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SITE ASSESSMENT REPORT FOR SOUTH FUEL FARM NAS CECIL FIELD FL
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TETRA TECH

Site Assessment Report for South Fuel Farm

Naval Air Station Cecil Field
Jacksonville, Florida



**BRAC Program Management Office
Southeast**

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

June 2014

SITE ASSESSMENT REPORT
FOR
SOUTH FUEL FARM
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Submitted to:
BRAC Program Management Office Southeast
Joint Base Charleston, South Carolina, 29404

Submitted by:
Tetra Tech
243 Mall Boulevard, Suite 260
King of Prussia, Pennsylvania 19406

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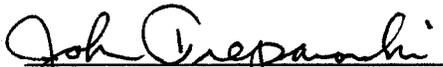
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PREPARED UNDER THE DIRECTION OF:



ROBERT F. SIMCIK, P.E.
PROJECT MANAGER
TETRA TECH
PITTSBURGH, PENNSYLVANIA

APPROVED FOR SUBMISSION BY:



JOHN J. TREPANOWSKI, P.E.
PROGRAM MANAGER
TETRA TECH
KING OF PRUSSIA, PENNSYLVANIA

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ACRONYMS AND ABBREVIATIONS

ABB-ES	ABB-Environmental Services, Inc.
AST	Aboveground storage tank
BCT	BRAC Cleanup Team
BEI	Bechtel Environmental, Inc.
bgs	below ground surface
BRAC	Base Realignment and Closure
BS	Biosparging
BTEX	benzene, toluene, ethylbenzene, and xylenes
btoc	below top of casing
CAR	Contamination Assessment Report
CARA	Contamination Assessment Report Addendum
CH2MHill	CH2MHill Constructors, Inc.
CLEAN	Comprehensive Long-Term Environmental Action Navy
COC	Contaminant of concern
CTO	Contract Task Order
EMT	Earth mounded tank
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
ft	feet
GCTL	Groundwater Cleanup Target Level
MONA	Monitoring Only for Natural Attenuation
µg/L	micrograms per liter
msl	mean sea level
MTBE	methyl tertiary butyl ether
N/A	Not applicable
NADC	Natural Attenuation Default Concentration
NAS	Naval Air Station
NFA	No further action
NM	Not measured
PAH	Polynuclear aromatic hydrocarbon
PARM	Post-Active Remediation Monitoring
PMO	Program Management Office
RAP	Remedial Action Plan
SAR	Site Assessment Report
SCTL	Soil Cleanup Target Level

SOP	Standard operating procedure
SVOC	semi-volatile organic compound
TCL	Target compound list
TM	Technical Memorandum
TRPH	Total recoverable petroleum hydrocarbons
Tetra Tech	Tetra Tech NUS, Inc.
UFP-SAP	Uniform Federal Policy – Sampling and Analysis Plan
USEPA	United States Environmental Protection Agency
UST	Underground storage tank
VOC	volatile organic compound

EXECUTIVE SUMMARY

This Site Assessment Report (SAR) for South Fuel Farm at former Naval Air Station (NAS) Cecil Field, Jacksonville, Florida, summarizes the previous investigations and remedial actions, related field operations, results, conclusions, and recommendations for the groundwater at South Fuel Farm.

The South Fuel Farm Site is located at the northern edge of the east-west runway at former NAS Cecil Field, Jacksonville, Florida. South Fuel Farm was used as a fuel storage facility for leaded and unleaded gasoline, fuel, and jet propellant. When fully operational, the facility contained three aboveground storage tanks (ASTs), four underground storage tanks (USTs), and four earth-mounded tanks (EMTs).

In December 1991, ABB-Environmental Services, Inc. (ABB-ES) completed a contamination assessment to determine the nature and extent of soil contamination discovered during the removal of ASTs, USTs, and EMTs. Based on the Contamination Assessment Report, Florida Department of Environmental Protection (FDEP) requested further investigation at the site. A supplemental investigation was completed in July 1995, and a Contamination Assessment Report Addendum submitted in January 1996 recommended that a Remedial Action Plan be prepared.

Soil excavation was chosen as the remedial alternative for the southern portion of the South Fuel Farm site, and enhanced intrinsic remediation through bioventing and biosparging (BS) combined with an oxygen barrier wall was chosen as the remedial alternative for the northern portion of the site. CH2MHill Constructors, Inc. (CH2MHill) excavated 28,953 tons of petroleum-impacted soil from the southern portion of the site from October 1998 to February 1999.

Bechtel Environmental Inc. (BEI) installed the approved bioventing and BS systems for the northern portion of the South Fuel Farm site from December 1997 to March 1998. The bioventing and BS systems were started up on April 6, 1998. Supplemental soil and groundwater sampling, along with an evaluation of the bioventing and BS systems, were conducted during 2006 and 2007. Conclusions presented in two technical memoranda stated that concentrations of contaminants historically detected at levels greater than regulatory criteria had been reduced to levels less than criteria as a result of the operation of the bioventing and BS systems and natural attenuation. Subsequently, the Navy proposed that the operation of the BS and bioventing systems be discontinued. The FDEP concurred with the Navy's proposed recommendation, with the stipulation that 1 year of post-active remediation monitoring be conducted.

Quarterly post-active remediation groundwater sampling events were conducted on February 8, July 9 and 10, and November 6, 2008; and February 3 and 4, 2009. Groundwater samples were collected from five monitoring wells, and analyzed for the following parameters: volatile organic compounds (VOCs),

semi-volatile organic compounds (SVOCs), lead, and total recoverable petroleum hydrocarbons (TRPH). Groundwater results indicated that groundwater monitoring should continue at the site, but that restarting the BS system was unnecessary.

