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NAS CECIL FIELD, FL
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FIRST SEMI-ANNUAL YEAR 2 EVEN GROUNDWATER MONITORING LETTER REPORT FOR BUILDING 815 WASH RACK AREA NAS CECIL FIELD FL

4/27/2010

TETRA TECH NUS INC

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PITT-04-10-067

April 27, 2010

Project Number 112G02267

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 V Contract Number N62470-08-D-1001
Contract Task Order JM09

Subject: Semi-Annual Groundwater Monitoring Report, 1st Semi-Annual, Year 2 Event – January 2010
Building 815 Wash Rack Area
Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Grabka:

Tetra Tech, Inc. (Tetra Tech) is pleased to submit this 2nd Semi-Annual, Year 1 Groundwater Monitoring Report for the Building 815 Wash Rack Area at Naval Air Station (NAS) Cecil Field. This report was prepared for the United States Navy, Naval Facilities Engineering Command Southeast (NAVFAC SE) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) V Contract Number N62470-08-D-1001. This Semi-Annual Groundwater Monitoring Report summarizes the fieldwork and analytical results for the sampling event conducted in January 2010. The work was performed in general accordance with Florida Department of Environmental Protection (FDEP) Standard Operating Procedures (SOPs) under DEP-SOP-001/01.

BACKGROUND

Building 815 is an aircraft maintenance hangar located at the northern end of the flightline and eastern end of Lake Newman Street (formerly 6th Street) (see Figure 1). An aircraft wash rack is located north of the hangar. Naphthalene contamination in groundwater was identified in wells at the wash rack in the 1999 Sampling and Analysis Report (SAR) for Hangar 815. There are no tanks associated with this area of contamination. During the SAR, two shallow monitoring wells were installed in the area of the wash rack. In addition, an area of soil contamination and a storm water retention pond in the wash rack area were investigated during the SAR. The results of the investigations of this area are described in the Technical Memorandum for Potential Source of Contamination 56.

Between October 1999 and May 2000, Tetra Tech conducted three phases of Site Assessment (SA) activities. The first phase included installation and sampling of one monitoring well and sampling of five existing wells for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and total recoverable petroleum hydrocarbons (TRPH). Naphthalene and TRPH were the only contaminants detected in excess of FDEP Groundwater Cleanup Target Levels (GCTLs). The second phase involved the installation and sampling of one shallow monitoring well and sampling of three other existing upgradient wells. The groundwater samples from the second phase were analyzed for select compounds

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(VOCs, SVOCs, and TRPH) detected during the first phase of SA activities. The third phase of work entailed resampling monitoring well CEF-815-4S for VOCs on May 11, 2000, to confirm the Phase II vinyl chloride result (which was greater than its GCTL). During Phase III SA activities, the vinyl chloride concentration was less than its FDEP GCTL in monitoring well CEF-815-4S. The extent of exceedances of naphthalene and TRPH in groundwater was delineated, and semi-annual monitoring was proposed and approved for the site under Florida's Petroleum Program. Based on the 2000 Natural Attenuation Monitoring Plan Approval Order (NAMPAO) issued by FDEP, semi-annual monitoring was conducted at the site from 2000 to 2003.

On January 12, 2004, Tetra Tech submitted the Groundwater Monitoring Report documenting results from the July 2003 sampling event. Based on these results, Tetra Tech concluded that naphthalene concentrations in monitoring well CEF-815-1S continued to exceed the annual milestone cleanup objectives defined in the NAMPAO. Tetra Tech recommended that the monitoring program be discontinued and that a Remedial Action Plan (RAP) be developed for the site. FDEP concurred with discontinuing the monitoring program and recommended that a soil assessment be conducted prior to preparation of a RAP. In January 2005, Tetra Tech collected soil samples in the 815 Wash Rack Area to determine if a continuing source of soil contamination was present in the vicinity of monitoring well CEF-815-1S. Eight samples were collected above the water table and capillary fringe from 2 to 4 feet below ground surface (bgs) and were analyzed for VOCs, polynuclear aromatic hydrocarbons (PAHs), and TRPH. All soil assessment results were less than FDEP Soil Cleanup Target Levels (SCTLs), so the soil was determined to not be a continuing source of groundwater contamination.

As discussed during the February 2005 meeting, the NAS Cecil Field Base Realignment and Closure (BRAC) Cleanup Team (BCT) agreed to transfer the site from the Petroleum Program to the Installation Restoration (IR) Program so that site remediation could be conducted concurrently with adjacent Site 59. However, at the September 2007 BCT Meeting, it was decided that groundwater at the Building 815 Wash Rack Area would be transferred back to the Petroleum Program. Because nearly 2 years had passed since the last groundwater sampling event and because a RAP had not been prepared for the site since its transfer to the IR Program, a Site Assessment Report Addendum (SARA) was recommended. The monitoring wells sampled and the analyses (naphthalene and TRPH) conducted for the SARA were those designated in the 2000 NAMPAO.

During the initial SARA field event on November 5, 2007, Tetra Tech collected groundwater samples from wells CEF-815-1S and NG-12S to confirm the presence of naphthalene using United States Environmental Protection Agency (USEPA) Method 8270C and TRPH using the Florida Petroleum Range Organics (FL-PRO) method. Monitoring well CEF-815-1S had a naphthalene concentration of 89 micrograms per liter (µg/L), greater than the FDEP GCTL of 14 µg/L. TRPH was detected at a concentration less than its GCTL in CEF-815-1S. Concentrations in the groundwater sample collected from NG-12S during the SARA investigation were less than GCTLs.

During a second SARA field event in February 2008, one shallow monitoring well was installed using hollow-stem auger drilling techniques to delineate the extent of naphthalene contamination at the site. The well (CEF-815-5S) was installed approximately 30 feet southeast of CEF-815-1S and was screened from approximately 4 to 14 feet bgs. The location of CEF-815-5S is shown on Figure 2. Groundwater samples were collected from wells CEF-815-1S, CEF-815-5S, NG-12S, and nearby IR Site 59 well CEF-059-028-015 and analyzed for naphthalene using USEPA Method 8270C and for TRPH using the FL-PRO method. February 2008 samples from CEF-815-1S and CEF-815-5S had naphthalene concentrations of 69 and 37 µg/L, respectively. Although these results exceeded the FDEP GCTL of 14 µg/L, they were less than the Natural Attenuation Default Concentration (NADC) of 140 µg/L and continued to demonstrate a consistent pattern of decreasing concentrations of naphthalene since the first

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sampling event performed in accordance with FDEP-approved semi-annual monitoring in 2000. TRPH concentrations have been less than its GCTL in all of the wells sampled at the Site over a long period of time, which is why the wells are no longer sampled for TRPH. Naphthalene concentrations from NG-12S and CEF-059-028-015 were less than FDEP GCTLs.
Due to the decreasing trend in naphthalene concentrations in CEF-815-1S, the well at which the highest concentrations are consistently detected, and because the naphthalene concentration in this well was significantly less than the NADC of 140 µg/L, Tetra Tech recommended in the 2008 SARA that regular monitoring of wells CEF-815-1S, NG-12S, CEF-815-5S, and CEF-059-015 for naphthalene be conducted over a 5-year period. The proposed sampling frequency was quarterly for the first year, semi-annual for years two and three, and annual for years four and five. FDEP issued an updated NAMPAO in November 2008 that incorporated these recommendations and is included in Attachment A. The field activities and results from the 1st Semi-Annual, Year 2 sampling event are detailed below.

