U	0.95	0.24	ug/l	
129-00-0	Pyrene	0.24 U	0.95	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	89%		42-108%
321-60-8	2-Fluorobiphenyl	88%		40-106%
1718-51-0	Terphenyl-d14	88%		39-121%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-BP-2S-20090127		
Lab Sample ID:	F63008-1	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY036382.D	1	01/30/09	CW	n/a	n/a	GXY1487
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	0.40	0.50	0.16	ug/l	I

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-BP-2S-20090127		
Lab Sample ID:	F63008-1	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	FLORIDA-PRO SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	IJ54785.D	1	01/30/09	SL	01/29/09	OP27915	GIJ1934
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	0.16 U	0.24	0.16	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	71%		38-122%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-BP-2S-20090127		
Lab Sample ID:	F63008-1	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
		Percent Solids:	n/a
Project:	NAS Cecil Field-CTO-248		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Nitrogen, Nitrate	0.61	0.10	0.050	mg/l	1	01/28/09 22:28	CC	EPA 300/SW846 9056
Nitrogen, Nitrite	0.87	0.10	0.050	mg/l	1	01/28/09 22:28	CC	EPA 300/SW846 9056
Sulfate	4.8	2.0	1.0	mg/l	1	01/28/09 22:28	CC	EPA 300/SW846 9056
Sulfide	0.60 U	1.0	0.60	mg/l	1	01/30/09	LE	SM20 4500S F

RL = Reporting Limit = PQL
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result >= MDL but < RL

Report of Analysis

Client Sample ID:	CEF-G82-3S-20090127		
Lab Sample ID:	F63008-2	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0032776.D	1	02/04/09	MM	n/a	n/a	VN1346
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.40 U	1.0	0.40	ug/l	
108-88-3	Toluene	0.35 U	1.0	0.35	ug/l	
100-41-4	Ethylbenzene	0.43 U	1.0	0.43	ug/l	
1330-20-7	Xylene (total)	1.2 U	3.0	1.2	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	
98-82-8	Isopropylbenzene	0.20 U	1.0	0.20	ug/l	
95-63-6	1,2,4-Trimethylbenzene	0.22 U	2.0	0.22	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.20 U	2.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		87-116%
17060-07-0	1,2-Dichloroethane-D4	89%		76-127%
2037-26-5	Toluene-D8	104%		86-112%
460-00-4	4-Bromofluorobenzene	109%		84-120%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-3S-20090127		
Lab Sample ID:	F63008-2	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W044604.D	1	02/03/09	RB	01/29/09	OP27906	SW2266
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.48 U	0.95	0.48	ug/l	
208-96-8	Acenaphthylene	0.48 U	0.95	0.48	ug/l	
120-12-7	Anthracene	0.48 U	0.95	0.48	ug/l	
56-55-3	Benzo(a)anthracene	0.048 U	0.19	0.048	ug/l	
50-32-8	Benzo(a)pyrene	0.048 U	0.19	0.048	ug/l	
205-99-2	Benzo(b)fluoranthene	0.048 U	0.19	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.048 U	0.19	0.048	ug/l	
207-08-9	Benzo(k)fluoranthene	0.048 U	0.19	0.048	ug/l	
218-01-9	Chrysene	0.095 U	0.19	0.095	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.048 U	0.19	0.048	ug/l	
206-44-0	Fluoranthene	0.24 U	0.95	0.24	ug/l	
86-73-7	Fluorene	0.48 U	0.95	0.48	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.048 U	0.19	0.048	ug/l	
90-12-0	1-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-57-6	2-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-20-3	Naphthalene	0.24 U	0.95	0.24	ug/l	
85-01-8	Phenanthrene	0.24 U	0.95	0.24	ug/l	
129-00-0	Pyrene	0.24 U	0.95	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	88%		42-108%
321-60-8	2-Fluorobiphenyl	83%		40-106%
1718-51-0	Terphenyl-d14	87%		39-121%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-3S-20090127		
Lab Sample ID:	F63008-2	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY036383.D	1	01/30/09	CW	n/a	n/a	GXY1487
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	0.50	0.50	0.16	ug/l	

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-3S-20090127		
Lab Sample ID:	F63008-2	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	FLORIDA-PRO SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	IJ54786.D	1	01/30/09	SL	01/29/09	OP27915	GIJ1934
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	0.16 U	0.24	0.16	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	88%		38-122%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-3S-20090127		
Lab Sample ID:	F63008-2	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
		Percent Solids:	n/a
Project:	NAS Cecil Field-CTO-248		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Nitrogen, Nitrate	1.4	0.10	0.050	mg/l	1	01/28/09 23:30	CC	EPA 300/SW846 9056
Nitrogen, Nitrite	1.7	0.10	0.050	mg/l	1	01/28/09 23:30	CC	EPA 300/SW846 9056
Sulfate	22.8	2.0	1.0	mg/l	1	01/28/09 23:30	CC	EPA 300/SW846 9056
Sulfide	0.60 U	1.0	0.60	mg/l	1	01/30/09	LE	SM20 4500S F

RL = Reporting Limit = PQL
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result >= MDL but < RL

Report of Analysis

Client Sample ID:	CEF-G82-1S-20090127		
Lab Sample ID:	F63008-3	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0032777.D	1	02/04/09	MM	n/a	n/a	VN1346
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.40 U	1.0	0.40	ug/l	
108-88-3	Toluene	0.35 U	1.0	0.35	ug/l	
100-41-4	Ethylbenzene	4.5	1.0	0.43	ug/l	
1330-20-7	Xylene (total)	3.0	3.0	1.2	ug/l	
91-20-3	Naphthalene	39.9	5.0	1.0	ug/l	
98-82-8	Isopropylbenzene	1.4	1.0	0.20	ug/l	
95-63-6	1,2,4-Trimethylbenzene	11.0	2.0	0.22	ug/l	
108-67-8	1,3,5-Trimethylbenzene	2.3	2.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		87-116%
17060-07-0	1,2-Dichloroethane-D4	90%		76-127%
2037-26-5	Toluene-D8	102%		86-112%
460-00-4	4-Bromofluorobenzene	103%		84-120%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-1S-20090127		
Lab Sample ID:	F63008-3	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W044605.D	1	02/03/09	RB	01/29/09	OP27906	SW2266
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	1.1	0.95	0.48	ug/l	
208-96-8	Acenaphthylene	0.48 U	0.95	0.48	ug/l	
120-12-7	Anthracene	0.48 U	0.95	0.48	ug/l	
56-55-3	Benzo(a)anthracene	0.048 U	0.19	0.048	ug/l	
50-32-8	Benzo(a)pyrene	0.048 U	0.19	0.048	ug/l	
205-99-2	Benzo(b)fluoranthene	0.048 U	0.19	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.048 U	0.19	0.048	ug/l	
207-08-9	Benzo(k)fluoranthene	0.048 U	0.19	0.048	ug/l	
218-01-9	Chrysene	0.095 U	0.19	0.095	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.048 U	0.19	0.048	ug/l	
206-44-0	Fluoranthene	0.24 U	0.95	0.24	ug/l	
86-73-7	Fluorene	1.5	0.95	0.48	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.048 U	0.19	0.048	ug/l	
90-12-0	1-Methylnaphthalene	14.7	0.95	0.24	ug/l	
91-57-6	2-Methylnaphthalene	23.0	0.95	0.24	ug/l	
91-20-3	Naphthalene	20.0	0.95	0.24	ug/l	
85-01-8	Phenanthrene	0.53	0.95	0.24	ug/l	I
129-00-0	Pyrene	0.24 U	0.95	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	83%		42-108%
321-60-8	2-Fluorobiphenyl	81%		40-106%
1718-51-0	Terphenyl-d14	86%		39-121%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-1S-20090127		
Lab Sample ID:	F63008-3	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY036403.D	5	01/30/09	CW	n/a	n/a	GXY1487
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	2850	2.5	0.80	ug/l	

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-1S-20090127		
Lab Sample ID:	F63008-3	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	FLORIDA-PRO SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	IJ54787.D	1	01/30/09	SL	01/29/09	OP27915	GIJ1934
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	0.752	0.24	0.16	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	96%		38-122%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-1S-20090127		
Lab Sample ID:	F63008-3	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
		Percent Solids:	n/a
Project:	NAS Cecil Field-CTO-248		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Nitrogen, Nitrate	0.050 U	0.10	0.050	mg/l	1	01/28/09 23:50	CC	EPA 300/SW846 9056
Nitrogen, Nitrite	1.6	0.10	0.050	mg/l	1	01/28/09 23:50	CC	EPA 300/SW846 9056
Sulfate	5.4	2.0	1.0	mg/l	1	01/28/09 23:50	CC	EPA 300/SW846 9056
Sulfide	2.5	1.0	0.60	mg/l	1	01/30/09	LE	SM20 4500S F

RL = Reporting Limit = PQL
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	CEF-G82-2S-20090127		
Lab Sample ID:	F63008-4	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0032778.D	1	02/04/09	MM	n/a	n/a	VN1346
Run #2	N0032815.D	2	02/05/09	MM	n/a	n/a	VN1347

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

Purgeable Aromatics, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.40 U	1.0	0.40	ug/l	
108-88-3	Toluene	0.35 U	1.0	0.35	ug/l	
100-41-4	Ethylbenzene	18.1	1.0	0.43	ug/l	
1330-20-7	Xylene (total)	6.9	3.0	1.2	ug/l	
91-20-3	Naphthalene	115 [a]	10	2.0	ug/l	
98-82-8	Isopropylbenzene	7.3	1.0	0.20	ug/l	
95-63-6	1,2,4-Trimethylbenzene	13.3	2.0	0.22	ug/l	
108-67-8	1,3,5-Trimethylbenzene	3.4	2.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%	99%	87-116%
17060-07-0	1,2-Dichloroethane-D4	90%	90%	76-127%
2037-26-5	Toluene-D8	101%	101%	86-112%
460-00-4	4-Bromofluorobenzene	99%	102%	84-120%

(a) Result is from Run# 2

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-2S-20090127		
Lab Sample ID:	F63008-4	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W044606.D	1	02/03/09	RB	01/29/09	OP27906	SW2266
Run #2	R17760.D	4	02/04/09	RB	01/29/09	OP27906	SR840

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2	1050 ml	1.0 ml

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	3.3	0.95	0.48	ug/l	
208-96-8	Acenaphthylene	0.57	0.95	0.48	ug/l	I
120-12-7	Anthracene	0.48 U	0.95	0.48	ug/l	
56-55-3	Benzo(a)anthracene	0.048 U	0.19	0.048	ug/l	
50-32-8	Benzo(a)pyrene	0.048 U	0.19	0.048	ug/l	
205-99-2	Benzo(b)fluoranthene	0.048 U	0.19	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.048 U	0.19	0.048	ug/l	
207-08-9	Benzo(k)fluoranthene	0.048 U	0.19	0.048	ug/l	
218-01-9	Chrysene	0.095 U	0.19	0.095	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.048 U	0.19	0.048	ug/l	
206-44-0	Fluoranthene	0.24 U	0.95	0.24	ug/l	
86-73-7	Fluorene	4.9	0.95	0.48	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.048 U	0.19	0.048	ug/l	
90-12-0	1-Methylnaphthalene	82.6 [a]	3.8	0.95	ug/l	
91-57-6	2-Methylnaphthalene	97.0 [a]	3.8	0.95	ug/l	
91-20-3	Naphthalene	71.5 [a]	3.8	0.95	ug/l	
85-01-8	Phenanthrene	1.4	0.95	0.24	ug/l	
129-00-0	Pyrene	0.24 U	0.95	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	87%	90%	42-108%
321-60-8	2-Fluorobiphenyl	77%	89%	40-106%
1718-51-0	Terphenyl-d14	79%	89%	39-121%