Surface soil samples were collected from 7 of the 15 original soil borings, and from 4 additional soil borings during the February 2008 post-active remediation event to confirm soil concentrations were less than FDEP residential Soil Cleanup Target Levels (SCTLs). Subsurface soil samples were collected within close proximity of the original 15 soil borings. The soil samples were analyzed for several VOCs and SVOCs including benzene, toluene, ethylbenzene, total xylenes, and methyl tertiary butyl ether (MTBE); and TRPH. Soil results did not warrant a restart of the bioventing system, and thus it was stated in the Post-Active Remediation Monitoring report that surface soil contamination did not present a significant threat for direct exposure at the site.

Subsequent to the results of the quarterly post-active remediation sampling, it was recommended that an additional Site Assessment be conducted to obtain additional groundwater data. Consequently, three groundwater sampling events were conducted for the Site Assessment in June 2010, February 2011, and August 2011. Based on an evaluation of data collected during the Site Assessment, Tetra Tech recommends semi-annual monitoring only for natural attenuation at the site for a period of 5 years, and evaluating the annual progress of natural attenuation against a set of milestone objectives for concentrations of contaminants of concern (COCs). The first semi-annual sampling event is scheduled for February 2012.

1.0 INTRODUCTION

This Site Assessment Report (SAR) for South Fuel Farm at former Naval Air Station (NAS) Cecil Field, Jacksonville, Florida, has been prepared by Tetra Tech NUS, Inc. (Tetra Tech) for the Base Realignment and Closure (BRAC) Program Management Office (PMO) Southeast. This project was conducted under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Program, Contract Number N62470-08-D-1001, Contract Task Order (CTO) JM09. This report summarizes the related field operations, results, conclusions, and recommendations for future monitoring at the site.

The South Fuel Farm Site is located at the northern edge of the east-west runway at former NAS Cecil Field, Jacksonville, Florida. The general site location is depicted on Figure 1-1. South Fuel Farm was used as a fuel storage facility for leaded and unleaded gasoline, fuel, and jet propellant. When fully operational, the facility contained three aboveground storage tanks (ASTs), four underground storage tanks (USTs), and four earth-mounded tanks (EMTs).

In December 1991, ABB-Environmental Services, Inc. (ABB-ES) completed a contamination assessment to determine the nature and extent of soil contamination discovered during the removal of ASTs, USTs, and EMTs. The Contamination Assessment Report (CAR) was submitted in July 1992, and the Florida Department of Environmental Protection (FDEP) requested further investigation at the site. A supplemental investigation was completed in July 1995, and a CAR Addendum (CARA) was submitted in January 1996 (ABB-ES, 1996a). The CARA was approved in April 1996 and recommended that a Remedial Action Plan (RAP) be prepared.

A RAP was submitted by ABB-ES in 1996 specifying the recommended remedial action as enhanced intrinsic remediation through bioventing and biosparging (BS), combined with an oxygen barrier wall (ABB-ES, 1996b). Subsequent to RAP submittal, the BRAC Cleanup Team (BCT) agreed to implement these remedial action activities for only the northern portion of the South Fuel Farm site; the BCT agreed not to implement these activities in the southern portion of the site [Bechtel Environmental, Inc. (BEI), 1998]. Instead, soil excavation was chosen as the remedial alternative for the southern portion of the South Fuel Farm site. CH2MHill Constructors, Inc. (CH2MHill) excavated 28,953 tons of petroleum-impacted soil from October 1998 to February 1999 (CH2MHill, 2001).

BEI installed the approved bioventing and BS systems for the northern portion of the South Fuel Farm site from December 1997 to March 1998. Startup of the bioventing and BS systems occurred on April 6, 1998 (BEI, 1998). CH2MHill conducted supplemental soil and groundwater sampling during 2007, and performed an evaluation of the BS and bioventing systems at the site during 2006 and 2007 to provide recommendations for a path forward for remedial activities at the site. The findings of this evaluation

were presented in two Technical Memoranda (TMs), dated June 6, 2006 (CH2MHill, 2006), and January 5, 2007 (CH2MHill, 2007). Both TMs concluded that concentrations of contaminants historically detected at levels greater than industrial Soil Cleanup Target Levels (SCTLs) and Groundwater Cleanup Target Levels (GCTLs) had been reduced to levels less than the respective soil and groundwater criteria as a result of the operation of the bioventing and BS systems, and natural attenuation. Subsequently, the Navy proposed that the operation of the BS and bioventing systems be discontinued. The FDEP concurred with the Navy's proposed recommendation, with the stipulation that 1 year of post-active remediation monitoring (PARM) of groundwater be conducted. The BS and bioventing systems were run intermittently during 2007, and were taken off-line during August 2007 after FDEP concurred with the decision to shut down remedial system operation.

Six site wells were sampled when the system was active and analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX); naphthalene; 1- and 2-methylnaphthalene; lead; and total recoverable petroleum hydrocarbons (TRPH). Since the system was shut down, there have been several PARM sampling events at various frequencies during which groundwater and soil were analyzed for various parameters. The following is a summary of the soil and groundwater PARM sampling results as presented in the PARM Report (CH2MHill, 2009).

- Quarterly post-active remediation groundwater sampling events were conducted on February 8, July 9 and 10, and November 6, 2008; and February 3 and 4, 2009. Groundwater samples were collected from five monitoring wells (CEF-043-2N, -4N, -6N, -7N, and -9N), and analyzed for the following parameters: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), lead, and TRPH. Groundwater results indicated that groundwater monitoring should continue at the site, but that restarting the BS system was unnecessary.
- Surface soil samples were collected during the February 2008 PARM event from 7 of the 15 original soil borings (borings B-41, B-96, B-101, B-104, B-106, B-146, and B-167), and from 4 additional soil borings located between wells BS-1 and BV-4 (identified as A, B, C, and D). Subsurface soil samples were collected within close proximity of the original 15 soil borings (B-7, B-31, B-41, B-70, B-96, B-99, B-101, B-104, B-106, B-110, B-137, B-146, B-158, B-167, and B-189). The soil samples were analyzed for several VOCs and SVOCs including BTEX, and methyl tertiary butyl ether (MTBE); and TRPH. Soil results did not warrant a restart of the bioventing system, and thus it was stated in the PARM report that surface soil contamination did not present a significant threat for direct exposure at the site.