FIELD ACTIVITIES

On January 20, 2010, Tetra Tech collected groundwater samples from wells CEF-815-1S, NG-12S, CEF-815-5S, and CEF-059-028-015 for analysis of naphthalene using USEPA Method 8270C. Monitoring well locations are shown on Figure 2. The depth-to-water measurements, top-of-casing elevations, and groundwater elevations are presented in Table 1. Low-flow purge sheets and groundwater sample log sheets from the January 2010 event are included as Attachment A. The samples were placed on ice immediately upon collection and delivered via FedEx under chain of custody to Empirical Laboratories, Inc. in Nashville, Tennessee.

Water level measurements were recorded on January 20, 2010, from wells CEF-815-1S, CEF-815-5S, NG-12S, and CEF-059-028-015 prior to sampling activities. An anomalous water level reading was recorded in monitoring well CEF-059-028-015. The typical depth to the water table is approximately 6.68 feet below top of casing (btoc) as identified in monitoring well NG-12S. The anomalous groundwater level reading was not used to contour the groundwater flow direction presented in Figure 3. Based on historical data, groundwater flow has consistently been to the southeast for at least 10 years in the site area. General protocols were in accordance with FDEP SOPs and Tetra Tech SOP SA-1.1.

RESULTS

The naphthalene concentrations in CEF-815-1S (46 µg/L) and in CEF-815-5S (110 µg/L) exceeded the GCTL of 14 µg/L. The naphthalene concentration in CEF-815-1S decreased significantly since the most previous event in July 2009. The naphthalene concentration in CEF-815-5S increased from 72 µg/L during the December 2008 sampling event to 110 µg/L during this sampling event. Naphthalene results in perimeter monitoring wells NG-12S and CEF-059-028-015 remained less than the GCTL. Laboratory analytical results from the January 2010 sampling event are summarized in Table 2 and illustrated on Figure 4. The laboratory analytical report is provided as Attachment B.

CONCLUSIONS AND RECOMMENDATIONS

During the January 2010 sampling event, naphthalene concentrations in source wells CEF-815-1S and CEF-815-5S were greater the FDEP GCTL of 14 µg/L. Concentrations of naphthalene in CEF-815-5S increased since the July 2009 sampling event and concentrations of naphthalene in CEF-815-1S decreased since the July 2009 sampling event.

Based on the results of the 1st Semi-Annual, Year 2 sampling event, Tetra Tech recommends that groundwater sampling continue on a semi-annual basis. If the FDEP approves this recommendation, the 2nd Semi-Annual, Year 2 sampling event would be scheduled for July 2010.

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If you have any questions regarding this submittal, please feel free to contact me at (412) 921-8163 or Kara Wimble at (904) 730-4669, extension 217, or via e-mail at Kara.Wimble@ttnus.com.
Sincerely,

Robert F. Simcik, P.E.
Task Order Manager

Kara F. Wimble
Project Scientist

RFS/rm

Attachments (4)

c: A. Sanford, NAVFAC SE (electronic copy)
M. Davidson, NAVFAC SE (electronic copy)
M. Halil, CH2M Hill (electronic only)
S. Currie, Tetra Tech CTO JM09 project file (1 copy, unbound)
J. Trepanowski, Tetra Tech
M. Jonnet, Tetra Tech (electronic copy)
J. Johnson, Tetra Tech (1 copy for Information Repository)
K. Wimble, Tetra Tech (1 copy)

CERTIFICATION

The information contained herein is based on the environmental investigation and associated information detailed in the text and appended to this report. If conditions are determined to exist that differ from those described, the undersigned engineer should be notified to evaluate the effects of any additional information or the information described in this report. This Semi-Annual Groundwater Monitoring Report, 1st Semi-Annual Year 2 Event – January 2010, was developed for the Building 815 Wash Rack Area at the former Naval Air Station Cecil Field and should not be construed to apply to any other site.

ROBERT FRANK SIMCIK
No. 00061263
STATE OF FLORIDA
PROFESSIONAL ENGINEER

April 27, 2010
Robert Simcik
P.E. License Number 61263

TABLES

TABLE 1

GROUNDWATER ELEVATION DATA
2nd YEAR, 1st SEMI-ANNUAL SAMPLING EVENT
BUILDING 815 WASH RACK AREA
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Monitoring Well Identification	Well Depth (feet btoc)	TOC Elevation (feet above msl)	May 1, 2001		December 17, 2001		June 19, 2002		January 9, 2003		July 24, 2003		February 12, 2008	
			Depth to Water (feet btoc)	Water Level Elevation (feet above msl)	Depth to Water (feet btoc)	Water Level Elevation (feet above msl)	Depth to Water (feet btoc)	Water Level Elevation (feet above msl)	Depth to Water (feet btoc)	Water Level Elevation (feet above msl)	Depth to Water (feet btoc)	Water Level Elevation (feet above msl)	Depth to Water (feet btoc)	Water Level Elevation (feet above msl)
CEF-815-1S	13.10	75.55	6.12	69.44	5.40	70.16	6.41	69.15	4.25	71.31	4.53	71.03	6.31	69.24
CEF-815-5S	14.40	75.65	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	6.56	69.09
NG-12S	13.40	75.69	6.39	69.30	5.63	70.06	6.68	69.01	4.69	71.00	4.83	70.86	6.54	69.15
CEF-059-028-015	15.00	76.05	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	7.16	68.89

Monitoring Well Identification	Well Depth (feet btoc)	TOC Elevation (feet above msl)	June 19, 2008		September 16, 2008		December 15, 2008		July 31, 2009		January 20, 2010	
			Depth to Water (feet btoc)	Water Level Elevation (feet above msl)	Depth to Water (feet btoc)	Water Level Elevation (feet above msl)	Depth to Water (feet btoc)	Water Level Elevation (feet above msl)	Depth to Water (feet btoc)	Water Level Elevation (feet above msl)	Depth to Water (feet btoc)	Water Level Elevation (feet above msl)
CEF-815-1S	13.10	75.55	6.40	69.15	4.86	70.69	6.54	69.01	4.46	71.09	6.36	62.79
CEF-815-5S	14.40	75.65	6.61	69.04	5.24	70.41	6.81	68.84	4.77	70.88	6.59	62.45
NG-12S	13.40	75.69	6.60	69.09	5.14	70.55	6.81	68.88	4.78	70.91	6.68	62.41
CEF-059-028-015	15.00	76.05	7.18	68.87	5.91	70.14	6.02	70.03	3.48	72.57	3.82 (1)	65.05

(1) Result determined to be anomalous and not used in the determination of the overall site groundwater flow direction.
TOC = Top of casing.
btoc = Below top of casing.
msl = Mean sea level.
NM = Not measured.