(a) Result is from Run# 2

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-2S-20090127		
Lab Sample ID:	F63008-4	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY036404.D	5	01/30/09	CW	n/a	n/a	GXY1487
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	4880	2.5	0.80	ug/l	

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-2S-20090127		
Lab Sample ID:	F63008-4	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	FLORIDA-PRO SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	IJ54788.D	4	01/30/09	SL	01/29/09	OP27915	GIJ1934
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	2.21	0.95	0.65	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	89%		38-122%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-2S-20090127		
Lab Sample ID:	F63008-4	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
		Percent Solids:	n/a
Project:	NAS Cecil Field-CTO-248		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Nitrogen, Nitrate	0.050 U	0.10	0.050	mg/l	1	01/29/09 00:51	CC	EPA 300/SW846 9056
Nitrogen, Nitrite	2.6	0.10	0.050	mg/l	1	01/29/09 00:51	CC	EPA 300/SW846 9056
Sulfate	1.4 I	2.0	1.0	mg/l	1	01/29/09 00:51	CC	EPA 300/SW846 9056
Sulfide	2.5	1.0	0.60	mg/l	1	01/30/09	LE	SM20 4500S F

RL = Reporting Limit = PQL
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result >= MDL but < RL

Report of Analysis

Client Sample ID:	CEF-G82-2I-20090127		
Lab Sample ID:	F63008-5	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0032805.D	1	02/05/09	MM	n/a	n/a	VN1347
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.40 U	1.0	0.40	ug/l	
108-88-3	Toluene	0.35 U	1.0	0.35	ug/l	
100-41-4	Ethylbenzene	0.43 U	1.0	0.43	ug/l	
1330-20-7	Xylene (total)	1.2 U	3.0	1.2	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	
98-82-8	Isopropylbenzene	0.20 U	1.0	0.20	ug/l	
95-63-6	1,2,4-Trimethylbenzene	0.22 U	2.0	0.22	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.20 U	2.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		87-116%
17060-07-0	1,2-Dichloroethane-D4	91%		76-127%
2037-26-5	Toluene-D8	102%		86-112%
460-00-4	4-Bromofluorobenzene	110%		84-120%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-2I-20090127		
Lab Sample ID:	F63008-5	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W044609.D	1	02/03/09	RB	01/29/09	OP27906	SW2266
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.48 U	0.95	0.48	ug/l	
208-96-8	Acenaphthylene	0.48 U	0.95	0.48	ug/l	
120-12-7	Anthracene	0.48 U	0.95	0.48	ug/l	
56-55-3	Benzo(a)anthracene	0.048 U	0.19	0.048	ug/l	
50-32-8	Benzo(a)pyrene	0.048 U	0.19	0.048	ug/l	
205-99-2	Benzo(b)fluoranthene	0.048 U	0.19	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.048 U	0.19	0.048	ug/l	
207-08-9	Benzo(k)fluoranthene	0.048 U	0.19	0.048	ug/l	
218-01-9	Chrysene	0.095 U	0.19	0.095	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.048 U	0.19	0.048	ug/l	
206-44-0	Fluoranthene	0.24 U	0.95	0.24	ug/l	
86-73-7	Fluorene	0.48 U	0.95	0.48	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.048 U	0.19	0.048	ug/l	
90-12-0	1-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-57-6	2-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-20-3	Naphthalene	0.24 U	0.95	0.24	ug/l	
85-01-8	Phenanthrene	0.24 U	0.95	0.24	ug/l	
129-00-0	Pyrene	0.24 U	0.95	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	82%		42-108%
321-60-8	2-Fluorobiphenyl	81%		40-106%
1718-51-0	Terphenyl-d14	81%		39-121%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-2I-20090127		
Lab Sample ID:	F63008-5	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY036386.D	1	01/30/09	CW	n/a	n/a	GXY1487
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	2.22	0.50	0.16	ug/l	

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-2I-20090127		
Lab Sample ID:	F63008-5	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
Method:	FLORIDA-PRO SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	IJ54789.D	1	01/30/09	SL	01/29/09	OP27915	GIJ1934
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	0.16 U	0.24	0.16	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	99%		38-122%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-2I-20090127		
Lab Sample ID:	F63008-5	**Date Sampled:**	01/27/09
Matrix:	AQ - Ground Water	**Date Received:**	01/28/09
		Percent Solids:	n/a
Project:	NAS Cecil Field-CTO-248		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Nitrogen, Nitrate	0.050 U	0.10	0.050	mg/l	1	01/29/09 01:12	CC	EPA 300/SW846 9056
Nitrogen, Nitrite	0.49	0.10	0.050	mg/l	1	01/29/09 01:12	CC	EPA 300/SW846 9056
Sulfate	10.1	2.0	1.0	mg/l	1	01/29/09 01:12	CC	EPA 300/SW846 9056
Sulfide	0.97 I	1.0	0.60	mg/l	1	01/30/09	LE	SM20 4500S F

RL = Reporting Limit = PQL
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result >= MDL but < RL

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	F63008-6	**Date Sampled:**	01/27/09
Matrix:	AQ - Trip Blank Water	**Date Received:**	01/28/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0032780.D	1	02/04/09	MM	n/a	n/a	VN1346
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.40 U	1.0	0.40	ug/l	
108-88-3	Toluene	0.35 U	1.0	0.35	ug/l	
100-41-4	Ethylbenzene	0.43 U	1.0	0.43	ug/l	
1330-20-7	Xylene (total)	1.2 U	3.0	1.2	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	
98-82-8	Isopropylbenzene	0.20 U	1.0	0.20	ug/l	
95-63-6	1,2,4-Trimethylbenzene	0.22 U	2.0	0.22	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.20 U	2.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		87-116%
17060-07-0	1,2-Dichloroethane-D4	91%		76-127%
2037-26-5	Toluene-D8	102%		86-112%
460-00-4	4-Bromofluorobenzene	106%		84-120%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 26419 F63008 PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112GN4248	Cecil Field G-82/88 Wells	Kara Wimble	904 636 6125	Accutest

SAMPLERS (SIGNATURE)

FIELD OPERATIONS LEADER: Jeff Kronc — PHONE NUMBER: 904 699-7473 — ADDRESS: 4405 Vineland Rd, Suite C-15

CARRIER/WAYBILL NUMBER: Accutest Courier — CITY, STATE: Orlando, Fl 32811

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G G P G

PRESERVATIVE USED: HCl none H2SO4 NaOH ZnAc/NaOH

TYPE OF ANALYSIS: VOC's 8260B; PAHs 8270D SIM; TRPH-FL-PRO; Sulfate/Nitrate/Nitrite; Sulfide 376.1; Methane RSKTS

	DATE YEAR 2009	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOC's 8260B	PAHs 8270D SIM	TRPH-FL-PRO	Sulfate/Nitrate/Nitrite	Sulfide 376.1	Methane RSKTS			COMMENTS
1	1/27	1000	CEF-88-2$-20090127				GW	G	12	3	2	2	1	1	3			Cool to 4°C
2	1/27	1115	CEF-G82-3$-20090127				GW	G	12	3	2	2	1	1	3			
3	1/27	1320	CEF-G82-1$-20090127				GW	G	12	3	2	2	1	1	3			
4	1/27	1405	CEF-G82-2$-20090127				GW	G	12	3	2	2	1	1	3			
5	1/27	1555	CEF-G82-2J-20090127				GW	G	12	3	2	2	1	1	2			
6			Trip Blank						1									

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY: Jeff Kronc	1/27/09	1630	1. RECEIVED BY: N. Vill. (ALSE)	1/27/09	16:30
2. RELINQUISHED BY: N. Vill. (ALSE)			2. RECEIVED BY: Maggie Bond (ACCUTEST)	1-28-09	08:30
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS: 2.0 1.0 1.8

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R FORM NO. TtNUS-001

4.1 4

F63008: Chain of Custody
Page 1 of 2

ACCUTEST Laboratories F63008

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: F63008 CLIENT: TETRA TECH PROJECT: 112 GN 4248

DATE/TIME RECEIVED: 1-28-09 08:00 # OF COOLERS RECEIVED: 3 COOLER TEMPS: 2.0 1.0 1.8

METHOD OF DELIVERY: FEDEX UPS ACCUTEST COURIER GREYHOUND DELIVERY OTHER

AIRBILL NUMBERS:

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET
- [ ] WET ICE RECEIVED IN COOLER

TRIP BLANK INFORMATION

- [x] TRIP BLANK PROVIDED
- [ ] TRIP BLANK NOT PROVIDED
- [ ] TRIP BLANK NOT ON COC
- [x] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [x] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

SAMPLE INFORMATION

- [ ] SAMPLE LABELS NOT PRESENT ON ALL BOTTLES
- [ ] CORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] TIMES ON COC DOES NOT MATCH LABEL(S)
- [ ] ID'S ON COC DOES NOT MATCH LABEL(S)
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING INSTRUCTIONS
- [ ] UNCLEAR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] 5035 FIELD KIT NOT FROZEN WITHIN 48 HOUR'S
- [ ] RESIDUAL CHLORINE PRESENT

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

MISC. INFORMATION

NUMBER OF ENCORES ? ____

NUMBER OF 5035 FIELD KITS ? ____

NUMBER OF LAB FILTERED METALS ? ____

SUMMARY OF COMMENTS: RECEIVED ONLY 1 SULFIDE BOTTLE PER SAMPLE

TECHNICIAN SIGNATURE/DATE JC 1-28-09 TECHNICIAN SIGNATURE/DATE [signature]

ASBD 12/17/07

4.1 4

F63008: Chain of Custody
Page 2 of 2

Southeast ACCUTEST Laboratories

IT'S ALL IN THE CHEMISTRY

02/17/09

Technical Report for

Tetra Tech NUS

NAS Cecil Field-CTO-248

112GN4248

Accutest Job Number: F63061

Sampling Date: 01/28/09

Report to:

Tetra Tech, NUS

kara.wimble@tetratech.com

ATTN: Kara Wimble

Total number of pages in report: 30

ACCUTEST LABORATORIES 50 YEARS 1956-2006

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Harry Behzadi, Ph.D.
Laboratory Director

Client Service contact: Heather Wandrey 407-425-6700

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.

Test results relate only to samples analyzed.

Sections: 1 2 3 4

Table of Contents

-1-

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Sample Results **5**
3.1: F63061-1: CEF-G82-6S-20090128 6
3.2: F63061-2: CEF-G82-5S-20090128 9
3.3: F63061-3: CEF-G82-4S-20090128 12
3.4: F63061-4: CEF-G82-DUP01-20090128 15
3.5: F63061-5: CEF-BP-DUP01-20090128 18
3.6: F63061-6: CEF-BP-4S-20090128 21
3.7: F63061-7: CEF-BP-3S-20090128 24
3.8: F63061-8: TRIP BLANK 27
Section 4: Misc. Forms **28**
4.1: Chain of Custody 29

Accutest LabLink@16:36 17-Feb-2009

Sample Summary

Tetra Tech NUS

Job No: F63061

NAS Cecil Field-CTO-248
Project No: 112GN4248

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
F63061-1	01/28/09	09:50 JK	01/30/09	AQ	Ground Water	CEF-G82-6S-20090128
F63061-2	01/28/09	11:35 JK	01/30/09	AQ	Ground Water	CEF-G82-5S-20090128
F63061-3	01/28/09	12:25 JK	01/30/09	AQ	Ground Water	CEF-G82-4S-20090128
F63061-4	01/28/09	00:00 JK	01/30/09	AQ	Ground Water	CEF-G82-DUP01-20090128
F63061-5	01/28/09	00:00 JK	01/30/09	AQ	Ground Water	CEF-BP-DUP01-20090128
F63061-6	01/28/09	13:30 JK	01/30/09	AQ	Ground Water	CEF-BP-4S-20090128
F63061-7	01/28/09	14:55 JK	01/30/09	AQ	Ground Water	CEF-BP-3S-20090128
F63061-8	01/28/09	00:00 JK	01/30/09	AQ	Trip Blank Water	TRIP BLANK

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Tetra Tech NUS **Job No:** F63061

Site: NAS Cecil Field-CTO-248 **Report Date:** 2/17/2009 2:13:58 PM

7 Samples and 1 Trip Blank were collected on 01/28/2009 and were received at Accutest SE on 01/30/2009 properly preserved, at 2 Deg. C and intact. These Samples received an Accutest job number of F63061. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS by Method SW846 8260B

Matrix: AQ **Batch ID:** VM1345

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Samples F63009-4MS, F63009-4MSD were used as the QC samples indicated.