It was recommended in the PARM report that further groundwater monitoring be conducted at the site.

2.0 FIELD INVESTIGATION

The field investigation to support the Site Assessment at the South Fuel Farm was conducted in June 2010, February 2011, and August 2011 in accordance with discussions and decisions at BCT meetings (BCT, 2010a and BCT, 2010b) and comments made by FDEP. Field activities included the following:

- Sampling and analysis of groundwater and measurement of groundwater elevations at eleven wells on site in June 2010.
- Sampling and analysis of groundwater from six wells on site which exhibited exceedances of regulatory criteria for VOCs, naphthalene, and/or TRPH during the June 2010 event, and measurement of groundwater elevations from 13 wells in the area, conducted in February and August 2011.

Based on the recommendations in the PARM report (CH2MHill, 2009) and regulatory agreement with the recommendations, eleven wells were sampled in June 2010. Field operations were performed in general accordance with FDEP and Tetra Tech Standard Operating Procedures (SOPs). Groundwater samples were collected between June 1, 2010 and June 3, 2010, using low-flow methods, from the eleven monitoring wells (CEF-043-2N, -4N, -5N, -6N, -8N, -9N, -7N, -17, -18, -23, and -40A) agreed upon by the NAS Cecil Field BCT (BCT, 2010a). Following collection, the groundwater samples were placed on ice and delivered via FedEx under chain of custody to Empirical Laboratories in Nashville, Tennessee for analysis. Groundwater samples were analyzed for Target Compound List (TCL) VOCs using United States Environmental Protection Agency (USEPA) Method SW-846 8260B, a select polynuclear aromatic hydrocarbon (PAH) (naphthalene) using USEPA Method SW-846 8270C, and TRPH using FDEP method FL-PRO.

Prior to obtaining the June 2010 groundwater samples, synoptic water levels and total well depths were measured in the eleven wells that were sampled. Groundwater level measurements were recorded on a site-specific groundwater level measurement sheet. This sheet, along with other field forms and notes, are included in Appendix A. The depth-to-water measurements were subtracted from known top-of-casing elevations to calculate groundwater elevations.

Several contaminants of concern (COCs) were detected at levels greater than FDEP GCTLs during the June 2010 event, including benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, and TRPH. Six of the eleven wells sampled contained groundwater with at least one exceedance. Based on the June 2010 results and subsequent discussions by the BCT during the August 2010 BCT meeting, it was

decided that the six wells that had concentrations in exceedance of GCTLs would be sampled in February 2011 (BCT, 2010b).

February 2011 field operations were performed in general accordance with FDEP and Tetra Tech SOPs. Groundwater samples were collected on February 16, 2011, using low-flow methods, from the six monitoring wells (CEF-043-2N, -4N, -6N, -9N, -7N, and -40A) which exhibited exceedances during the June 2010 sampling event. Following collection, the groundwater samples were placed on ice and delivered via FedEx under chain of custody to Empirical Laboratories in Nashville, Tennessee for analysis. Groundwater samples were analyzed for VOCs using USEPA Method SW-846 8260B, naphthalene using USEPA Method SW-846 8270C, and TRPH using FDEP method FL-PRO.

Prior to obtaining the February 2011 groundwater samples, synoptic water levels and total well depths were measured in the six wells that were sampled, along with seven other wells, in order to gain a more complete picture of the groundwater flow directions at the site. Groundwater level measurements at the thirteen wells (CEF-043-2N, -4N, -5N, -6N, -7N, -8N, -9N, -17, -18, -23, -29, -40A, and -44) were recorded on a site-specific groundwater level measurement sheet. This sheet and other field forms and notes are included in Attachment A. The depth-to-water measurements were subtracted from known top-of-casing elevations to calculate groundwater elevations.

Groundwater elevations ranged from 66.88 to 68.10 feet above mean sea level (msl) during the June 2010 event, and 68.91 to 70.78 feet above msl during the February 2011 event.

August 2011 field operations were performed in general accordance with FDEP and Tetra Tech SOPs. Groundwater samples were collected on August 24, 2011, using low-flow methods, from the six monitoring wells (CEF-043-2N, -4N, -6N, -9N, -7N, and -40A) which exhibited exceedances during the June 2010 sampling event and were sampled during the February 2011 event. Following collection, the groundwater samples were placed on ice and delivered via FedEx under chain of custody to Empirical Laboratories in Nashville, Tennessee for analysis. Groundwater samples were analyzed for VOCs using USEPA Method SW 846 8260B, naphthalene using USEPA Method SW-846 8270C, and TRPH using FDEP method FL-PRO.

Prior to collecting the August 2011 groundwater samples, synoptic water levels and total well depths were measured in the 6 wells that were sampled, along with the 7 other wells at which groundwater levels were measured in February 2011. Groundwater level measurements at the 13 wells (CEF-043-2N, -4N, -5N, -6N, -7N, -8N, -9N, -17, -18, -23, -29, -40A, and -44) were recorded on a site-specific groundwater level measurement sheet. This sheet and other field forms and notes are included in Attachment A. The

depth-to-water measurements were subtracted from known top-of-casing elevations to calculate groundwater elevations.