Table 2
Summary of Detections in Groundwater

1st Semi-Annual, Year 2 Event – January 2010
Building 815 Wash Rack Area
Naval Air Station Cecil Field
Jacksonville, Florida

Parameter	GCTL	NADC	CEF-815-1S										
			11/01/00	05/01/01	12/01/01	06/01/02	07/01/02	01/01/03	07/01/03	01/01/06	11/01/07	02/12/08	
												Sample	Duplicate
VOCs (µg/L)													
Naphthalene	14	140	**192**	**250**	**129**	**299**	**205**	**152**	**256**	**140**	**89**	**69**	**68**
Petroleum Hydrocarbons (mg/L)													
TRPH	5	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	0.88

Parameter	GCTL	NADC	CEF-815-1S								
			06/19/08		09/16/08		12/15/08		07/31/09	01/20/10	
			Sample	Duplicate	Sample	Duplicate	Sample	Duplicate		Sample	Duplicate
VOCs (µg/L)											
Naphthalene	14	140	**50**	**58**	**72 J**	**43 J**	**42.5**	**40.7**	**160**	**46**	**39**
Petroleum Hydrocarbons (mg/L)											
TRPH	5	50	NA	NA	NA	NA	NA	NA	NA	NA	NA

Parameter	GCTL	NADC	CEF-815-5S						NG-12S			
			02/12/08	06/19/08	09/15/08	12/15/08	07/31/09	01/20/10	11/01/00	05/01/01	12/01/01	06/01/02
VOCs (µg/L)												
Naphthalene	14	140	**37.0**	**42**	**42.0**	**36**	**72**	**110**	9.2	8.2	7.1	3.4
Petroleum Hydrocarbons (mg/L)												
TRPH	5	50	0.48	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 2
Summary of Detections in Groundwater

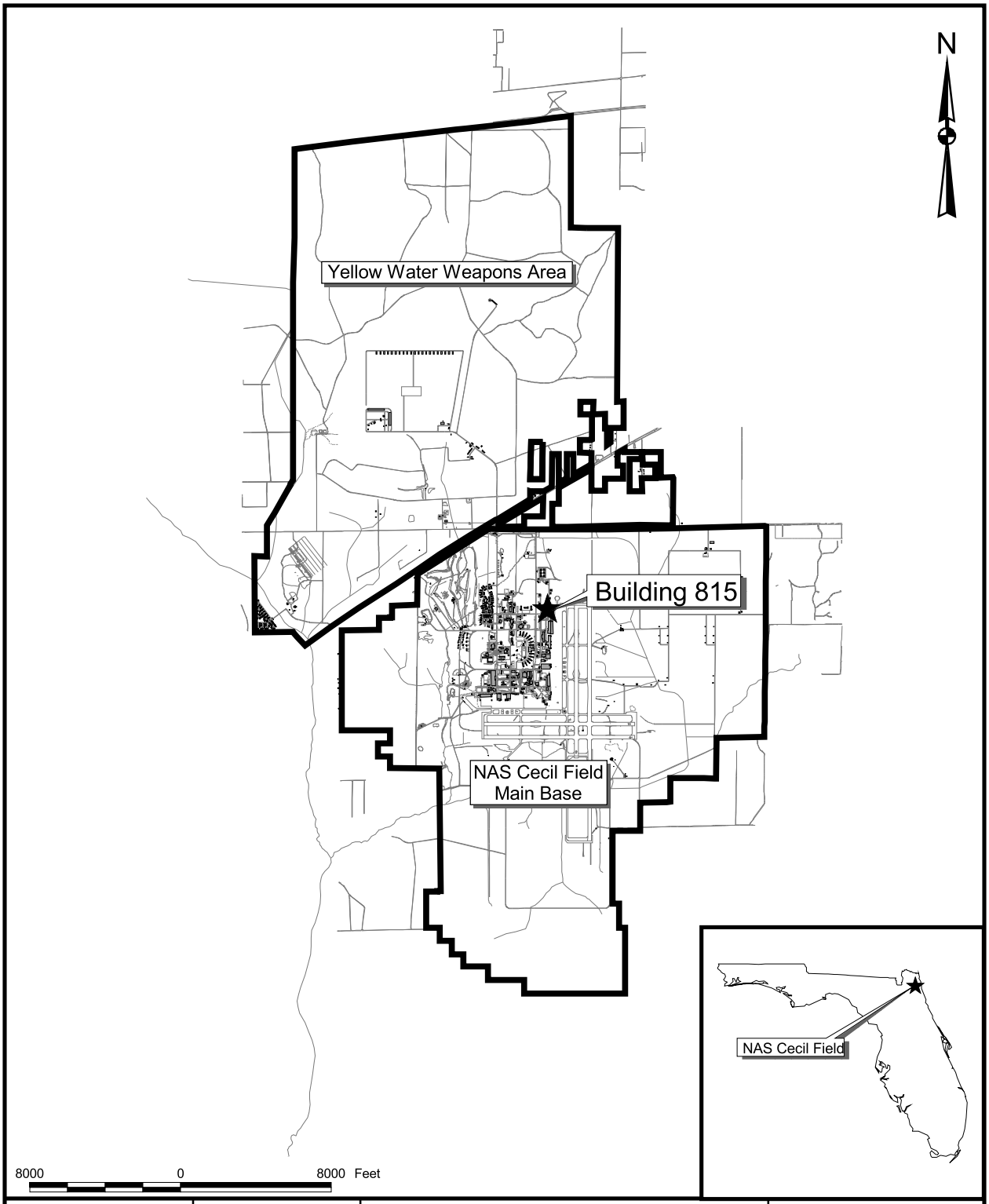
1st Semi-Annual, Year 2 Event – January 2010
Building 815 Wash Rack Area
Naval Air Station Cecil Field
Jacksonville, Florida

Parameter	GCTL	NADC	NG-12S									
			01/01/03	07/01/03	01/01/06	11/01/07	02/01/08	06/01/08	09/01/08	12/01/08	07/31/09	01/20/10
VOCs (µg/L)												
Naphthalene	14	140	13.2	**39.9**	13.6	4.7	3.3	2.2	0.51	0.53 J	0.11 J	4.3
Petroleum Hydrocarbons (mg/L)												
TRPH	5	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Parameter	GCTL	NADC	CEF-059-028-015					
			02/01/08	06/01/08	09/01/08	12/01/08	07/31/09	01/20/10
VOCs (µg/L)								
Naphthalene	14	140	0.1 J	0.058	0.12	0.24 U	0.10 U	0.72 U
Petroleum Hydrocarbons (mg/L)								
TRPH	5	50	NA	NA	NA	NA	NA	NA

GCTL = Florida Department of Environmental Protection (FDEP) Groundwater Cleanup Target Levels from Chapter 62-777, Florida Administrative Code (F.A.C.).
NADC = Natural Attenuation Default Concentrations from Chapter 62-777, F.A.C.
VOCs = Volatile organic compounds.
µg/L = Micrograms per liter.
Bold indicates concentration greater than FDEP GCTL.
U = Not detected at detection limit shown.
I = Reported value is between laboratory method detection limit and laboratory practical quantitation limit.
J = Estimated value.
NA= Not analyzed.