Matrix: AQ **Batch ID:** VN1347

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Samples F63061-7MS, F63061-7MSD were used as the QC samples indicated.

Matrix: AQ **Batch ID:** VN1348

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Samples F63104-4MS, F63104-4MSD were used as the QC samples indicated.

Extractables by GCMS by Method SW846 8270C BY SIM

Matrix: AQ **Batch ID:** OP27948

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Samples F63061-2MS, F63061-2MSD were used as the QC samples indicated.

Extractables by GC by Method FLORIDA-PRO

Matrix: AQ **Batch ID:** OP27933

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Samples F63060-1MS, F63060-1MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Matrix Spike Recovery for TPH (C8-C40) is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

Date: February 17, 2009

Ellen Pampel, Inorganic QA (signature on file)

Tuesday, February 17, 2009

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	CEF-G82-6S-20090128		
Lab Sample ID:	F63061-1	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0032937.D	1	02/04/09	MM	n/a	n/a	VM1345
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.40 U	1.0	0.40	ug/l	
108-88-3	Toluene	0.35 U	1.0	0.35	ug/l	
100-41-4	Ethylbenzene	0.43 U	1.0	0.43	ug/l	
1330-20-7	Xylene (total)	1.2 U	3.0	1.2	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	
98-82-8	Isopropylbenzene	0.20 U	1.0	0.20	ug/l	
95-63-6	1,2,4-Trimethylbenzene	0.22 U	2.0	0.22	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.20 U	2.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		87-116%
17060-07-0	1,2-Dichloroethane-D4	97%		76-127%
2037-26-5	Toluene-D8	97%		86-112%
460-00-4	4-Bromofluorobenzene	99%		84-120%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-6S-20090128		
Lab Sample ID:	F63061-1	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R17753.D	1	02/04/09	RB	02/03/09	OP27948	SR840
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.48 U	0.95	0.48	ug/l	
208-96-8	Acenaphthylene	0.48 U	0.95	0.48	ug/l	
120-12-7	Anthracene	0.48 U	0.95	0.48	ug/l	
56-55-3	Benzo(a)anthracene	0.048 U	0.19	0.048	ug/l	
50-32-8	Benzo(a)pyrene	0.048 U	0.19	0.048	ug/l	
205-99-2	Benzo(b)fluoranthene	0.048 U	0.19	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.048 U	0.19	0.048	ug/l	
207-08-9	Benzo(k)fluoranthene	0.048 U	0.19	0.048	ug/l	
218-01-9	Chrysene	0.095 U	0.19	0.095	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.048 U	0.19	0.048	ug/l	
206-44-0	Fluoranthene	0.24 U	0.95	0.24	ug/l	
86-73-7	Fluorene	0.48 U	0.95	0.48	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.048 U	0.19	0.048	ug/l	
90-12-0	1-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-57-6	2-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-20-3	Naphthalene	0.24 U	0.95	0.24	ug/l	
85-01-8	Phenanthrene	0.24 U	0.95	0.24	ug/l	
129-00-0	Pyrene	0.24 U	0.95	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	70%		42-108%
321-60-8	2-Fluorobiphenyl	63%		40-106%
1718-51-0	Terphenyl-d14	61%		39-121%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-6S-20090128		
Lab Sample ID:	F63061-1	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	FLORIDA-PRO SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP85050.D	1	02/02/09	SL	02/02/09	OP27933	GOP2211
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	0.16 U	0.24	0.16	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	71%		38-122%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-5S-20090128		
Lab Sample ID:	F63061-2	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0032938.D	1	02/04/09	MM	n/a	n/a	VM1345
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.40 U	1.0	0.40	ug/l	
108-88-3	Toluene	0.35 U	1.0	0.35	ug/l	
100-41-4	Ethylbenzene	0.43 U	1.0	0.43	ug/l	
1330-20-7	Xylene (total)	1.2 U	3.0	1.2	ug/l	
91-20-3	Naphthalene	7.8	5.0	1.0	ug/l	
98-82-8	Isopropylbenzene	0.25	1.0	0.20	ug/l	I
95-63-6	1,2,4-Trimethylbenzene	0.22 U	2.0	0.22	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.20 U	2.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		87-116%
17060-07-0	1,2-Dichloroethane-D4	98%		76-127%
2037-26-5	Toluene-D8	99%		86-112%
460-00-4	4-Bromofluorobenzene	99%		84-120%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-5S-20090128		
Lab Sample ID:	F63061-2	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R17754.D	1	02/04/09	RB	02/03/09	OP27948	SR840
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.48 U	0.95	0.48	ug/l	
208-96-8	Acenaphthylene	0.48 U	0.95	0.48	ug/l	
120-12-7	Anthracene	0.48 U	0.95	0.48	ug/l	
56-55-3	Benzo(a)anthracene	0.048 U	0.19	0.048	ug/l	
50-32-8	Benzo(a)pyrene	0.048 U	0.19	0.048	ug/l	
205-99-2	Benzo(b)fluoranthene	0.048 U	0.19	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.048 U	0.19	0.048	ug/l	
207-08-9	Benzo(k)fluoranthene	0.048 U	0.19	0.048	ug/l	
218-01-9	Chrysene	0.095 U	0.19	0.095	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.048 U	0.19	0.048	ug/l	
206-44-0	Fluoranthene	0.24 U	0.95	0.24	ug/l	
86-73-7	Fluorene	0.48 U	0.95	0.48	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.048 U	0.19	0.048	ug/l	
90-12-0	1-Methylnaphthalene	3.7	0.95	0.24	ug/l	
91-57-6	2-Methylnaphthalene	2.7	0.95	0.24	ug/l	
91-20-3	Naphthalene	3.8	0.95	0.24	ug/l	
85-01-8	Phenanthrene	0.24 U	0.95	0.24	ug/l	
129-00-0	Pyrene	0.24 U	0.95	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	63%		42-108%
321-60-8	2-Fluorobiphenyl	60%		40-106%
1718-51-0	Terphenyl-d14	85%		39-121%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-5S-20090128		
Lab Sample ID:	F63061-2	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	FLORIDA-PRO SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP85051.D	1	02/02/09	SL	02/02/09	OP27933	GOP2211
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	0.228	0.24	0.16	mg/l	I