Groundwater elevations ranged from 57.87 to 60.97 feet above msl during the August 2011 event. Table 2-1 provides the groundwater elevation data. Figures 2-1, 2-2 and 2-3 show the potentiometric surface maps based on the June 2010, February 2011, and August 2011 groundwater elevation measurements, respectively. Two of the 13 wells at which groundwater levels were measured are not included on Figures 2-1, 2-2, and 2-3 because there are not accurate survey results for those wells. The direction of groundwater flow was predominantly towards the southwest during all events. The analytical results are discussed in Section 3.0.

3.0 ANALYTICAL RESULTS

During the June 2010 sampling event, exceedances were detected at six of eleven wells. Concentrations of isopropylbenzene, and total xylenes exceeded the Natural Attenuation Default Concentrations (NADCs) at CEF-043-7N; and ethylbenzene exceeded the GCTL. Groundwater from well CEF-043-2N exceeded the NADC for isopropylbenzene; and concentrations of ethylbenzene, total xylenes, naphthalene, and TRPH exceeded GCTLs. The isopropylbenzene concentration in CEF-043-6N exceeded the NADC; and all other concentrations in this well were less than GCTLs. Isopropylbenzene concentrations also exceeded the GCTL in June 2010 at CEF-043-4N, CEF-043-9N, and CEF-043-40A.

As indicated in Table 3-1, the GCTL for isopropylbenzene was exceeded in groundwater from well CEF-043-6N during the February 2011 sampling event. All other contaminants analyzed in groundwater from this well were either not detected, or were detected at levels less than GCTLs. The GCTL for isopropylbenzene is 0.8 micrograms per liter ($\mu\text{g/L}$). The NADC for isopropylbenzene ($8 \mu\text{g/L}$), as defined in Chapter 62-777, Florida Administrative Code (F.A.C.), was not exceeded in any of the groundwater samples collected during this event. Furthermore, there were no exceedances at any other wells during the February 2011 event, suggesting a significant decrease in many COC concentrations across the site overall.

The August 2011 event was conducted and included in the Site Assessment to determine if the concentrations did decrease to the extent shown by the February 2011 results. August 2011 results showed low-level detections of ethylbenzene, xylenes, and naphthalene, but no GCTL or NADC exceedances for these COCs. Benzene was not detected in any of the samples. Isopropylbenzene was either not detected, or detected at a concentration less than the GCTL at CEF-043-2N, CEF-043-4N, CEF-043-6N, CEF-043-7N (the well with the greatest concentrations during the June 2010 sampling event), and CEF-043-40A. Isopropylbenzene concentrations in CEF-043-9N were detected at $1.1 \mu\text{g/L}$ in the original sample and $2.2 \mu\text{g/L}$ in the duplicate. These concentrations exceed the GCTL and are greater than the concentration detected in February 2011, but are still less than the June 2010 concentration in this well. During the August 2011 event, there were also two samples with exceedances of TRPH GCTLs: CEF-043-6N and CEF-043-9N. These were the first TRPH exceedances at these two wells; however, there was one TRPH GCTL exceedance at CEF-043-2N during the June 2010 event.

The analytical results for these events are summarized in Table 3-1, and the laboratory reports are provided as Attachment B. The results for all three events are also shown on Figure 3-1.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The Site Assessment confirmed the presence of groundwater contamination greater than FDEP GCTLs at South Fuel Farm. Several COC concentrations exceeded NADCs during the June 2010 event. Concentrations of COCs decreased overall at the site during the February 2011 event. Most concentrations remained less than GCTLs during the August 2011 event; however there were three exceedances.

Based on the groundwater data the plume does not appear to be migrating and groundwater flow patterns indicate clean downgradient wells are present and being monitored. The plume appears to be stable, active remediation has already occurred at the site using a bioventing and BS system, and COC concentrations appear to be generally decreasing across the site; therefore, monitoring only for natural attenuation (MONA) is recommended at South Fuel Farm as the most appropriate and cost-effective remediation strategy. For the MONA, it is recommended that source monitoring wells CEF-043-2N, -4N, -6N, -7N, -9N, and -040A and downgradient well CEF-043-23, be sampled and analyzed on a semi-annual basis for select VOCs by USEPA Method SW-846 8260B, naphthalene by USEPA Method SW-846 8270C, and TRPH by FDEP Method FL-PRO.

A Uniform Federal Policy – Sampling and Analysis Plan (UFP-SAP) will be prepared for the site. Semi-annual sampling is proposed, and the first semi-annual long-term monitoring event is tentatively scheduled for February 2012. The first Semi-Annual, Year 1 Groundwater Monitoring Report will be prepared when the results from the sampling event have been received and evaluated.

The proposed monitoring program is for a period of 5 years. The milestone objectives found on Table 4-1, per F.A.C. 62-770, will be used for the annual evaluation of the progress of natural attenuation:

The milestone objectives were determined assuming a 15-percent annual decrease in contaminant concentrations, with the initial concentrations being the average of the concentrations for each COC detected during the Site Assessment events in June 2010, February 2011, and August 2011. The data from the five wells which were sampled during the June 2010 event only were not included in determining the averages, as none of the COCs were detected at these wells at levels exceeding the GCTLs; therefore they were not sampled in February or August 2011. Non-detects of COCs from the other six wells which were sampled during both events were included in the averages. The “End of Year 5” milestone objective for isopropylbenzene is slightly greater than its GCTL, but is less than the NADC. Additional monitoring will likely be required for isopropylbenzene.

Should the concentrations of any of the COCs be less than their respective GCTLs for two or more consecutive monitoring events, they may be considered for elimination from the monitoring program as appropriate. Any such changes will be discussed with FDEP and the BCT.