FIGURES



DRAWN BY MJJ	DATE 22Oct09	GENERAL LOCATION MAP BUILDING 815 WASH RACK AREA 1st SEMI-ANNUAL, YEAR 2 EVENT - JANUARY 2010 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 2267
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1 / REV 0

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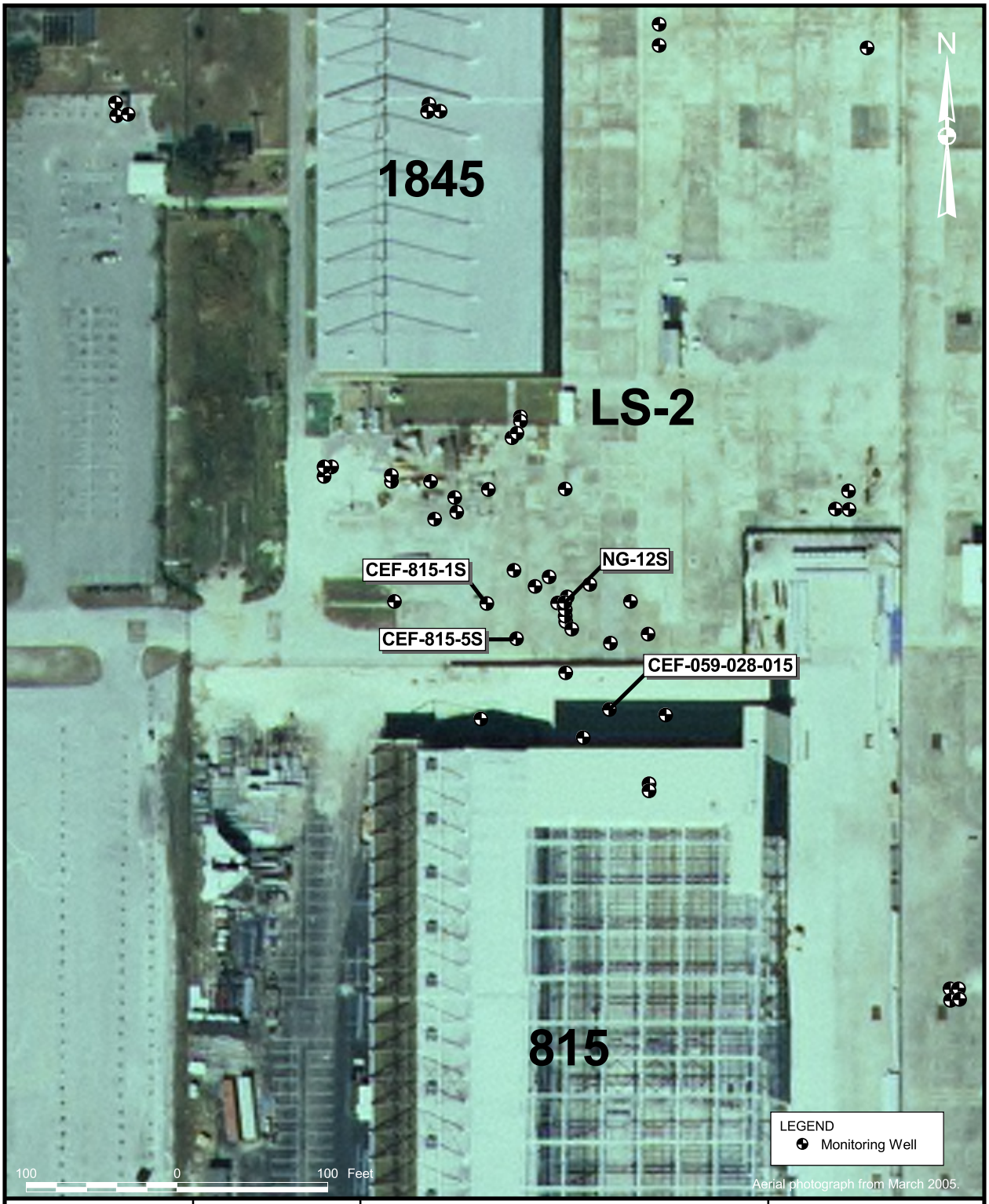

DRAWN BY MJJ	DATE 13Mar10	MONITORING WELL LOCATIONS BUILDING 815 WASH RACK AREA 1st SEMI-ANNUAL, YEAR 2 EVENT - JANUARY 2010 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 2267
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 2 / REV 0

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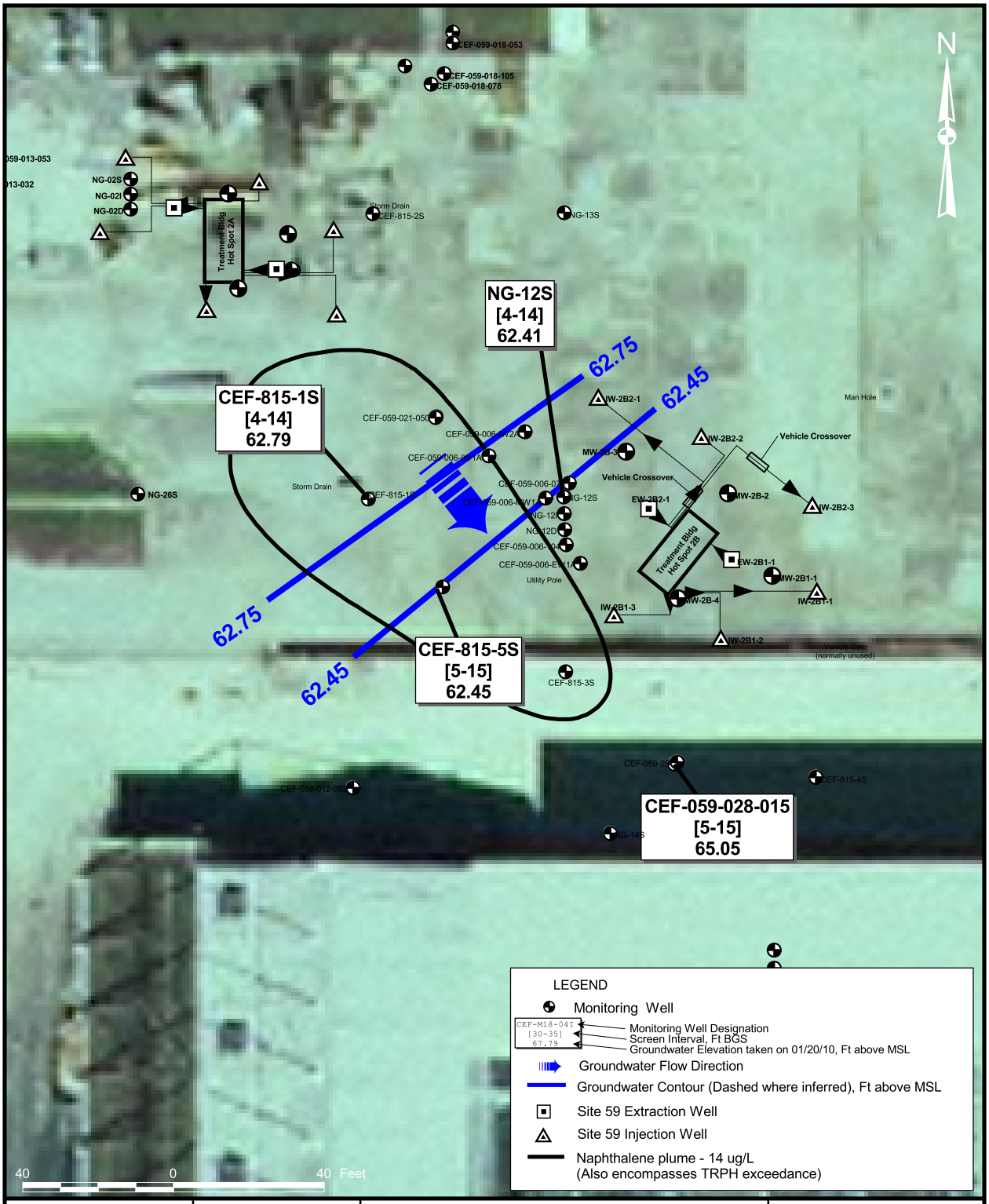