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	77%		38-122%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-4S-20090128		
Lab Sample ID:	F63061-3	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0032939.D	1	02/04/09	MM	n/a	n/a	VM1345
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.40 U	1.0	0.40	ug/l	
108-88-3	Toluene	0.35 U	1.0	0.35	ug/l	
100-41-4	Ethylbenzene	0.43 U	1.0	0.43	ug/l	
1330-20-7	Xylene (total)	1.2 U	3.0	1.2	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	
98-82-8	Isopropylbenzene	0.20 U	1.0	0.20	ug/l	
95-63-6	1,2,4-Trimethylbenzene	0.22 U	2.0	0.22	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.20 U	2.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		87-116%
17060-07-0	1,2-Dichloroethane-D4	97%		76-127%
2037-26-5	Toluene-D8	100%		86-112%
460-00-4	4-Bromofluorobenzene	101%		84-120%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-4S-20090128		
Lab Sample ID:	F63061-3	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R17757.D	1	02/04/09	RB	02/03/09	OP27948	SR840
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.48 U	0.95	0.48	ug/l	
208-96-8	Acenaphthylene	0.48 U	0.95	0.48	ug/l	
120-12-7	Anthracene	0.48 U	0.95	0.48	ug/l	
56-55-3	Benzo(a)anthracene	0.048 U	0.19	0.048	ug/l	
50-32-8	Benzo(a)pyrene	0.048 U	0.19	0.048	ug/l	
205-99-2	Benzo(b)fluoranthene	0.048 U	0.19	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.048 U	0.19	0.048	ug/l	
207-08-9	Benzo(k)fluoranthene	0.048 U	0.19	0.048	ug/l	
218-01-9	Chrysene	0.095 U	0.19	0.095	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.048 U	0.19	0.048	ug/l	
206-44-0	Fluoranthene	0.24 U	0.95	0.24	ug/l	
86-73-7	Fluorene	0.48 U	0.95	0.48	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.048 U	0.19	0.048	ug/l	
90-12-0	1-Methylnaphthalene	0.32	0.95	0.24	ug/l	I
91-57-6	2-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-20-3	Naphthalene	0.24 U	0.95	0.24	ug/l	
85-01-8	Phenanthrene	0.24 U	0.95	0.24	ug/l	
129-00-0	Pyrene	0.24 U	0.95	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	71%		42-108%
321-60-8	2-Fluorobiphenyl	67%		40-106%
1718-51-0	Terphenyl-d14	86%		39-121%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-4S-20090128		
Lab Sample ID:	F63061-3	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	FLORIDA-PRO SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP85052.D	1	02/02/09	SL	02/02/09	OP27933	GOP2211
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	0.16 U	0.24	0.16	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	67%		38-122%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-DUP01-20090128		
Lab Sample ID:	F63061-4	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0032940.D	1	02/04/09	MM	n/a	n/a	VM1345
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.40 U	1.0	0.40	ug/l	
108-88-3	Toluene	0.35 U	1.0	0.35	ug/l	
100-41-4	Ethylbenzene	0.43 U	1.0	0.43	ug/l	
1330-20-7	Xylene (total)	1.2 U	3.0	1.2	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	
98-82-8	Isopropylbenzene	0.20 U	1.0	0.20	ug/l	
95-63-6	1,2,4-Trimethylbenzene	0.22 U	2.0	0.22	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.20 U	2.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		87-116%
17060-07-0	1,2-Dichloroethane-D4	96%		76-127%
2037-26-5	Toluene-D8	98%		86-112%
460-00-4	4-Bromofluorobenzene	101%		84-120%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-DUP01-20090128		
Lab Sample ID:	F63061-4	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R17758.D	1	02/04/09	RB	02/03/09	OP27948	SR840
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.48 U	0.95	0.48	ug/l	
208-96-8	Acenaphthylene	0.48 U	0.95	0.48	ug/l	
120-12-7	Anthracene	0.48 U	0.95	0.48	ug/l	
56-55-3	Benzo(a)anthracene	0.048 U	0.19	0.048	ug/l	
50-32-8	Benzo(a)pyrene	0.048 U	0.19	0.048	ug/l	
205-99-2	Benzo(b)fluoranthene	0.048 U	0.19	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.048 U	0.19	0.048	ug/l	
207-08-9	Benzo(k)fluoranthene	0.048 U	0.19	0.048	ug/l	
218-01-9	Chrysene	0.095 U	0.19	0.095	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.048 U	0.19	0.048	ug/l	
206-44-0	Fluoranthene	0.24 U	0.95	0.24	ug/l	
86-73-7	Fluorene	0.48 U	0.95	0.48	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.048 U	0.19	0.048	ug/l	
90-12-0	1-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-57-6	2-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-20-3	Naphthalene	0.24 U	0.95	0.24	ug/l	
85-01-8	Phenanthrene	0.24 U	0.95	0.24	ug/l	
129-00-0	Pyrene	0.24 U	0.95	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	69%		42-108%
321-60-8	2-Fluorobiphenyl	64%		40-106%
1718-51-0	Terphenyl-d14	82%		39-121%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-G82-DUP01-20090128		
Lab Sample ID:	F63061-4	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	FLORIDA-PRO SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP85053.D	1	02/02/09	SL	02/02/09	OP27933	GOP2211
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	0.16 U	0.24	0.16	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	73%		38-122%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-BP-DUP01-20090128		
Lab Sample ID:	F63061-5	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0032941.D	20	02/04/09	MM	n/a	n/a	VM1345
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	8.0 U	20	8.0	ug/l	
108-88-3	Toluene	7.0 U	20	7.0	ug/l	
100-41-4	Ethylbenzene	8.6 U	20	8.6	ug/l	
1330-20-7	Xylene (total)	23 U	60	23	ug/l	
91-20-3	Naphthalene	20 U	100	20	ug/l	
98-82-8	Isopropylbenzene	4.0 U	20	4.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	4.4 U	40	4.4	ug/l	
108-67-8	1,3,5-Trimethylbenzene	4.0 U	40	4.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		87-116%
17060-07-0	1,2-Dichloroethane-D4	95%		76-127%
2037-26-5	Toluene-D8	98%		86-112%
460-00-4	4-Bromofluorobenzene	100%		84-120%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-BP-DUP01-20090128		
Lab Sample ID:	F63061-5	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R17761.D	1	02/04/09	RB	02/03/09	OP27948	SR840
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.48 U	0.95	0.48	ug/l	
208-96-8	Acenaphthylene	0.48 U	0.95	0.48	ug/l	
120-12-7	Anthracene	0.48 U	0.95	0.48	ug/l	
56-55-3	Benzo(a)anthracene	0.048 U	0.19	0.048	ug/l	
50-32-8	Benzo(a)pyrene	0.048 U	0.19	0.048	ug/l	
205-99-2	Benzo(b)fluoranthene	0.048 U	0.19	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.048 U	0.19	0.048	ug/l	
207-08-9	Benzo(k)fluoranthene	0.048 U	0.19	0.048	ug/l	
218-01-9	Chrysene	0.095 U	0.19	0.095	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.048 U	0.19	0.048	ug/l	
206-44-0	Fluoranthene	0.24 U	0.95	0.24	ug/l	
86-73-7	Fluorene	0.48 U	0.95	0.48	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.048 U	0.19	0.048	ug/l	
90-12-0	1-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-57-6	2-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-20-3	Naphthalene	0.24 U	0.95	0.24	ug/l	
85-01-8	Phenanthrene	0.24 U	0.95	0.24	ug/l	
129-00-0	Pyrene	0.24 U	0.95	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	74%		42-108%
321-60-8	2-Fluorobiphenyl	71%		40-106%
1718-51-0	Terphenyl-d14	86%		39-121%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-BP-DUP01-20090128		
Lab Sample ID:	F63061-5	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	FLORIDA-PRO SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP85054.D	1	02/02/09	SL	02/02/09	OP27933	GOP2211
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	0.16 U	0.24	0.16	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	76%		38-122%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-BP-4S-20090128		
Lab Sample ID:	F63061-6	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0032835.D	1	02/06/09	MM	n/a	n/a	VN1348
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.40 U	1.0	0.40	ug/l	
108-88-3	Toluene	0.35 U	1.0	0.35	ug/l	
100-41-4	Ethylbenzene	0.43 U	1.0	0.43	ug/l	
1330-20-7	Xylene (total)	1.2 U	3.0	1.2	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	
98-82-8	Isopropylbenzene	0.20 U	1.0	0.20	ug/l	
95-63-6	1,2,4-Trimethylbenzene	0.22 U	2.0	0.22	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.20 U	2.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		87-116%
17060-07-0	1,2-Dichloroethane-D4	91%		76-127%
2037-26-5	Toluene-D8	102%		86-112%
460-00-4	4-Bromofluorobenzene	109%		84-120%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-BP-4S-20090128		
Lab Sample ID:	F63061-6	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R17762.D	1	02/04/09	RB	02/03/09	OP27948	SR840
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.48 U	0.95	0.48	ug/l	
208-96-8	Acenaphthylene	0.48 U	0.95	0.48	ug/l	
120-12-7	Anthracene	0.48 U	0.95	0.48	ug/l	
56-55-3	Benzo(a)anthracene	0.048 U	0.19	0.048	ug/l	
50-32-8	Benzo(a)pyrene	0.048 U	0.19	0.048	ug/l	
205-99-2	Benzo(b)fluoranthene	0.048 U	0.19	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.048 U	0.19	0.048	ug/l	
207-08-9	Benzo(k)fluoranthene	0.048 U	0.19	0.048	ug/l	
218-01-9	Chrysene	0.095 U	0.19	0.095	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.048 U	0.19	0.048	ug/l	
206-44-0	Fluoranthene	0.24 U	0.95	0.24	ug/l	
86-73-7	Fluorene	0.48 U	0.95	0.48	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.048 U	0.19	0.048	ug/l	
90-12-0	1-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-57-6	2-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-20-3	Naphthalene	0.24 U	0.95	0.24	ug/l	
85-01-8	Phenanthrene	0.24 U	0.95	0.24	ug/l	
129-00-0	Pyrene	0.24 U	0.95	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	69%		42-108%
321-60-8	2-Fluorobiphenyl	65%		40-106%
1718-51-0	Terphenyl-d14	90%		39-121%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-BP-4S-20090128		
Lab Sample ID:	F63061-6	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	FLORIDA-PRO SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP85057.D	1	02/02/09	SL	02/02/09	OP27933	GOP2211
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	0.16 U	0.24	0.16	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	74%		38-122%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-BP-3S-20090128		
Lab Sample ID:	F63061-7	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0032809.D	1	02/05/09	MM	n/a	n/a	VN1347
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.40 U	1.0	0.40	ug/l	
108-88-3	Toluene	0.35 U	1.0	0.35	ug/l	
100-41-4	Ethylbenzene	0.43 U	1.0	0.43	ug/l	
1330-20-7	Xylene (total)	1.2 U	3.0	1.2	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	
98-82-8	Isopropylbenzene	0.20 U	1.0	0.20	ug/l	
95-63-6	1,2,4-Trimethylbenzene	0.22 U	2.0	0.22	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.20 U	2.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		87-116%
17060-07-0	1,2-Dichloroethane-D4	92%		76-127%
2037-26-5	Toluene-D8	102%		86-112%
460-00-4	4-Bromofluorobenzene	107%		84-120%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-BP-3S-20090128		
Lab Sample ID:	F63061-7	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R17763.D	1	02/04/09	RB	02/03/09	OP27948	SR840
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	0.48 U	0.95	0.48	ug/l	
208-96-8	Acenaphthylene	0.48 U	0.95	0.48	ug/l	
120-12-7	Anthracene	0.48 U	0.95	0.48	ug/l	
56-55-3	Benzo(a)anthracene	0.048 U	0.19	0.048	ug/l	
50-32-8	Benzo(a)pyrene	0.048 U	0.19	0.048	ug/l	
205-99-2	Benzo(b)fluoranthene	0.048 U	0.19	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.048 U	0.19	0.048	ug/l	
207-08-9	Benzo(k)fluoranthene	0.048 U	0.19	0.048	ug/l	
218-01-9	Chrysene	0.095 U	0.19	0.095	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.048 U	0.19	0.048	ug/l	
206-44-0	Fluoranthene	0.24 U	0.95	0.24	ug/l	
86-73-7	Fluorene	0.48 U	0.95	0.48	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.048 U	0.19	0.048	ug/l	
90-12-0	1-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-57-6	2-Methylnaphthalene	0.24 U	0.95	0.24	ug/l	
91-20-3	Naphthalene	0.24 U	0.95	0.24	ug/l	
85-01-8	Phenanthrene	0.24 U	0.95	0.24	ug/l	
129-00-0	Pyrene	0.24 U	0.95	0.24	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	71%		42-108%
321-60-8	2-Fluorobiphenyl	67%		40-106%
1718-51-0	Terphenyl-d14	88%		39-121%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-BP-3S-20090128		
Lab Sample ID:	F63061-7	**Date Sampled:**	01/28/09
Matrix:	AQ - Ground Water	**Date Received:**	01/30/09
Method:	FLORIDA-PRO SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP85058.D	1	02/02/09	SL	02/02/09	OP27933	GOP2211
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	0.16 U	0.24	0.16	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	77%		38-122%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	F63061-8	**Date Sampled:**	01/28/09
Matrix:	AQ - Trip Blank Water	**Date Received:**	01/30/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Cecil Field-CTO-248		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N0032813.D	1	02/05/09	MM	n/a	n/a	VN1347
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.40 U	1.0	0.40	ug/l	
108-88-3	Toluene	0.35 U	1.0	0.35	ug/l	
100-41-4	Ethylbenzene	0.43 U	1.0	0.43	ug/l	
1330-20-7	Xylene (total)	1.2 U	3.0	1.2	ug/l	
91-20-3	Naphthalene	1.0 U	5.0	1.0	ug/l	
98-82-8	Isopropylbenzene	0.20 U	1.0	0.20	ug/l	
95-63-6	1,2,4-Trimethylbenzene	0.22 U	2.0	0.22	ug/l	
108-67-8	1,3,5-Trimethylbenzene	0.20 U	2.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		87-116%
17060-07-0	1,2-Dichloroethane-D4	92%		76-127%
2037-26-5	Toluene-D8	102%		86-112%
460-00-4	4-Bromofluorobenzene	105%		84-120%

U = Not detected MDL - Method Detection Limit
RL = Reporting Limit = PQL
L = Indicates value exceeds calibration range

I = Result > = MDL but < RL J = Estimated value
V = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody

TETRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER 26420 F6306 PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
1126V 4248	Cecil Field G-82 / BP Walks	Kara Wimble	904 636-6125	Accutest
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: Jeff Krone	PHONE NUMBER: 904 699-7473	ADDRESS: 4405 Vineland Road Suite C-15
		CARRIER/WAYBILL NUMBER		CITY, STATE: Orlando, Fl 32811

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G
PRESERVATIVE USED: HCL none HNO3
TYPE OF ANALYSIS: VOCs 8260B; PAHs 8270D SIM; TRPH - FL PRO

	DATE YEAR 2009	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAP (G) COMP (C)	No. OF CONTAINERS	VOCs 8260B	PAHs 8270D SIM	TRPH - FL PRO					COMMENTS
1	1/28	0950	CEF-G82-6$-20090128				GW	G	7	3	2	2					Cool to 4°C
2	1/28	1135	CEF-G82-5$-20090128				GW	G	7	3	2	2					
3	1/28	1205	CEF-G82-4$-20090128				GW	G	7	3	2	2					
4	1/28	0000	CEF-G82-DUP01-20090128				GW	G	7	3	2	2					
5	1/28	0000	CEF-BP-DUP01-20090128				GW	G	7	3	2	2					
6	1/28	1330	CEF-BP-4$-20090128				GW	G	7	3	2	2					
7	1/28	1455	CEF-BP-3$-20090128				GW	G	7	3	2	2					
8			Trip Blank						3								