Groundwater use restrictions, in the form of Land Use Controls recorded in the deed, remain in place at South Fuel Farm to prevent the use of groundwater from the site for long as contamination still exists at concentrations greater than the GCTLs. The Land Use Controls objectives and figures showing the area restricted by Land Use Controls (Navy, 2005), are included in Appendix C. Soil concentrations have been confirmed to be less than FDEP industrial criteria, and land use restrictions will remain in effect on-site to ensure that the property is not used for residential purposes. If the use of the land changes in the future and the site may become residential property, the soil contamination will need to be re-evaluated; however, the soil contamination levels are acceptable for the current land use.

If groundwater COC concentrations have not decreased to concentrations less than the milestone objectives, the BCT may consider initiating efforts to restart the bioventing and BS system. Furthermore, if groundwater concentrations should increase or exceed NADCs, or if other unforeseen events transpire prior to the completion of 5 years of monitoring, the BCT may choose to consider restarting the bioventing and BS system at an earlier date or evaluate other potential treatment options.

5.0 REFERENCES

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BEI (Bechtel Environmental, Inc.), 1998. Completion Report for the South Fuel Farm Bioventing and Biosparging Systems, Naval Air Station Cecil Field, Jacksonville, Florida. Prepared for the Department of the Navy, Naval Facilities Engineering Command, Southern Division. September.

CH2MHill (CH2MHill Constructors, Inc.), 2001. Work Plan Addendum No. 12, Operation and Maintenance of the Remediation Systems at Day Tank 1, South Fuel Farm, and 103rd Street and A Avenue, NAS Cecil Field, Jacksonville, Florida. April.

CH2MHill, 2006. Technical Memorandum: Evaluation of Biosparging and Bioventing Systems at the South Fuel Farm Facility, Naval Air Station, Cecil Field, Jacksonville, Florida. June.

CH2MHill, 2007. Technical Memorandum: Evaluation of Supplemental Soil Sampling Analytical Results from Area Between BS-1 and BV-4, South Fuel Farm Facility, Naval Air Station Cecil Field, Jacksonville, Florida. January.

CH2MHill, 2009. Technical Memorandum: Post-Active Remediation Monitoring Report, South Fuel Farm Site, Former Naval Air Station Cecil Field, Jacksonville, Florida. August.

TABLES

TABLE 2-1

**GROUNDWATER ELEVATION MEASUREMENTS
SITE ASSESSMENT REPORT SOUTH FUEL FARM
NAVAL AIR STATION CECIL FIELD, JACKSONVILLE, FLORIDA**

Well Number	Total Depth of Well (feet bgs)	Top of Casing Elevation (feet above msl)	June 01,2010		February 15, 2011		August 24, 2011	
			Depth to Water (feet btoc)	Groundwater Elevation (feet above msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet above msl)	Depth to Water (feet btoc)	Groundwater Elevation (feet above msl)
CEF-043-02N	13.8	76.68	9.51	67.17	7.06	69.62	8.77	58.40
CEF-043-04N	14.6	76.75	9.47	67.28	7.15	69.60	8.67	58.61
CEF-043-05N	14.6	77.14	10.03	67.11	7.55	69.59	9.24	57.87
CEF-043-06N	14.6	76.43	9.31	67.12	6.76	69.67	8.53	58.59
CEF-043-07N	14.5	76.13	8.44	67.69	5.35	70.78	7.36	60.33
CEF-043-08N	4.6	77.03	9.47	67.56	6.71	70.32	8.68	58.88
CEF-043-09N	13.2	76.13	8.22	67.91	5.37	70.76	7.52	60.39
CEF-043-17	15.0	75.96	8.22	67.74	5.59	70.37	7.76	59.98
CEF-043-18	15.0	75.70	7.60	68.10	5.04	70.66	7.13	60.97
CEF-043-23	15.0	74.62	7.74	66.88	5.71	68.91	6.98	59.90
CEF-043-40A	14.7	74.69	7.79	66.90	5.06	69.63	6.95	59.95
CEF-043-29	13.2	NA	NA	NA	5.94	NA	5.94	NA
CEF-043-44	14.4	NA	NA	NA	5.26	NA	5.26	NA

NM - Not measured
 N/A - Not applicable
 ft - feet
 msl - mean sea level
 bgs - below ground surface
 btoc - below top of casing

TABLE 3-1

GROUNDWATER DATA
 SITE ASSESSMENT REPORT SOUTH FUEL FARM
 NAVAL AIR STATION CECIL FIELD, JACKSONVILLE, FLORIDA
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Parameter	FDEP Criteria		CEF-043-2N			CEF-043-4N			CEF-043-5N	CEF-043-6N			CEF-043-7N			
	GCTL	NADC	6/1/2010	2/16/2011	8/24/2011	6/1/2010	2/16/2011		8/24/2011	6/1/2010	6/1/2010	2/16/2011	8/24/2011	6/1/2010	2/16/2011	8/24/2011
							Sample	Duplicate								
VOCs (USEPA Method 8260B) (µg/L)																
Benzene	1	100	0.14 U	0.25 U	0.25 U	0.14 U	0.25 U	0.25 U	0.25 U	0.14 U	0.322	0.25 U	0.25 U	15.2 [G]	0.25 U	0.25 U
Toluene	40	400	1.3	0.25 U	NA	0.19 U	0.25 U	0.25 U	NA	0.19 U	0.19 U	0.25 U	NA	6.83	0.25 U	NA
Ethylbenzene	30	300	64.8 [G]	0.32 J	1.59	0.15 U	0.25 U	0.25 U	0.25 U	0.15 U	0.964	0.25 U	0.25 U	37 [G]	0.335 J	0.25 U
Total Xylenes	20	200	114 [G]	0.75 U	1.56	0.22 U	0.75 U	0.75 U	0.75 U	0.22 U	0.644	0.75 U	0.75 U	262 [G] [N]	1.86 J	0.75 U
Isopropylbenzene	0.8	8	9.68 [G] [N]	0.25 U	0.25 U	2.02 [G]	0.404 J	0.474 J	0.25 U	0.15 U	10.7 [G] [N]	1.66 [G]	0.25 U	17.4 [G] [N]	0.25 U	0.25 U
PAHs (USEPA Method 8270C SIM) (µg/L)																
Naphthalene	14	140	27.3 [G]	0.0185 U	0.321	0.836	0.207	0.192	0.0715	0.0185 U	0.0185 U	0.0185 U	0.0500 U	0.191 U	0.0185 U	0.0500 U
TRPH (FL-PRO) (µg/L)																
TRPH	5000	50000	8720 [G]	416 J	3990	1040	347 J	326 J	187	159 U	487 J	219 J	5650 [G]	186 J	157 U	676