DRAWN BY MJJ	DATE 13Mar10	GROUNDWATER FLOW MAP BUILDING 815 WASH RACK AREA 1st SEMI-ANNUAL, YEAR 2 EVENT - JANUARY 2010 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 2267
CHECKED BY	DATE		APPROVED BY / DATE
COST/SCHEDULE-AREA			APPROVED BY / DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3 / REV 0

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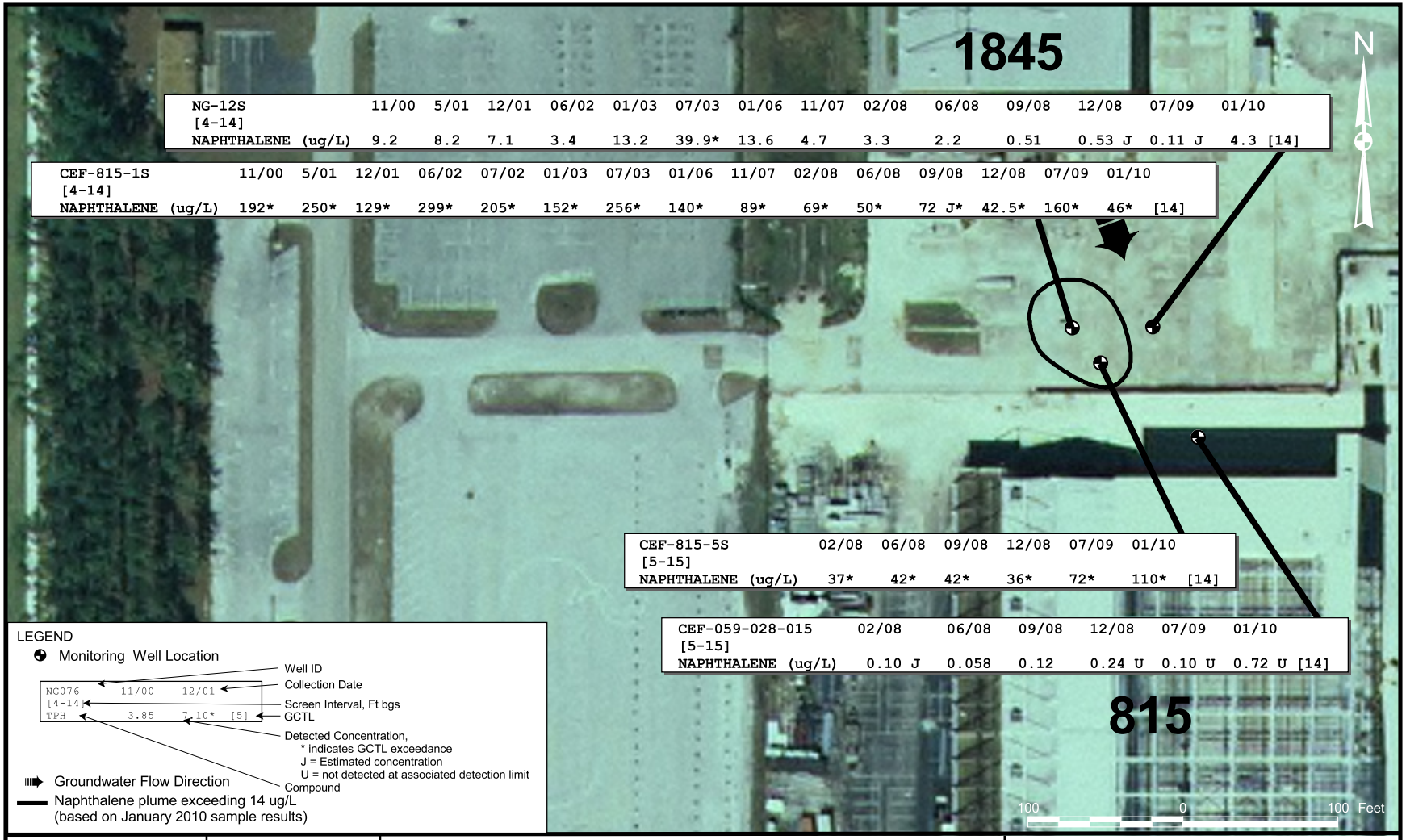

DRAWN BY	DATE
MJJ	13Mar10
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE	AS NOTED

NAVFAC

GROUNDWATER CONCENTRATIONS
BUILDING 815 WASH RACK AREA
1st SEMI-ANNUAL, YEAR 2 EVENT - JANUARY 2010
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

CONTRACT NUMBER	
2267	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 4	REV 0

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ATTACHMENT A

FDEP NAMPAO

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blairstone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

Site Assessment Report

CTO 209

November 6, 2008

BRAC PMO SE
Attn: Mr. Art Sanford
4130 Faber Place Drive
Suite 202
North Charleston, SC 29405

RE: Natural Attenuation Monitoring Plan, Building 815 Wash Rack Area, Naval Air Station Cecil Field, Jacksonville, Florida

Dear Mr. Art Sanford:

I have completed my review of the Site Assessment Report Addendum and Natural Attenuation Monitoring Plan, Building 815 Wash Rack Area, Naval Air Station Cecil Field, dated May 15, 2008 (received May 16, 2008), prepared and submitted by Tetra Tech NUS, Inc. Based upon my review, the enclosed Natural Attenuation Monitoring Plan Approval Order (NAMPAO) was signed by Mr. Doug Jones, Chief, Bureau of Waste Cleanup.

If you have any concerns regarding this letter, please contact me at (850) 245-8997.