	DATE	TIME		DATE	TIME
1 RELINQUISHED BY: Jeff Krone	1/29/09	1445	1 RECEIVED BY: Accutest	1/30/09	1445
2 RELINQUISHED BY: Accutest	1/29/09	1645	2 RECEIVED BY: Accutest	1-30-09	0800
3 RELINQUISHED BY	DATE	TIME	3 RECEIVED BY	DATE	TIME

COMMENTS: 2.0 1.4 1.6

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TINUS-001

4.1 4

F63061: Chain of Custody
Page 1 of 2

ACCUTEST Laboratories
F63061

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: F63061 CLIENT: Tetra Tech PROJECT: 112G42248

DATE/TIME RECEIVED: 1-30-09 08:00 # OF COOLERS RECEIVED: 3 COOLER TEMPS: 2.0 1.4 1.6

METHOD OF DELIVERY: FEDEX UPS ACCUTEST COURIER GREYHOUND DELIVERY OTHER

AIRBILL NUMBERS:

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET
- [ ] WET ICE RECEIVED IN COOLER

TRIP BLANK INFORMATION

- [x] TRIP BLANK PROVIDED
- [ ] TRIP BLANK NOT PROVIDED
- [ ] TRIP BLANK NOT ON COC
- [x] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [x] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

SAMPLE INFORMATION

- [ ] SAMPLE LABELS NOT PRESENT ON ALL BOTTLES
- [ ] CORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] TIMES ON COC DOES NOT MATCH LABEL(S)
- [ ] ID'S ON COC DOES NOT MATCH LABEL(S)
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING INSTRUCTIONS
- [ ] UNCLEAR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] 5035 FIELD KIT NOT FROZEN WITHIN 48 HOUR'S
- [ ] RESIDUAL CHLORINE PRESENT

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

MISC. INFORMATION

NUMBER OF ENCORES ? 8

NUMBER OF 5035 FIELD KITS ? 8

NUMBER OF LAB FILTERED METALS ? 7

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE E.T. 1-30-09 TECHNICIAN SIGNATURE/DATE K 1-30-09

ASBD 12/17/07

4.1 4

F63061: Chain of Custody
Page 2 of 2

ATTACHMENT C

COMPLETED FIELD FORMS

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: Bldg G82 and BP Wells Site
Project No.: CTO 248 112GN4248
Location: NAS Cecil Field
Personnel: Jeff Krone
Weather Conditions: Partly Cloudy 70°
Measuring Device: Heron Water Tape
Tidally Influenced: Yes ___ No X
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
CEF-BP-1S	1/24/09	1132	71.28	14.72	7.82			
CEF-BP-2S		1129	71.78	14.48	8.21			
CEF-BP-3S		1121	72.38	14.57	9.03			
CEF-BP-4S		1136	72.28	14.75	8.96			
CEF-BP-5I		1131	71.63	34.39	8.19			
CEF-BP-6S		1135	37.87	14.2	8.48			
CEF-G82-1S		1141	71.46	15.00	7.39			
CEF-G82-2I		1145	71.60	35.00	8.05			
CEF-G-82-2S		1144	71.23	14.00	7.56			
CEF-G82-3S		1141	71.20	14.00	7.42			
CEF-G82-4S		1150	71.74	15.00	8.37			
CEF-G82-5S		1149	71.53	15.00	8.16			
CEF-G82-6S		1147	71.95	15.00	10.73			

* All measurements to the nearest 0.01 foot

FIGURE 8-1

SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of performing field investigation activities at NAS Cecil Field and that I have received site-specific training which included the elements presented below:

- Names of designated personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present on site
- Use of personal protective equipment
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- Emergency response procedures (evacuation and assembly points)
- Incipient response procedures
- Review of the contents of relevant Material Safety Data Sheets
- Review of the use of Safe Work Permits

I have been given the opportunity to ask questions and all of my questions have been answered to my satisfaction. The dates of my training and medical surveillance requirements indicated below are accurate.

Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	Medical Exam
Jeff Krone	1/26/09	6/95	6/08		6/08

1/27 JK
1/26 JL

MEDICAL DATA SHEET

This Medical Data Sheet must be completed by all on-site personnel and kept in a central location during the execution of site operations. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project G-82 / BP Groundwater Monitoring CTO 248

Name Jeff Krone Home Telephone 904 260-6062

Address 3667 Torre Grande Drive, Jax, FL 32257

Age 50 Height 5'11" Weight 200

Name of Next Kin Bonnie Krone

Drug or other Allergies none

Particular Sensitivities none

Do You Wear Contacts? no

Provide a Checklist of Previous Illnesses or Exposure to Hazardous Chemicals none

What medications are you presently using? Toprol / Benicar

Do you have any medical restrictions? no

Name, Address, and Phone Number of personal physician: Dr Browning 904 619 5338

I am the individual described above. I have read and understand this HASP.

Signature

01/26/09
Date

SAFE WORK PERMIT
IDW MANAGEMENT
NAS CECIL FIELD, JACKSONVILLE, FLORIDA 11/27/09 11/28/09

Permit No. 3 Date: 1/26/09 Time: From 0800 to 1800

SECTION I: General Job Scope

I. **Work limited to the following (description, area, equipment used):** IDW management activities includes containerization, staging, monitoring for leaks of IDW accumulated wastes. Wastes types include soil cutting, purge and decontamination wash waters.

II. **Primary Hazards:** Lifting, pinches and compressions; flying projectiles; slips, trips, and falls and chemical contamination.

III. **Field Crew:**

IV. **On-site Inspection conducted** ☒ Yes ☐ No Initials of Inspector JC TtNUS
Equipment Inspection required ☐ Yes ☒ No Initials of Inspector TtNUS

SECTION II: General Safety Requirements (To be filled in by permit issuer)

V. **Protective equipment required**
Level D ☒ Level B ☐
Level C ☐ Level A ☐

Respiratory equipment required
Yes ☐ See Reverse
No ☒

Modifications/Exceptions: None anticipated

VI. **Chemicals of Concern**
VOCs and SVOCs

Hazard Monitoring /Action Level(s)
PID with, 10.6eV lamp, reading of 7 ppm above BG in BZ for no more than 3 minutes in any work day. Or FID with 11 ppm above BG

Response Measures
Suspend site activities and report to an unaffected area.

Primary Route of Exposure/Hazard: inhalation, dermal, ingestion

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes or No)

VII. **Additional Safety Equipment/Procedures**

Hard-hat	☐ Yes	☒ No	Hearing Protection (Plugs/Muffs)	☐ Yes	☒ No
Safety Glasses	☐ Yes	☒ No	Safety belt/harness	☐ Yes	☒ No
Chemical/splash goggles	☐ Yes	☒ No	Radio/Cellular Phone	☒ Yes	☐ No
Splash Shield	☐ Yes	☒ No	Barricades	☐ Yes	☒ No
Splash suits/coveralls	☐ Yes	☒ No	Gloves (Type – Leather/Cotton)	☒ Yes	☐ No
Impermeable apron	☐ Yes	☒ No	Work/rest regimen	☐ Yes	☒ No
Steel toe work shoes/boots	☒ Yes	☐ No	Chemical Resistant Boot Covers	☐ Yes	☒ No
High visibility vest	☐ Yes	☒ No	Tape up/use insect repellent	☐ Yes	☒ No
First Aid Kit	☒ Yes	☐ No	Fire Extinguisher	☒ Yes	☐ No
Safety Shower/Eyewash	☐ Yes	☒ No	Other	☐ Yes	☒ No

Modifications/Exceptions: If using pneumatic/electric power to open drums – Safety glasses are required; If power equipment is used to move drums or you are working near operating equipment hard hats will be worn. Tyvek coverall to protect against natural hazards (e.g., ticks) if working/walking through areas of high grass. Use insect repellants containing at least 10% DEET if necessary. Follow manufacturer's recommendations for proper application and reapplication. If working in areas where snakes are a threat, wear snake chaps to protect against bites. High visibility vest if near active traffic areas.

VIII. **Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed	☐	☐	☒
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place	☐	☐	☒
Physical Hazards Identified and Isolated	☒	☐	☐
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).	☒	☐	☐

IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.). ☐ Yes ☒ No
If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. **Special Instructions, precautions:** Suspend site activities in the event of inclement weather. Employ proper lifting techniques. When/where possible use heavy equipment to move and place containers. When placing drums – Place the label and retention ring nut on the outside where it is readily visible. Place 4-drums to a pallet. Maintain a minimum distance of 4-feet between pallet rows. An IDW inventory shall be generated to provide the number of drums, contents, and volumes. This inventory should be provided to the facility contact. Inspect equipment prior to use.

Permit Issued by: Permit Accepted by:

SAFE WORK PERMIT
SAMPLING ACTIVITIES
NAS CECIL FIELD, JACKSONVILLE, FLORIDA

Permit No. 2 Date: 1/26/09 1/28/09 1/27/09 Time: From 0800 to 1800

I. **Work limited to the following (description, area, equipment used):** Sampling activities, including monitoring well sampling, water level measurement, purging

II. **Primary Hazards:** Lifting; slips, trips and falls; vehicular and foot traffic; insect/animal bites and stings; poisonous plants; inclement weather. Chemical contamination.

III. **Field Crew:**

IV. **On-site Inspection conducted** ☒ Yes ☐ No Initials of Inspector TtNUS
Equipment Inspection required ☒ Yes ☐ No Initials of Inspector TtNUS

V. **Protective equipment required**
Level D ☒ Level B ☐
Level C ☐ Level A ☐

Respiratory equipment required
Yes ☐ Specify on the reverse
No ☒

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, or coveralls, safety, glasses and safety footwear. Hard hats and hearing protection will be worn when working near operating equipment.

VI. Chemicals of Concern	Hazard Monitoring /Action Level(s)	Response Measures
VOCs and SVOCs	PID with, 10.6eV lamp, reading of 7 ppm above BG in BZ for no more than 3 minutes in any work day. Or FID with 11 ppm above BG	Suspend site activities and report to an unaffected area.

Primary Route(s) of Exposure/Hazard: inhalation, dermal, ingestion

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. **Additional Safety Equipment/Procedures**

Hard-hat	☐ Yes	☒ No	Hearing Protection (Plugs/Muffs)	☐ Yes	☒ No
Safety Glasses	☐ Yes	☒ No	Safety belt/harness	☐ Yes	☒ No
Chemical/splash goggles	☐ Yes	☒ No	Radio/Cellular Phone	☐ Yes	☒ No
Splash Shield	☐ Yes	☒ No	Barricades	☐ Yes	☒ No
Splash suits/coveralls	☐ Yes	☒ No	Gloves (Type – surgeons' style)	☒ Yes	☐ No
Impermeable apron	☐ Yes	☒ No	Work/rest regimen	☐ Yes	☒ No
Steel toe work shoes/boots	☒ Yes	☐ No	Chemical Resistant Boot Covers	☐ Yes	☒ No
High visibility vest	☐ Yes	☒ No	Tape up/use insect repellent	☐ Yes	☒ No
First Aid Kit	☒ Yes	☐ No	Fire Extinguisher	☒ Yes	☐ No
Safety Shower/Eyewash	☒ Yes	☐ No	Other	☐ Yes	☒ No

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, safety footwear, and nitrile gloves Tyvek coverall to protect against natural hazards (e.g., ticks) if working/walking through areas of high grass. Use insect repellants containing at least 10% DEET and tape up in such areas. Follow manufacturer's recommendations for proper application and reapplication. Hard hat when overhead hazards exist. Safety glasses when near eye hazards. Hearing protection when in high noise areas.