TABLE 3-1

GROUNDWATER DATA
 SITE ASSESSMENT REPORT SOUTH FUEL FARM
 NAVAL AIR STATION CECIL FIELD, JACKSONVILLE, FLORIDA
 PAGE 2 OF 2

Parameter	FDEP Criteria		CEF-043-8N	CEF-043-9N				CEF-043-17	CEF-043-18	CEF-043-23	CEF-043-40A		
	GCTL	NADC		6/2/2010	6/1/2010	2/16/2011	8/24/2011				6/2/2010	6/2/2010	6/2/2010
			Sample				Duplicate						
VOCs (USEPA Method 8260B) (µg/L)													
Benzene	1	100	0.14 U	0.14 U	0.25 U	0.25 U	0.25 U	0.14 U	0.14 U	0.14 U	0.14 U	0.25 U	0.25 U
Toluene	40	400	0.18 U	0.19 U	0.25 U	NA	NA	0.19 U	0.19 U	0.19 U	0.19 U	0.25 U	NA
Ethylbenzene	30	300	0.15 U	2.2	0.513 J	0.905	1.93	0.15 U	0.15 U	0.15 U	0.15 U	0.25 U	0.25 U
Total Xylenes	20	200	0.22 U	6.52	1.65 J	0.75 U	1.27	0.22 U	0.22 U	0.22 U	0.22 U	0.75 U	0.75 U
Isopropylbenzen	0.8	8	0.15 U	3.18 [G]	0.449 J	1.1 [G]	2.2 [G]	0.15 U	0.15 U	0.15 U	1.97 [G]	0.25 U	0.25 U
PAHs (USEPA Method 8270C SIM) (µg/L)													
Naphthalene	14	140	0.0185 U	12.8	0.577	4.9	6.29	0.284 U	0.078 U	0.169 U	0.0185 U	0.0185 U	0.0500 U
TRPH (FL-PRO) (µg/L)													
TRPH	5000	50000	577 J	1160	1040	2970	11100 [G]	157 U	157 U	157 U	217 J	157 U	1440

[G] - GCTL - Groundwater Cleanup Target Level exceedance.
 [N] - NADC - Natural Attenuation Default Concentration exceedance.
 J - Estimated value.
 U - Not detected at detection limit shown.
 Bolded value indicates detected concentration.
 I - Concentration is between the laboratory method detection limit and the laboratory practical quantitation limit
 NA - Not analyzed.

VOCs - Volatile organic compounds.
 PAHs - Polynuclear aromatic hydrocarbons.
 TRPH - Total recoverable petroleum hydrocarbons.
 µg/L - Micrograms per liter.
 Shaded value indicates concentration greater than criteria.

TABLE 4-1

**MONA PLAN MILESTONE OBJECTIVES
SITE ASSESSMENT REPORT SOUTH FUEL FARM
NAVAL AIR STATION CECIL FIELD, JACKSONVILLE, FLORIDA
PAGE 1 OF 3**

Parameter	CEF-043-2N					
	Initial Concentration	End of Year 1	End of Year 2	End of Year 3	End of Year 4	End of Year 5
VOCs (USEPA Method 8260B) (µg/L)						
Benzene	0.25 U	NA	NA	NA	NA	NA
Ethylbenzene	1.59	1.35	1.15	0.98	0.83	0.71
Total Xylenes	1.56	1.33	1.13	0.96	0.81	0.69
Isopropylbenzene	0.25 U	NA	NA	NA	NA	NA
PAHs (USEPA Method 8270C SIM) (µg/L)						
Naphthalene	0.321	0.27	0.23	0.20	0.17	0.14
TRPH (FL-PRO) (µg/L)						
TRPH	3990	3392	2883	2450	2083	1770

Parameter	CEF-043-4N					
	Initial Concentration	End of Year 1	End of Year 2	End of Year 3	End of Year 4	End of Year 5
VOCs (USEPA Method 8260B) (µg/L)						
Benzene	0.25 U	NA	NA	NA	NA	NA
Ethylbenzene	0.25 U	NA	NA	NA	NA	NA
Total Xylenes	0.75 U	NA	NA	NA	NA	NA
Isopropylbenzene	0.25 U	NA	NA	NA	NA	NA
PAHs (USEPA Method 8270C SIM) (µg/L)						
Naphthalene	0.0715	0.0608	0.0517	0.0439	0.0373	0.0317
TRPH (FL-PRO) (µg/L)						
TRPH	187	159	135	115	98	83

TABLE 4-1

**MONA PLAN MILESTONE OBJECTIVES
SITE ASSESSMENT REPORT SOUTH FUEL FARM
NAVAL AIR STATION CECIL FIELD, JACKSONVILLE, FLORIDA
PAGE 2 OF 3**