Sincerely,

David P. Grabka, P.G.
Remedial Project Manager

DAVID P. GRABKA
LICENSE
NO. 2192
STATE OF
FLORIDA
PROFESSIONAL GEOLOGIST

30 October 2008
Date

CC: Doyle Brittain, USEPA, Atlanta
John Flowe, City of Jacksonville
~~Mark Speranza,~~ TtNUS, Pittsburgh
Mike Halil, CH2M Hill, Jacksonville
Mike Fitzsimmons, FDEP, Northeast District
Mark Peterson, TtNUS, Jacksonville

JJC JJC ESN ESN

ATTACHMENT B

LABORATORY ANALYTICAL REPORT

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**R. SIMCIK**	**DATE:**	**FEBRUARY 22, 2010**
FROM:	**A. COGNETTI**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – NAPHTHALENE**
LIMITED REVIEW
NAS CECIL FIELD – CTO JM09
SAMPLE DELIVERY GROUP (SDG) –CTOJM09CF_003

SAMPLES: 6/Aqueous/Naphthalene

CEF-059-028-15-20100120	CEF-815-01S-20100120
CEF-815-05S-20100120	CEF-815-DUP01-20100120
CEF-NG-12S-20100120	Trip Blank 20100120

Overview

The sample set for NAS CECIL FIELD, CTO JM09, SDG CTOJM09CF_003, consists of five (5) aqueous environmental samples and one (1) trip blank. All samples were analyzed for the volatile organic compound (VOC), naphthalene. There is one (1) field duplicate pair associated with this SDG: CEF-815-01S-20100120 and CEF-815-DUP01-20100120.

The samples were collected by Tetra Tech NUS on January 20, 2010 and analyzed by Empirical. Laboratory under Naval Facilities Engineering Service Center (NFESC) Quality Assurance / Quality Control (QA/QC) criteria. VOC analyses for naphthalene were conducted using SW-846 method 8260B.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • Initial and Continuing Calibrations
• Laboratory Method Blank Analyses
* • Field Duplicate Precision
* • Detection Limits

* - All quality control criteria were met for this parameter.

Volatiles

Naphthalene was detected in the laboratory method blank 0A28010-BLK1 affecting all of the samples.

Contaminant	Maximum Concentration (ug/L)	Action Level (ug/L)
Naphthalene	0.23	1.15

An action level of 5X the maximum contaminant concentration of naphthalene was established to evaluate samples for laboratory contamination. Dilution factors and sample aliquots were taken into consideration during the application of all action levels. Positive naphthalene results with concentrations less than the reporting limit were qualified as (U).

Notes

The chain of custody incorrectly states naphthalene should be analyzed by SW-846 Method 8270C. The statement of work states naphthalene should be analyzed according to SW-846 Method 8260B. The laboratory correctly analyzed the samples by SW-846 Method 8260C.

Executive Summary

Laboratory Performance: Naphthalene was detected in the laboratory method blank.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review", October 1999 and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", January 2006.

The text of this report has been formulated to address only those problem areas affecting data quality.

Ann Cognetti

Tetra Tech NUS
Ann Cognetti
Chemist/ Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

Appendix A

Qualified Analytical Results

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can be any number of issues; e.g. poor chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02267	NSAMPLE	CEF-059-028-15-20100120			CEF-815-01S-20100120			CEF-815-05S-20100120			CEF-815-DUP01-20100120		
SDG: CTOJM09CF_003	LAB_ID	1001141-05			1001141-02			1001141-03			1001141-01		
FRACTION: OV	SAMP_DATE	1/20/2010			1/20/2010			1/20/2010			1/20/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF										CEF-815-01S-20100120		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
NAPHTHALENE		0.72	U	A	46			110			39		

PROJ_NO: 02267	NSAMPLE	CEF-NG-12S-20100120			TRIP_BLANK_20100120		
SDG: CTOJM09CF_003	LAB_ID	1001141-04			1001141-06		
FRACTION: OV	SAMP_DATE	1/20/2010			1/20/2010		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
NAPHTHALENE		4.3			0.12	U	

Appendix B

Results as Reported by the Laboratory

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-059-028-15-20100120

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CTOJM09CF_003

Matrix: (soil/water) WATER Lab Sample ID: 1001141-05

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0114105

Level: (low/med) LOW Date Sampled: 01/20/10 13:15

% Moisture: not dec. _____ Date Analyzed: 01/27/10 07:20

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
91-20-3	Naphthalene	0.12	1.0	0.72	IV

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-815-0
1S-20100120

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CTOJM09CF_003

Matrix: (soil/water) WATER Lab Sample ID: 1001141-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0114102

Level: (low/med) LOW Date Sampled: 01/20/10 10:15

% Moisture: not dec. _____ Date Analyzed: 01/27/10 05:52

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
91-20-3	Naphthalene	0.12	1.0	46	V

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-815-0
5S-20100120

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CTOJM09CF_003

Matrix: (soil/water) WATER Lab Sample ID: 1001141-03

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0114103

Level: (low/med) LOW Date Sampled: 01/20/10 10:40

% Moisture: not dec. _____ Date Analyzed: 01/27/10 06:22

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
91-20-3	Naphthalene	0.12	1.0	110	V

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-815-DUP
01-20100120

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CTOJM09CF_003

Matrix: (soil/water) WATER Lab Sample ID: 1001141-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0114101

Level: (low/med) LOW Date Sampled: 01/20/10 :

% Moisture: not dec. _____ Date Analyzed: 01/27/10 05:23

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
91-20-3	Naphthalene	0.12	1.0	39	V

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CEF-NG-12
S-20100120

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CTOJM09CF_003

Matrix: (soil/water) WATER Lab Sample ID: 1001141-04

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0114104

Level: (low/med) LOW Date Sampled: 01/20/10 11:25

% Moisture: not dec. _____ Date Analyzed: 01/27/10 06:51

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
91-20-3	Naphthalene	0.12	1.0	4.3	V

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TRIP BLANK

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CTOJM09CF_003

Matrix: (soil/water) WATER Lab Sample ID: 1001141-06

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0114106

Level: (low/med) LOW Date Sampled: 01/20/10 :

% Moisture: not dec. _____ Date Analyzed: 01/27/10 03:55

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
91-20-3	Naphthalene	0.12	1.0		U

FORM I VOA

Appendix C

Support Documentation

ORGANIC CASE NARRATIVE
Tetra Tech NUS, Inc./Nas Cecil Field (Wash Rack) JM09
SDG: CTOJM09CF_003

Sampled	Received	Lab ID	Client ID
1/20/2010	1/21/2010	1001141-01	CEF-815-DUP01-20100120
1/20/2010	1/21/2010	1001141-02	CEF-815-01S-20100120
1/20/2010	1/21/2010	1001141-03	CEF-815-05S-20100120
1/20/2010	1/21/2010	1001141-04	CEF-NG-12S-20100120
1/20/2010	1/21/2010	1001141-05	CEF-059-028-15-20100120
1/20/2010	1/21/2010	1001141-06	Trip Blank

Volatiles

Method: The samples were analyzed by USEPA SW-846 Methods 5030B/8260B (purge and trap then capillary column GC/MS) for waters upon receipt to the laboratory in satisfactory condition.