VIII. **Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed	☐	☐	☒
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place	☐	☐	☒
Physical Hazards Identified and Isolated (Splash and containment barriers)	☒	☐	☐
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).	☒	☐	☐

IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.). ☐ Yes ☒ No
If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. **Special instructions, precautions:** Preview work locations to identify potential hazards (slips, trips, and falls, natural hazards, etc.) Review PPE needs based on activities being performed and the associated hazards. Use safe lifting procedures and obtain assistance when handling heavy or awkward objects. Suspend site activities in the event of inclement weather. Observe site workers for signs and symptoms of heat/cold stress. Use sun block (SPF > 15) to prevent sunburn if necessary.

Permit Issued by: Permit Accepted by:

SAFE WORK PERMIT

MOBILIZATION AND DEMOBILIZATION ACTIVITIES

NAS CECIL FIELD, JACKSONVILLE, FLORIDA

1/27/09 JK 1/28/09 JK

Permit No. 1 Date: 01/26/09 Time: From 0800 to 1800

I. **Work limited to the following (description, area, equipment used):** Mobilization and demobilization activities

II. **Primary Hazards:** Lifting; slips, trips and falls; vehicular and foot traffic; insect/animal bites and stings; poisonous plants; inclement weather.

III. **Field Crew:** Jeff Kons

IV. **On-site Inspection conducted** ☒ Yes ☐ No Initials of Inspector JK TtNUS

Equipment Inspection required ☒ Yes ☐ No Initials of Inspector JK TtNUS

V. **Protective equipment required**

Level D ☒ Level B ☐

Level C ☐ Level A ☐

Respiratory equipment required

Yes ☐ Specify on the reverse

No ☒

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, or coveralls, safety, glasses and safety footwear. Hard hats and hearing protection will be worn when working near operating equipment.

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
None anticipated	None	None	None

Primary Route(s) of Exposure/Hazard: NA

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. **Additional Safety Equipment/Procedures**

Hard-hat	☐ Yes	☒ No	Hearing Protection (Plugs/Muffs)	☐ Yes	☒ No
Safety Glasses	☐ Yes	☒ No	Safety belt/harness	☐ Yes	☒ No
Chemical/splash goggles	☐ Yes	☒ No	Radio/Cellular Phone	☐ Yes	☒ No
Splash Shield	☐ Yes	☒ No	Barricades	☐ Yes	☒ No
Splash suits/coveralls	☐ Yes	☒ No	Gloves (Type – Work)	☒ Yes	☐ No
Impermeable apron	☐ Yes	☒ No	Work/rest regimen	☐ Yes	☒ No
Steel toe work shoes/boots	☒ Yes	☐ No	Chemical Resistant Boot Covers	☐ Yes	☒ No
High visibility vest	☐ Yes	☒ No	Tape up/use insect repellent	☐ Yes	☒ No
First Aid Kit	☒ Yes	☐ No	Fire Extinguisher	☒ Yes	☐ No
Safety Shower/Eyewash	☒ Yes	☐ No	Other	☐ Yes	☒ No

Modifications/Exceptions: Tyvek coverall to protect against natural hazards (e.g., ticks) if working/walking through areas of high grass. Use insect repellants containing at least 10% DEET and tape up in such areas. Follow manufacturer's recommendations for proper application and reapplication. Hard hat when overhead hazards exist. Safety glasses when near eye hazards. Hearing protection when in high noise areas.

VIII. **Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed	☐	☐	☒
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place	☐	☐	☒
Physical Hazards Identified and Isolated (Splash and containment barriers)	☒	☐	☒
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).	☒	☐	☐

IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.). ☐ Yes ☒ No

If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. **Special instructions, precautions:** Preview work locations to identify potential hazards (slips, trips, and falls, natural hazards, etc.) Review PPE needs based on activities being performed and the associated hazards. Use safe lifting procedures and obtain assistance when handling heavy or awkward objects. Suspend site activities in the event of inclement weather. Observe site workers for signs and symptoms of heat/cold stress. Use sun block (SPF > 15) to prevent sunburn if necessary.

Permit Issued by: _____ Permit Accepted by: _____

Tetra Tech NUS, Inc.

YSI EQUIPMENT CALIBRATION SHEET

PROJECT NAME : NAS Cecil Field

INSTRUMENT NAME/MODEL: YSI 556 MPS

SITE NAME: G82/BP Wells

MANUFACTURER: YSI

PROJECT No.: 112GN4248

SERIAL NUMBER: 08D101953

		Date of Calibration	Person Performing Calibration	Machine Serial No.	Machine Settings	Instrument Readings		Calibration Standard (Lot#/Expiration Date)	Comments
		(mm/dd/yy)	(Name)			Pre-cal	Post-cal		
pH (4)	(S.U.)	01/28/09	Jeff Kram	08D101958	4.00	4.14	4.00	Lot# 6672 Exp.Date: 9/09	
pH (10)	(S.U.)	"	"	"	10.00	9.95	10.00	Lot# 1710605 Exp.Date: 10/09	
D.O.	%	"	"	"	100	89.2	100	Lot# Exp.Date:	
Cond.	(mS/cm)	"	"	"	1.413	1.425	1.413	Lot# 6540 Exp.Date: 9/09	
Temp.	°C							Lot# Exp.Date:	
ORP	(mV)	"	"	"	240	231.2	240	Lot# 62458 Exp.Date: 10/12	
								Lot# Exp.Date:	
pH (4)	(S.U.)							Lot# Exp.Date:	
pH (10)	(S.U.)							Lot# Exp.Date:	
D.O.	%							Lot# Exp.Date:	
Cond.	(mS/cm)							Lot# Exp.Date:	
Temp.	°C							Lot# Exp.Date:	
ORP	(mV)							Lot# Exp.Date:	

Tetra Tech NUS, Inc.

YSI EQUIPMENT CALIBRATION SHEET

PROJECT NAME : NAS Cecil Field

INSTRUMENT NAME/MODEL: YSI 556 MPS

SITE NAME: G82/BP Wells

MANUFACTURER: YSI

PROJECT No.: 112GN4248

SERIAL NUMBER: 08D101953

		Date of Calibration	Person Performing Calibration	Machine Serial No.	Machine Settings	Instrument Readings		Calibration Standard (Lot#/Expiration Date)	Comments
		(mm/dd/yy)	(Name)			Pre-cal	Post-cal		
pH (4)	(S.U.)	01/26/09	Jeff Kionc	OD10955	4.00	4.48	4.00	Lot# 6572 Exp.Date: 9/09	
pH (10)	(S.U.)	"	"	"	10.00 7.00	10.43 6.68	10.00 7.00	Lot# 1710605 Exp.Date: 10/09	10 cal std 28044 14 exp 10/09
D.O.	%	"	"	"	760	109.6	100	Lot# Exp.Date:	
Cond.	(mS/cm)	"	"	"	1.413	1.324	1.413	Lot# 6540 Exp.Date: 9/09	
Temp.	°C	"	"	"				Lot# Exp.Date:	
ORP	(mV)	"	"	"	240	253.9	240	Lot# 6248 Exp.Date: 09/12	
								Lot# Exp.Date:	
pH (4)	(S.U.)	1/27/09	Jeff Kionc	OD10955	4.0	3.93	4.00	Lot# 6572 Exp.Date: 9/09	
pH (10)	(S.U.)	"	"	"	10.0	10.11	10.00	Lot# 1710605 Exp.Date: 10/09	
D.O.	%	"	"	"	100%	106.3	100%	Lot# Exp.Date:	
Cond.	(mS/cm)	"	"	"	1.413	1.429	1.413	Lot# 6540 Exp.Date: 9/09	
Temp.	°C							Lot# Exp.Date:	
ORP	(mV)	"	"	"	240	256.8	240	Lot# 6248 Exp.Date: 9/12	

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

PROJECT NAME : NAS Cecil Field

INSTRUMENT NAME/MODEL: Lamotte 2020e Turbidimeter

SITE NAME: G82/BP Wells

MANUFACTURER: Lamotte

PROJECT No.: CTO 248 112GN4248

SERIAL NUMBER: ME-12230

Date of Calibration	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot No.)	Remarks and Comments
			Pre-calibration	Post-calibration	Pre-calibration	Post-calibration		
1/26/09	ME-12230	Jeff Kronk	1.0NTU 10.0NTUs	1.0NTU 10.0NTUs	.993 10.16	1.0 10.00		GFS# 8356-P887311 exp 7/09 GFS# 8356-P891234 exp 7/09
1/27/09	"	"	1.0NTU 10.0NTUs	1.0NTU 10.0NTUs	0.89 10.88	1.00 10.89	10.00	" " " " " " " " " " " "
1/28/09	"	"	1.0NTU 10.0NTUs	1.0NTU 10.0NTUs	0.98 10.06	1.00 10.00		GFS# 8356-P887311 exp 7/09 GFS# 8356-P891234 exp 7/09
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: G82/BP Wells	SITE LOCATION: NAS Cecil Field	
WELL NO: CEF-G82-1S	SAMPLE ID: CEF-G82-1S-200901 27	DATE: 01 / 27 / 2009

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 5 – 15'	STATIC DEPTH TO WATER (ft): 7.39	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable) 15 - 7.39 = 7.61 X .1632 = 1.24 X 3.785 = 4.72 5X = 23.5
4.7 Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 9	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 9	PURGE INITIATED AT: 1155	PURGE ENDED AT: 1320	TOTAL VOLUME PURGED (Liters): 24.5

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1155	—	—	200								
1220	5	5	200	7.84	5.76	20.05	.205	0.47	19.21	-23.6	cloudy
1250	9	14	300	7.84	5.74	20.30	.205	0.24	39.8	-38.1	cloudy
1305	5.25	19.25	350	7.87	5.72	19.86	.206	.34	36.6	-46.6	cloudy
1320	5.25	24.50	350	7.85	5.71	19.81	.208	.32	36.1	-48.5	cloudy
1322	Sample time										

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Jeff Krone TtNUS/	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1322	SAMPLING ENDED AT: 1351
PUMP OR TUBING DEPTH IN WELL (feet): 9	SAMPLE PUMP FLOW RATE (mL per minute):	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: ____ FILTER SIZE: ____ µm		DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
TRPH	2	AG	1 L	H_2SO_4			FL-PRO	
VOC's	3	CG	40 ml	HCl			8260B	
PAHS	2	AG	1 L	None			8270 SIM	
Sulfide	1	PE	250 ml	Zinc acetate and sodium hydroxide			EPA method 376.1	
Sulfate	1	PE	500 ml	None			EPA method 300.00	
Nitrate/Nitrite							EPA method 300.00	
Alkalinity							EPA Method 310.0	
Methane	3	CG	40 ml	None			Method RSK 175	

REMARKS: Changed purge rate to lower turbidity. 5X = 23.5
Purged 5 well volumes due to high turbidity

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NAS Cecil Field G82/BP Wells
Sample ID No.: CEF-G82-1S-20090127
Project No.: 112GN4248
Sample Location: CEF-G82-1S
Sampled By: Jeff Krone
Duplicate: ☐
Field Analyst:
Blank: ☐
Field Form Checked as per QA/QC Checklist (initials): JK

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Turbidity (NTU)	DO (Meter, mg/l)	Temp. (°C)	ORP (Eh) (+/- mv)
Date: 1/27/09							
Time: 1322							
Method: Peristaltic	cloudy	5.71	.208	36.1	.32	19.81	-94.5

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:
Equipment: Chemetrics K-7501 or K-7512
Range ☒ 0 - 1.0 mg/L ☐ 1 - 12 mg/L
Analysis Time: 1340
Concentration: .4 mg/L
Notes:

Sulfide (S^{2-}):
Equipment: DR-890
Program/Module: 93 / 610 nm
Analysis Time: 1345
Concentration: .34 mg/L
Notes:

Carbon Dioxide:
Equipment: (Range: 10 to 100 mg/L)
CHEMetrics K1910, K1920, or K1925.
Analysis Time: 1348
Concentration: 75 mg/L
Notes:

Alkalinity:
Equipment: (Range: 10 to 100 mg/L)
CHEMetrics K9810, K9815, or K9820.
Analysis Time: 1351
Concentration: 55 mg/L
Notes: Results may be skewed due to high turbidity.