Parameter	CEF-043-6N					
	Initial Concentration	End of Year 1	End of Year 2	End of Year 3	End of Year 4	End of Year 5
VOCs (USEPA Method 8260B) (µg/L)						
Benzene	0.25 U	NA	NA	NA	NA	NA
Ethylbenzene	0.25 U	NA	NA	NA	NA	NA
Total Xylenes	0.75 U	NA	NA	NA	NA	NA
Isopropylbenzene	0.25 U	NA	NA	NA	NA	NA
PAHs (USEPA Method 8270C SIM) (µg/L)						
Naphthalene	0.0500 U	NA	NA	NA	NA	NA
TRPH (FL-PRO) (µg/L)						
TRPH	5650	4803	4082	3470	2949	2507

Parameter	CEF-043-7N					
	Initial Concentration	End of Year 1	End of Year 2	End of Year 3	End of Year 4	End of Year 5
VOCs (USEPA Method 8260B) (µg/L)						
Benzene	0.25 U	NA	NA	NA	NA	NA
Ethylbenzene	0.25 U	NA	NA	NA	NA	NA
Total Xylenes	0.75 U	NA	NA	NA	NA	NA
Isopropylbenzene	0.25 U	NA	NA	NA	NA	NA
PAHs (USEPA Method 8270C SIM) (µg/L)						
Naphthalene	0.0500 U	NA	NA	NA	NA	NA
TRPH (FL-PRO) (µg/L)						
TRPH	676	575	488	415	353	300

TABLE 4-1

**MONA PLAN MILESTONE OBJECTIVES
SITE ASSESSMENT REPORT SOUTH FUEL FARM
NAVAL AIR STATION CECIL FIELD, JACKSONVILLE, FLORIDA
PAGE 3 OF 3**

Parameter	CEF-043-9N					
	Initial Concentration	End of Year 1	End of Year 2	End of Year 3	End of Year 4	End of Year 5
VOCs (USEPA Method 8260B) (µg/L)						
Benzene	0.25 U	NA	NA	NA	NA	NA
Ethylbenzene	1.93	1.64	1.39	1.19	1.01	0.86
Total Xylenes	1.27	1.08	0.92	0.78	0.66	0.56
Isopropylbenzene	2.2	1.9	1.6	1.4	1.1	1.0
PAHs (USEPA Method 8270C SIM) (µg/L)						
Naphthalene	6.29	5.35	4.54	3.86	3.28	2.79
TRPH (FL-PRO) (µg/L)						
TRPH	11100	9435	8020	6817	5794	4925

Parameter	CEF-043-40A					
	Initial Concentration	End of Year 1	End of Year 2	End of Year 3	End of Year 4	End of Year 5
VOCs (USEPA Method 8260B) (µg/L)						
Benzene	0.25 U	NA	NA	NA	NA	NA
Ethylbenzene	0.25 U	NA	NA	NA	NA	NA
Total Xylenes	0.75 U	NA	NA	NA	NA	NA
Isopropylbenzene	0.25 U	NA	NA	NA	NA	NA
PAHs (USEPA Method 8270C SIM) (µg/L)						
Naphthalene	0.0500 U	NA	NA	NA	NA	NA
TRPH (FL-PRO) (µg/L)						
TRPH	1440	1224	1040	884	752	639

U - Not detected at detection limit shown.

NA - Not applicable.

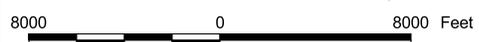
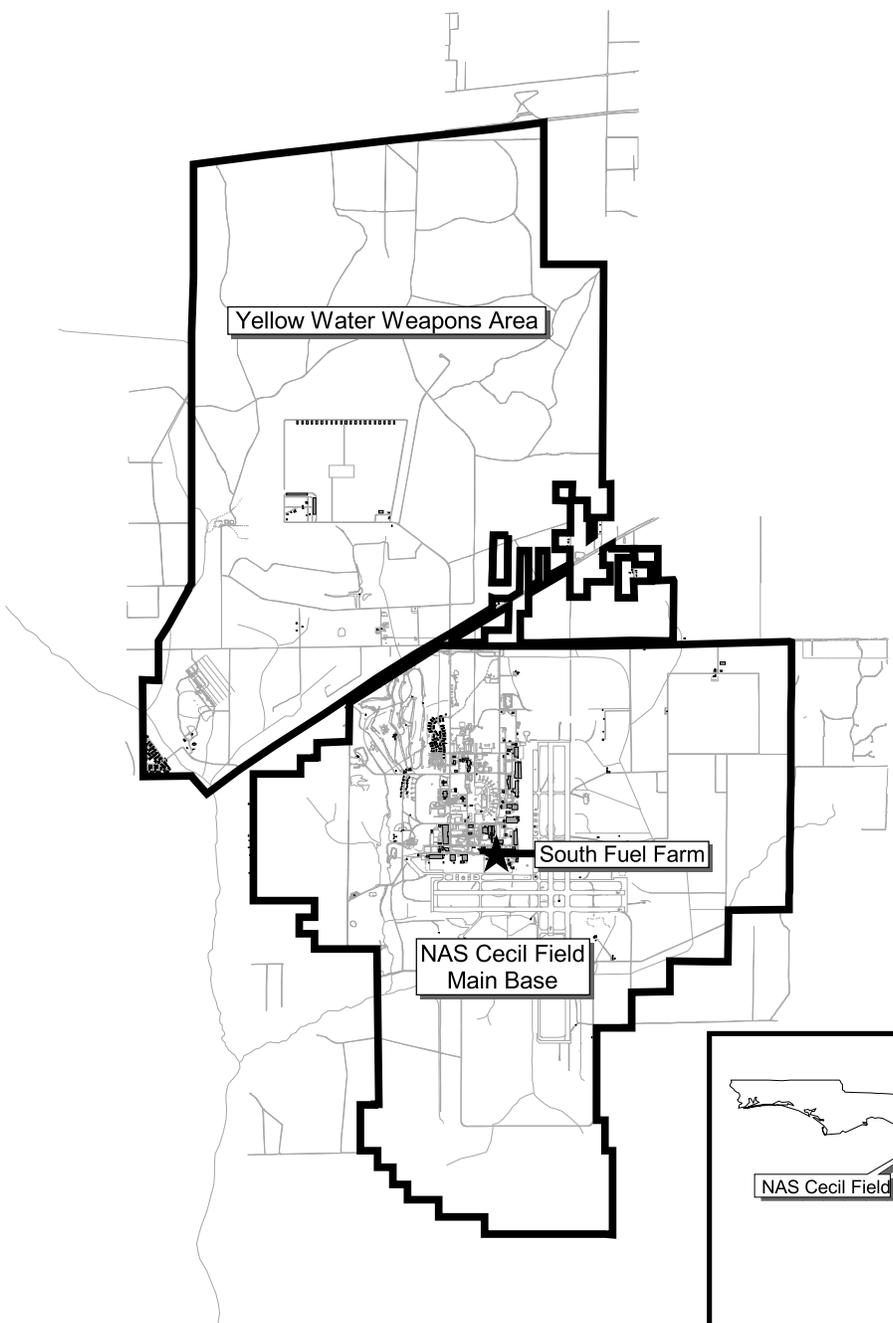
VOCs - Volatile organic compounds.