Comments: The volatile analyses for these samples were satisfactorily completed within sample holding times and met the corresponding specifications with the following note/exceptions:

- Samples were analyzed for an abbreviated target list of naphthalene only.
- Naphthalene was detected at a concentration less then ½ the quantitation limit in the method blank. Reported concentrations in the associated samples are qualified with a "V".
- Quantitation signals were manually integrated in order to accurately reflect the peak areas based on the technical judgment of the analyst. A listing of the manual integrations performed and reason for the integration is included with the logs. Before and after "pictures" are available at the laboratory where manual integrations were performed.

I certify that, to the best of my knowledge and based upon my inquiry of those individuals immediately responsible for obtaining the information, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in the case narrative, as verified by the following signature.

Jade Holliman
Organic Manager

1001141 Volatiles

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER № 2015

PAGE ___ OF ___

PROJECT NO: 112G02267	FACILITY: NAS Cecil Field 815 Wash Rack	PROJECT MANAGER: Rob Simcik	PHONE NUMBER	LABORATORY NAME AND CONTACT: Empirical Labs
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: Kara Wimble	PHONE NUMBER: 904 636-6125	ADDRESS: 621 mainstream Dr Suite 270
		CARRIER/WAYBILL NUMBER: FEDEX Airbill # 8643 5142 1571		CITY, STATE: Nashville, TN

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

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

PRESERVATIVE USED: HCl

TYPE OF ANALYSIS: Naphthalene SW8260 8270C

DATE YEAR 2010	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	Naphthalene SW8260 8270C	COMMENTS
1/20	0000	CEF-815-DUP01-20100120				GW	G	3	X	Cool to 4° C -6
1/20	1015	CEF-815-015-20100120				GW	G	3	X	1001141 -02
1/20	1040	CEF-815-055-20100120				GW	G	3	X	-03
1/20	1125	CEF-NG-125-20100120				GW	G	3	X	-04
1/20	1315	CEF-059-028-15-20100120				GW	G	3	X	-05
1/20		Trip Blank				QC		2	X	-06

1. RELINQUISHED BY	DATE 1/20/10	TIME 1600	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE 1/21/10	TIME 08:50

COMMENTS

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

4/02R
FORM NO. TtNUS-001

3

EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

LIMS Number: 1001141 Number of Coolers: 1 of 1

Client: Tetra Tech NUS Project: NAS Cecil Field 815 Wash Rack

Date/Time Received: **01/21/10 08:50** Date cooler(s) opened: **01/21/10**

Opened By (print): **WILLIAM SCHWAB** (signature): [signature]

Circle response below as appropriate

1. How did the samples arrive?: FedEx UPS DHL Hand Delivered EL Courier Other: _____

If applicable, enter airbill number here: 1571

2. Were custody seals on outside of cooler(s)? ..... Yes No

How many: 2 Seal date: 1/20/10 Seal Initials: !

3. Were custody seals unbroken and intact at the date and time of arrival? ..... Yes No N/A
4. Were custody papers sealed in a plastic bag included in the sample cooler? ..... Yes No N/A
5. Were custody papers filled out properly (ink, signed, etc.)? ..... Yes No N/A
6. Did you sign custody papers in the appropriate place for acceptance? ..... Yes No N/A
7. Was project identifiable from custody papers? ..... Yes No N/A
8. If required, was ~~enough~~ ice present in the cooler(s)? ..... Yes No N/A

Type of Coolant: WET DRY BLUE NONE Temperature of Samples upon Receipt: 3-8°C

Dates samples were logged-in: **01/21/10**

9. Initial this form to acknowledge login of sample(s): (Name): Will Schwab (Initial): WS
10. Were all bottle lids intact and sealed tightly? ..... Yes No N/A
11. Did all bottles arrive unbroken? ..... Yes No N/A
12. Was all required bottle label information complete? ..... Yes No N/A
13. Did all bottle labels agree with custody papers? ..... Yes No N/A
14. Were correct containers used for the analyses indicated? ..... Yes No N/A
15. Were preservative levels correct in all applicable sample containers? ..... Yes No N/A
16. Was residual chlorine present in any applicable sample containers? ..... Yes No N/A
17. Was sufficient amount of sample sent for the analyses required? ..... Yes No N/A
18. Was headspace present in any included VOA vials? ..... Yes No N/A

If Non-Conformance issues were present, list by sample ID: _____

COC says to run for 8270, however CAR#: _____

vials were received! Tagged per project for 8260 VOC

NAP-4

HOLDTIME

SDG CTOJM09CF_

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	%	Trip Blank	1001141-06	NM	01/20/2010	01/27/2010	01/27/2010	7.163	0	7.163
OV	%	CEF-NG-12S-20100120	1001141-04	NM	01/20/2010	01/27/2010	01/27/2010	6.81	0	6.81
OV	%	CEF-815-DUP01-2010012	1001141-01	NM						
OV	%	CEF-815-05S-20100120	1001141-03	NM	01/20/2010	01/27/2010	01/27/2010	6.821	0	6.821
OV	%	CEF-815-01S-20100120	1001141-02	NM	01/20/2010	01/27/2010	01/27/2010	6.817	0	6.817
OV	%	CEF-059-028-15-2010012	1001141-05	NM						
OV	UG/L	Trip Blank	1001141-06	NM	01/20/2010	01/27/2010	01/27/2010	7.163	0	7.163
OV	UG/L	CEF-NG-12S-20100120	1001141-04	NM	01/20/2010	01/27/2010	01/27/2010	6.81	0	6.81
OV	UG/L	CEF-815-DUP01-2010012	1001141-01	NM						
OV	UG/L	CEF-815-05S-20100120	1001141-03	NM	01/20/2010	01/27/2010	01/27/2010	6.821	0	6.821
OV	UG/L	CEF-815-01S-20100120	1001141-02	NM	01/20/2010	01/27/2010	01/27/2010	6.817	0	6.817
OV	UG/L	CEF-059-028-15-2010012	1001141-05	NM						

NAS CECIL FIELD
WATER DATA
CTOJM09CF_003

FRACTION	CHEMICAL	CEF-815-01S-20100120	UNITS	EF-815-DUP01-2010012	RPD	D
OV	NAPHTHALENE	46	UG/L	39	16.47	7.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EMPIRICAL LABS Contract:

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: SDGA84517

Lab File ID: SEQ-TUN1 BFB Injection Date: 01/24/10

Instrument ID: VOA4 BFB Injection Time: 0858

GC Column: DB-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.2
75	30.0 - 60.0% of mass 95	50.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	64.3
175	5.0 - 9.0% of mass 174	5.1 (8.0)1
176	95.0 - 101.0% of mass 174	61.1 (95.1)1
177	5.0 - 9.0% of mass 176	4.5 (7.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	V4STD0.5PPB	SEQ-CAL2	SEQ-CAL2	01/24/10	1025
02	V4STD1.0PPB	SEQ-CAL3	SEQ-CAL3	01/24/10	1055
03	V4STD2.0PPB	SEQ-CAL4	SEQ-CAL4	01/24/10	1124
04	V4STD10PPB	SEQ-CAL5	SEQ-CAL5	01/24/10	1154
05	V4STD20PPB	SEQ-CAL6	SEQ-CAL6	01/24/10	1223
06	V4STD50PPB	SEQ-CAL7	SEQ-CAL7	01/24/10	1252
07	V4BLK0124LCS	SEQ-ICV1	SEQ-ICV1	01/24/10	1322
08	V4STD100PPB	SEQ-CAL8	SEQ-CAL8	01/24/10	1351
09	V4STD200PPB	SEQ-CAL9	SEQ-CAL9	01/24/10	1421
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

page 1 of 1

FORM V VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: ELABN Case No.: NA SAS No.: NA SDG No.: SDGA56295

Instrument ID: VOA4 Calibration Date(s): 11/13/09 01/24/10

Column: DB-VRX ID: 0.25 (mm) Calibration Time(s): 1121 1421

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2
cis-1,2-Dichloroethene	AVRG		0.28794578		8.8
trans-1,2-Dichloroethene	AVRG		0.27223266		6.3
1,2-Dichloroethene(total)	AVRG		0.28008922		7.5
1,2-Dichloropropane	AVRG		0.25691259		2.9
1,3-Dichloropropane	AVRG		0.79778535		9.3
2,2-Dichloropropane	AVRG		0.32975234		2.5
1,1-Dichloropropene	AVRG		0.33052490		3.9
cis-1,3-Dichloropropene	AVRG		0.40324455		5.4
trans-1,3-Dichloropropene	AVRG		0.71205848		6.0
Ethylbenzene	AVRG		2.27145943		10.4
Ethyl methacrylate	AVRG		0.57384790		7.8
Hexachlorobutadiene	AVRG		0.22281289		13.2
2-Hexanone	AVRG		0.33490503		8.5
Iodomethane	AVRG		0.29716862		13.1
Isopropylbenzene	AVRG		1.66225986		8.1
p-Isopropyltoluene	AVRG		1.68543455		4.2
Methyl acetate	AVRG		0.21432643		4.7
Methyl cyclohexane	AVRG		0.30337606		3.9
Methylene chloride	2ORDR	1.2e-003	3.17159164	0.15148929	0.999
Methyl methacrylate	AVRG		0.21067464		11.3
4-Methyl-2-pentanone	AVRG		0.23619626		7.3
MTBE	AVRG		0.62991925		4.8
Naphthalene	AVRG		1.02029208		14.2
n-Propylbenzene	AVRG		2.79626793		6.0
Styrene	AVRG		1.32592810		8.0
1,1,1,2-Tetrachloroethane	AVRG		0.42687239		4.0
1,1,2,2-Tetrachloroethane	AVRG		0.68729012		5.2
Tetrachloroethene	AVRG		0.46647028		2.3
Tetrahydrofuran	AVRG		6.607e-002		4.6
Toluene	AVRG		1.21890974		9.0
1,2,3-Trichlorobenzene	AVRG		0.50215555		10.4
1,2,4-Trichlorobenzene	AVRG		0.60103612		9.3
1,1,1-Trichloroethane	AVRG		0.36137563		4.0
1,1,2-Trichloroethane	AVRG		0.41319071		7.1
Trichloroethene	AVRG		0.25655253		3.5
Trichlorotrifluoroethane	AVRG		0.24843815		2.5
Trichlorofluoromethane	AVRG		0.38968945		2.5

FORM VI VOA

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CTOJM09CF_003

Lab File ID: SEQ-TUN2 BFB Injection Date: 01/27/10

Instrument ID: VOA4 BFB Injection Time: 0001

GC Column: DB-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.7
75	30.0 - 60.0% of mass 95	47.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.5
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	71.5
175	5.0 - 9.0% of mass 174	6.0 (8.4)1
176	95.0 - 101.0% of mass 174	68.9 (96.4)1
177	5.0 - 9.0% of mass 176	4.7 (6.9)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SEQ-CCV2	SEQ-CCV2	SEQ-CCV2	01/27/10	0030
02	0A28010-BLK1	0A28010-BS1	V4LCS01E	01/27/10	0059
03	0A28010-BLK1	0A28010-BLK1	V4BLK01E	01/27/10	0227
04	TRIP BLANK	1001141-06	0114106	01/27/10	0355
05	CEF-815-DUP0	1001141-01	0114101	01/27/10	0523
06	CEF-815-01S-	1001141-02	0114102	01/27/10	0552
07	CEF-815-05S-	1001141-03	0114103	01/27/10	0622
08	CEF-NG-12S-2	1001141-04	0114104	01/27/10	0651
09	CEF-059-028-	1001141-05	0114105	01/27/10	0720
10	0A28010-BLK1	0A28010-BSD1	V4LCSDE	01/27/10	0749
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

page 1 of 1

FORM V VOA

FORM 7
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CTOJM09CF_003

Instrument ID: VOA4 Calibration Date: 01/27/10 Time: 0030

Lab File ID: SEQ-CCV2 Init. Calib. Date(s): 03/05/08 01/24/10

Heated Purge: (Y/N) N Init. Calib. Times: 0908 1421

GC Column: DB-VRX ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF100	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
Naphthalene	1.020	1.166	100.0	114.3		AVRG	14.3	20.0
Dibromofluoromethane	0.298	0.307	30.00	30.90		AVRG	3.0	
1,2-Dichloroethane-d4	0.065	0.067	30.00	30.72		AVRG	2.4	
Toluene-d8	2.033	1.858	30.00	27.41		AVRG	-8.6	
Bromofluorobenzene	0.854	0.828	30.00	29.09		AVRG	-3.0	

FORM VII VOA

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

0A28010-BLK1

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CTOJM09CF_003

Lab File ID: V4BLK01E Lab Sample ID: 0A28010-BLK1

Date Analyzed: 01/27/10 Time Analyzed: 0227

Column: DB-VRX ID: 0.25 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA4

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	0A28010-BLK1	0A28010-BS1	V4LCS01E	0059
02	TRIP BLANK	1001141-06	0114106	0355
03	CEF-815-DUP0	1001141-01	0114101	0523
04	CEF-815-01S-	1001141-02	0114102	0552
05	CEF-815-05S-	1001141-03	0114103	0622
06	CEF-NG-12S-2	1001141-04	0114104	0651
07	CEF-059-028-	1001141-05	0114105	0720
08	0A28010-BLK1	0A28010-BSD1	V4LCSDE	0749
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COMMENTS:

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FORM IV VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

0A28010-BLK1

Lab Name: EMPIRICAL LABS Contract: TETRATECH

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: CTOJM09CF_003

Matrix: (soil/water) WATER Lab Sample ID: 0A28010-BLK1

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: V4BLK01E

Level: (low/med) LOW Date Sampled: _____

% Moisture: not dec. _____ Date Analyzed: 01/27/10 02:27

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
91-20-3	Naphthalene	0.12	1.0	0.23	I

FORM I VOA