~~**Ferrous Iron (Fe^{2+}):**~~
~~Equipment: DR-890~~ ~~IR-18C Color Wheel~~
~~Program/Module: 33 / 500nm~~
~~Analysis Time:~~
~~Concentration: mg/L~~
~~Filtered:~~ ☐
~~Notes:~~

~~**Hydrogen Sulfide (H_2S):**~~
~~Equipment: HS-C~~
~~Exceeded 5.0 mg/L range on color chart:~~ ☐
~~Analysis Time:~~
~~Concentration: mg/L~~
~~Notes:~~

QA/QC Checklist:
All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Multiplication is correct for each *Multiplier* table: ☑
Final concentration is within the appropriate *Range Used* block: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: G82/BP Wells	SITE LOCATION: NAS Cecil Field	
WELL NO: CEF-G82-2I	SAMPLE ID: CEF-G82-2I-200901~~27~~	DATE: 01 / ~~27~~ 07 / 2009

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 30 – 35'	STATIC DEPTH TO WATER (ft): 8.08	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable) ~~35 - 8.08 = 26.92 x .16 = 4.30 x 5 =~~ 1.30 Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) 5x = 5.925 1.185 Liters .0014 x 35 = .049 x 3.785 = .185 + 1 =

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGE INITIATED AT:	PURGE ENDED AT:	TOTAL VOLUME PURGED (Liters):
32	32	1504	1551	11.0

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1504	—	—	300	—							
1530	4.8	4.8	300	8.19	4.75	22.47	.054	1.51	101.9	99.0	cloudy
1540	4.0	8.8	200	8.19	4.69	22.47	.054	0.79	92.7	89.6	cloudy
1545	1.0	9.8	200	8.19	4.66	22.50	.053	0.53	74.0	84.3	cloudy
1548	.6	10.4	200	8.19	4.66	22.49	0.054	0.51	72.4	84.0	cloudy
1551	.6	11.0	200	8.19	4.66	22.49	0.054	0.50	72.2	83.6	cloudy
1555	Sample time										

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Jeff KroneTtNUS/	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1555	SAMPLING ENDED AT: 1648
PUMP OR TUBING DEPTH IN WELL (feet): 32	SAMPLE PUMP FLOW RATE (mL per minute): ~~300~~/200	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: ____ µm	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
TRPH	2	AG	1 L	H_2SO_4			FL-PRO	
VOC's	3	CG	40 ml	HCl			8260B	
PAHS	~~1~~ 2	AG	1 L	None			8270 SIM	
Sulfide	1	PE	250 ml	Zinc acetate and sodium hydroxide			EPA method 376.1	
Sulfate	1	PE	500 ml	None			EPA method 300.00	
Nitrate/Nitrite							EPA method 300.00	
Alkalinity							EPA Method 310.0	
Methane	~~2~~ 3	CG	40 ml	None			Method RSK 175	

REMARKS: Slowed purge rate to decrease turbidity.
Pumped/purged 5 screen volumes due to high turbidity.

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **NAS Cecil Field G82/BP Wells**
Sample ID No.: **CEF-G82-2I-20090127**
Project No.: **112GN4248**
Sample Location: **CEF-G82-2I**
Sampled By: Jeff Krone
Duplicate: ☐
Field Analyst:
Blank: ☐
Field Form Checked as per QA/QC Checklist (initials): JC

SAMPLING DATA:

Date: 1/27/09	Color	pH	S.C.	Turbidity	DO	Temp.	ORP (Eh)
Time: 1555	(Visual)	(SU)	(mS/cm)	(NTU)	(Meter, mg/l)	(°C)	(+/- mv)
Method: Peristaltic	Cloudy	4.66	.054	72.2	.50	22.49	83.6

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:
Equipment: Chemetrics K-7501 or K-7512
Range ☒ 0 - 1.0 mg/L ☐ 1 - 12 mg/L
Analysis Time: 1640
Concentration: .7 mg/L
Notes:

Sulfide (S^{2-}):
Equipment: DR-890
Program/Module: 93 / 610 nm
Analysis Time: 1645
Concentration: .25 mg/L
Notes:

Carbon Dioxide:
Equipment: (Range: 10 to 100 mg/L)
CHEMetrics K1910, K1920, or K1925.
Analysis Time: 1648
Concentration: 32 mg/L
Notes:

Alkalinity:
Equipment: (Range: 10 to 100 mg/L)
CHEMetrics K9810, K9815, or K9820.
Analysis Time: 1643
Concentration: 0 mg/L
Notes: Sample failed to change color.

~~**Ferrous Iron (Fe^{2+}):**~~
~~Equipment: DR-890~~ ~~IR-18C Color Wheel~~
~~Program/Module: 33 / 500nm~~
~~Analysis Time:~~
~~Concentration: mg/L~~
~~Filtered:~~ ☐
~~Notes:~~

~~**Hydrogen Sulfide (H_2S):**~~
~~Equipment: HS-C~~
~~Exceeded 5.0 mg/L range on color chart:~~ ☐
~~Analysis Time:~~
~~Concentration: mg/L~~
~~Notes:~~ Results may be skewed due to high turbidity.

QA/QC Checklist:
All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Multiplication is correct for each *Multiplier* table: ☑
Final concentration is within the appropriate *Range Used* block: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: G82/BP Wells	SITE LOCATION: NAS Cecil Field	
WELL NO: CEF-G82-2S	SAMPLE ID: CEF-G82-2S-200901 27	DATE: 01 / 27 / 2009

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 4 – 14'	STATIC DEPTH TO WATER (ft): 7.67	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DERTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable) 14 - 7.67 = 6.33 X .1632 = 1.03 X 3.785 = 3.91
3.91 Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 9	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 9	PURGE INITIATED AT: 1358	PURGE ENDED AT: 1421	TOTAL VOLUME PURGED (Liters): 6.9

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1358	—	—	300	7.67							
1412	4.2	4.2	300	7.87	6.04	20.36	.367	.55	3.80	-24.3	clear
1415	.9	5.1	300	7.88	6.03	20.36	.372	.53	3.11	-26.0	clear
1418	.9	6.0	300	7.88	6.02	20.34	.375	.50	2.23	-27.9	clear
1421	.9	6.9	300	7.88	6.02	20.34	.375	.51	1.13	-28.1	clear
1425	Sample time										

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Jeff Krone TtNUS/	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1425	SAMPLING ENDED AT: 1500
PUMP OR TUBING DEPTH IN WELL (feet): 9	SAMPLE PUMP FLOW RATE (mL per minute): 300	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: ____ FILTER SIZE: ____ µm	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
TRPH	2	AG	1 L	H_2SO_4			FL-PRO	
VOC's	3	CG	40 ml	HCl			8260B	
PAHS	2	AG	1 L	None			8270 SIM	
Sulfide	1	PE	250 ml	Zinc acetate and sodium hydroxide			EPA method 376.1	
Sulfate	1	PE	500 ml	None			EPA method 300.00	
Nitrate/Nitrite							EPA method 300.00	
Alkalinity							EPA Method 310.0	
Methane	3	CG	40 ml	None			Method RSK 175	

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **NAS Cecil Field G82/BP Wells**
Sample ID No.: **CEF-G82-2S-20090107**
Project No.: **112GN4248**
Sample Location: **CEF-G82-2S**
Sampled By: Jeff Krone
Duplicate: ☐
Field Analyst:
Blank: ☐
Field Form Checked as per QA/QC Checklist (initials): JK

SAMPLING DATA:

Date: 01/ /09	Color	pH	S.C.	Turbidity	DO	Temp.	ORP (Eh)
Time:	(Visual)	(SU)	(mS/cm)	(NTU)	(Meter, mg/l)	(°C)	(+/- mv)
Method: Peristaltic	Clear	6.02	.375	1.13	.51	20.34	-28.1

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:
Equipment: Chemetrics K-7501 or K-7512
Range ☒ 0 - 1.0 mg/L ☐ 1 - 12 mg/L
Analysis Time: 1451
Concentration: .7 mg/L
Notes:

Sulfide (S^{2-}):
Equipment: DR-890
Program/Module: 93 / 610 nm
Analysis Time: 1449
Concentration: _____ mg/L
Notes:

Carbon Dioxide:
Equipment: (Range: 10 to 100 mg/L)
CHEMetrics K1910, K1920, or K1925.
Analysis Time: 1455
Concentration: 85 mg/L
Notes:

Alkalinity:
Equipment: (Range: 50 to 500 mg/L)
CHEMetrics K9810, K9815, or K9820.
Analysis Time: 1500
Concentration: 130 mg/L
Notes:

~~**Ferrous Iron (Fe^{2+}):**~~
~~Equipment: DR-890~~ ~~IR-18C Color Wheel~~
~~Program/Module: 33 / 500nm~~
~~Analysis Time:~~ _____
~~Concentration: _____ mg/L~~
~~Filtered:~~ ☐
~~Notes:~~

~~**Hydrogen Sulfide (H_2S):**~~
~~Equipment: HS-C~~
~~Exceeded 5.0 mg/L range on color chart:~~ ☐
~~Analysis Time:~~ _____
~~Concentration: _____ mg/L~~
~~Notes:~~

QA/QC Checklist:
All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Multiplication is correct for each *Multiplier* table: ☑
Final concentration is within the appropriate *Range Used* block: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **G82/BP Wells**	SITE LOCATION: **NAS Cecil Field**	
WELL NO: CEF-G82-3S	SAMPLE ID: CEF-G82-3S-200901 27	DATE: 01/ 27 / 2009

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 4 – 14'	STATIC DEPTH TO WATER (ft): 7.42	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable) 14 - 7.42 = 6.58 x .1632 = 1.07 x 3.785 = 4.06
4.06 Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 9	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 9	PURGE INITIATED AT: 1050	PURGE ENDED AT: 1111	TOTAL VOLUME PURGED (Liters): 6.3

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1050	—	—	300	—							
1105	4.5	4.5	300	7.59	6.72	20.00	.270	1.42	7.99	129.2	clear
1108	.9	5.4	300	7.59	6.72	20.07	.270	1.46	5.54	130.6	clear
1111	.9	6.3	300	7.59	6.72	20.03	.268	1.45	5.34	130.7	clear
1115	Sample time										

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Jeff Krone TtNUS/	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1115	SAMPLING ENDED AT: 1140
PUMP OR TUBING DEPTH IN WELL (feet): 9	SAMPLE PUMP FLOW RATE (mL per minute): 300	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: ____	FILTER SIZE: ____ µm	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
TRPH	2	AG	1 L	H_2SO_4			FL-PRO	
VOC's	3	CG	40 ml	HCl			8260B	
PAHS	~~1~~ 2	AG	1 L	None			8270 SIM	
Sulfide	1	PE	250 ml	Zinc acetate and sodium hydroxide			EPA method 376.1	
Sulfate	1	PE	500 ml	None			EPA method 300.00	
Nitrate/Nitrite							EPA method 300.00	
Alkalinity							EPA Method 310.0	
Methane	~~1~~ 3	CG	40 ml	None			Method RSK 175	

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: **NAS Cecil Field G82/BP Wells**
Sample ID No.: **CEF-G82-3S-20090127**
Project No.: **112GN4248**
Sample Location: **CEF-G82-3S**
Sampled By: Jeff Krone
Duplicate: ☐
Field Analyst:
Blank: ☐
Field Form Checked as per QA/QC Checklist (initials): JK

SAMPLING DATA:

	Color	pH	S.C.	Turbidity	DO	Temp.	ORP (Eh)
Date: 01/27/09							
Time: 1115	(Visual)	(SU)	(mS/cm)	(NTU)	(Meter, mg/l)	(°C)	(+/- mv)
Method: Peristaltic	clear	5.72	.268	6.34	1.45	20.03	130.7

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:
Equipment: Chemetrics K-7501 or K-7512
Range ☒ 0 - 1.0 mg/L ☐ 1 - 12 mg/L
Analysis Time: 1138
Concentration: 0.7 mg/L
Notes:

Sulfide (S^{2-}):
Equipment: DR-890
Program/Module: 93 / 610 nm
Analysis Time: 1136
Concentration: 0.01 mg/L
Notes:

Carbon Dioxide:
Equipment: (Range: 10 to 100 mg/L)
CHEMetrics K1910, K1920, or K1925.
Analysis Time: 1141
Concentration: 70 mg/L
Notes:

Alkalinity:
Equipment: (Range: 10 to 100 mg/L)
CHEMetrics K9810, K9815, or K9820.
Analysis Time: 1144
Concentration: 50 mg/L
Notes:

~~**Ferrous Iron (Fe^{2+}):**~~
~~Equipment: DR-890~~ ~~IR-18C Color Wheel~~
~~Program/Module: 33 / 500nm~~
~~Analysis Time:~~
~~Concentration: mg/L~~
~~Filtered:~~ ☐
~~Notes:~~

~~**Hydrogen Sulfide (H_2S):**~~
~~Equipment: HS-C~~
~~Exceeded 5.0 mg/L range on color chart:~~ ☐
~~Analysis Time:~~
~~Concentration: mg/L~~
~~Notes:~~

QA/QC Checklist:
All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Multiplication is correct for each *Multiplier* table: ☑
Final concentration is within the appropriate *Range Used* block: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: G82/BP Wells	SITE LOCATION: NAS Cecil Field	
WELL NO: CEF-G82-4S	SAMPLE ID: CEF-G82-4S-200901 28	DATE: 01 / 28 / 2009

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 5 – 15'	STATIC DEPTH TO WATER (ft): 8.38	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH 15 – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable) 4.08 Liters 15 – 8.38 = 6.62 x .1632 = 1.08 x 3.785 = 4.08L

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 9	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 9	PURGE INITIATED AT: 1200	PURGE ENDED AT: 1221	TOTAL VOLUME PURGED (Liters): 6.3

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (ml/pm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1200	–	–	300								
1215	4.5	4.5	300	8.48	4.49	23.58	.130	.79	18.0	156.6	clear
1218	.9	5.4	300	8.48	4.50	23.55	.132	.70	17.4	154.5	clear
1221	.9	6.3	300	8.48	4.52	23.59	.132	.69	17.2	153.2	clear
1225	Sample time										

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Jeff Krone	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1225	SAMPLING ENDED AT: 1241
PUMP OR TUBING DEPTH IN WELL (feet): 9	SAMPLE PUMP FLOW RATE (mL per minute): 300	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: ____ FILTER SIZE: ____ µm		DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
TRPH	2	AG	1 L	H_2SO_4			FL-PRO	
VOC's	3	CG	40 ml	HCl			8260B	
PAHS	2	AG	1 L	None			8270 SIM	

REMARKS:

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: G82/BP Wells	SITE LOCATION: NAS Cecil Field	
WELL NO: CEF-G82-5S	SAMPLE ID: CEF-G82-5S-200901 28	DATE: 01 / 28 / 2009

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 5 – 15'	STATIC DEPTH TO WATER (ft): 8.18	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable) 15 - 8.18 = 6.82 X .1632 = 1.113 X 3.785 = 4.21
4.21 Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 9	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 9	PURGE INITIATED AT: 1105	PURGE ENDED AT: 1129	TOTAL VOLUME PURGED (Liters): 7.2

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1105	—	—	300								
1120	4.5	4.6	300	8.31	6.08	21.08	.130	1.96	5.76	123.1	clear
1123	.9	5.4	300	8.31	5.07	21.30	.130	1.88	3.71	116.0	clear
1126	.9	6.3	300	8.31	5.05	21.19	.128	1.67	3.76	104.0	clear
1129	.9	7.2	300	8.31	6.02	21.17	.128	1.70	3.21	103.2	clear
1135	Sample time										

WELL CAPACITY (Gallons Per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Jeff Krone TtNUS/	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1135	SAMPLING ENDED AT: 1150
PUMP OR TUBING DEPTH IN WELL (feet): 9	SAMPLE PUMP FLOW RATE (mL per minute): 300	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: ____	FILTER SIZE: ____ µm	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
TRPH	2	AG	1 L	H_2SO_4			FL-PRO	
VOC's	3	CG	40 ml	HCl			8260B	
PAHS	2	AG	1 L	None			8270 SIM	

REMARKS:

MATERIAL CODES: AG = Amber Glass; CG = Clear Glass; PE = Polyethylene; PP = Polypropylene; S = Silicone; T = Teflon; O = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: APP = After Peristaltic Pump; B = Bailer; BP = Bladder Pump; ESP = Electric Submersible Pump; PP = Peristaltic Pump; RFPP = Reverse Flow Peristaltic Pump; SM = Straw Method (Tubing Gravity Drain); VT = Vacuum Trap; O = Other (Specify)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: G82/BP Wells	SITE LOCATION: NAS Cecil Field	
WELL NO: CEF-G82-6S	SAMPLE ID: CEF-G82-6S-200901 28	DATE: 01 / 28 / 2009

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH: 5 - 15	STATIC DEPTH TO WATER (ft): 10.72	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable) 15 - 10.72 = 4.28 x .1632 = .6985 x 3.785 = 2.64 L
2.64 Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 13	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 13	PURGE INITIATED AT: 0855	PURGE ENDED AT: 0946	TOTAL VOLUME PURGED (Liters): 10.2

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
0855	—	—	200	—	—	—	—	—	8.26	—	—
0940	9	9	200	11.19	4.17	19.76	.122	2.63	2.68	200.3	clear
0943	.6	9.6	200	11.19	4.16	19.79	.119	2.75	1.31	202.1	clear
0946	.6	10.2	200	11.19	4.15	19.79	.117	2.67	1.02	201.9	clear
0950	Sample Time										

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Jeff Krone	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 0950	SAMPLING ENDED AT: 1015
PUMP OR TUBING DEPTH IN WELL (feet): 13	SAMPLE PUMP FLOW RATE (mL per minute): 200	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: ____ FILTER SIZE: ____ µm	DUPLICATE: (Y) ~~N~~	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
TRPH	2	AG	1 L	H_2SO_4			FL-PRO	
VOC's	3	CG	40 ml	HCl			8260B	
PAHS	~~1~~ 2	AG	1 L	None			8270 SIM	

REMARKS: Duplicate: CEF-G82-~~6S01~~ DUP01-20090128

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER 26420

PAGE 1 OF 1

PROJECT NO: 1126V4248	FACILITY: Cecil Field G-82 / BP walk	PROJECT MANAGER: Kara Wimble	PHONE NUMBER: 904 636-6125
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: Jeff Krone	PHONE NUMBER: 904 699-7473
		CARRIER/WAYBILL NUMBER	

LABORATORY NAME AND CONTACT: Accutest

ADDRESS: 4405 Vineland Road Suite C-15

CITY, STATE: Orlando, Fl 32811

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

CONTAINER TYPE: PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR 2009	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOC's 8260B (G, HCL)	PHC's 8270 SIM (G, none)	TRPH - FLPRO (G, H2SO4)					COMMENTS
1/28	0956	CEF-G82-6$-20090128				GW	G	7	3	2	2					cool to 4°C
1/28	1135	CEF-G82-5$-20090128				GW	G	7	3	2	2					
1/28	1205	CEF-G82-4$-20090128				GW	G	7	3	2	2					
1/28	0000	CEF-G82-DUP01-20090128				GW	G	7	3	2	2					
1/28	0000	CEF-BP-DUP01-20090128				GW	G	7	3	2	2					
1/28	1330	CEF-BP-4$-20090128				GW	G	7	3	2	2					
1/28	1455	CEF-BP-3$-20090128				GW	G	7	3	2	2					
		Trip Blank						3								

1. RELINQUISHED BY: Jeff Krone	DATE: 1/29/09	TIME: 1445	1. RECEIVED BY: Elizabeth Rieg Accutest	DATE: 1/30/09	TIME: 1445
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R

FORM NO. TtNUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER 26419

PAGE 1 OF 1

PROJECT NO: 112GN4248	FACILITY: Cecil Field G-82/BB wells	PROJECT MANAGER Kara Wimble	PHONE NUMBER 904 636 6125	LABORATORY NAME AND CONTACT: Accutest
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER Jeff Kronc	PHONE NUMBER 904 699-7473	ADDRESS 4405 Vineland Rd, Suite C-15
		CARRIER/WAYBILL NUMBER Accutest Courier		CITY, STATE Orlando, Fl 32811

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

DATE YEAR 2009	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAP (G) COMP (C)	No. OF CONTAINERS	VOC's 8260B	PAH's 8270D SIM	TRPH-FL PRO	Sulfate/Nitrite/Nitrate	Sulfide 376.1	Methane RSK175			COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	G	G	P	P	G			
PRESERVATIVE USED									HCl	none	H2SO4	Alkalinity Sulfate Sulfide	NaOH	none			
1/27	1000	CEF-BB-2S-20090127				GW	G	12	3	2	2	1	1	3			Cool to 4°C
1/27	1115	CEF-G82-3S-20090127				GW	G	12	3	2	2	1	1	3			
1/27	1320	CEF-G82-1S-20090127				GW	G	12	3	2	2	1	1	3			
1/27	1425	CEF-G82-2S-20090127				GW	G	12	3	2	2	1	1	3			
1/27	1555	CEF-G82-2I-20090127				GW	G	12	3	2	2	1	1	2			
		Trip Blank						1									

1. RELINQUISHED BY Jeff Kronc	DATE 1/27/09	TIME 1630	1. RECEIVED BY (A/SE)	DATE 1/27/09	TIME 16:30
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. — **CHAIN OF CUSTODY** — **NUMBER** 26230 — **PAGE** 1 **OF** 1

PROJECT NO: 112GN424B	**FACILITY:** NAS Cecil Field	**PROJECT MANAGER** Kara Wimble	**PHONE NUMBER** 904-626-6125	**LABORATORY NAME AND CONTACT:** Accutest
SAMPLERS (SIGNATURE)		**FIELD OPERATIONS LEADER** Jeff Kane	**PHONE NUMBER** 904-699-7473	**ADDRESS** 4405 Vineland Rd, Ste C-15
		CARRIER/WAYBILL NUMBER Courier - Accutest		**CITY, STATE** Orlando, FL 32811

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

DATE YEAR 2009	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOCs-8260	PAHs-8270SIM	TPH-FL-PRO	Sulfate, Nitrate, Nitrite, alkalinity	sulfide	Methane			COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	G	G	P	P	G			
PRESERVATIVE USED									HCl	None	H_2SO_4	None	NaOH Zn Ac	HCl			
1/26	1305	CFF-BP-6S-20090126				GW		13	3	1	2	1	3	3			* Cool 1a
↓	~~1448~~ 1448	CFF-BP-1S-20090126				GW		14	3	2	2	1	3	3			4°C
↓	1605	CFF-BP-5I-20090126				GW		14	3	2	2	1	3	3			

1. RELINQUISHED BY	DATE 1/26/09	TIME 1625	1. RECEIVED BY	DATE 1/26/09	TIME 1625
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001