PAHs - Polynuclear aromatic hydrocarbons.

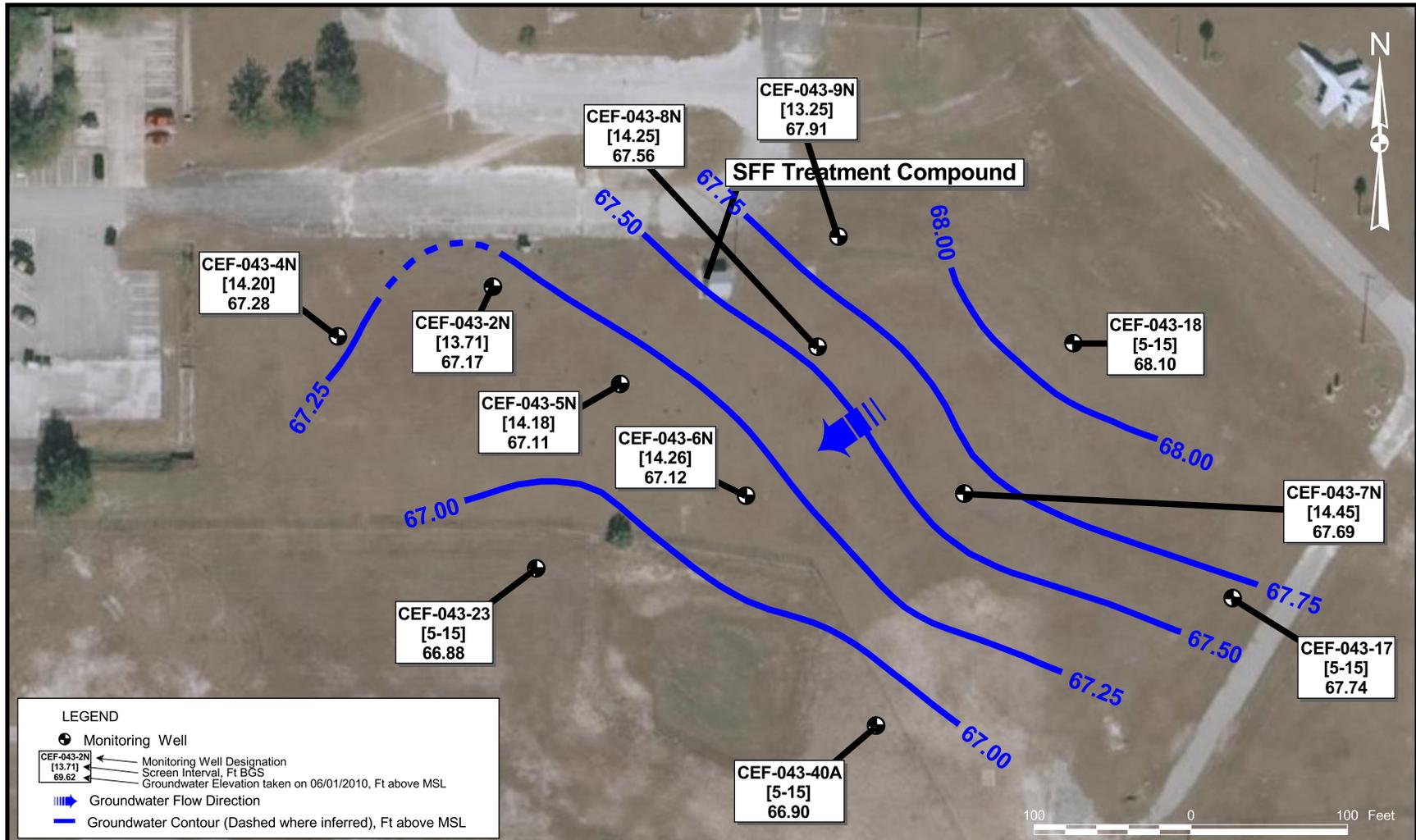
TRPH - Total recoverable petroleum hydrocarbons.

µg/L - Micrograms per liter.

FIGURES



DRAWN BY MJJ	DATE 05Feb11		GENERAL LOCATION MAP SITE ASSESSMENT REPORT SOUTH FUEL FARM 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 1-1	REV 0

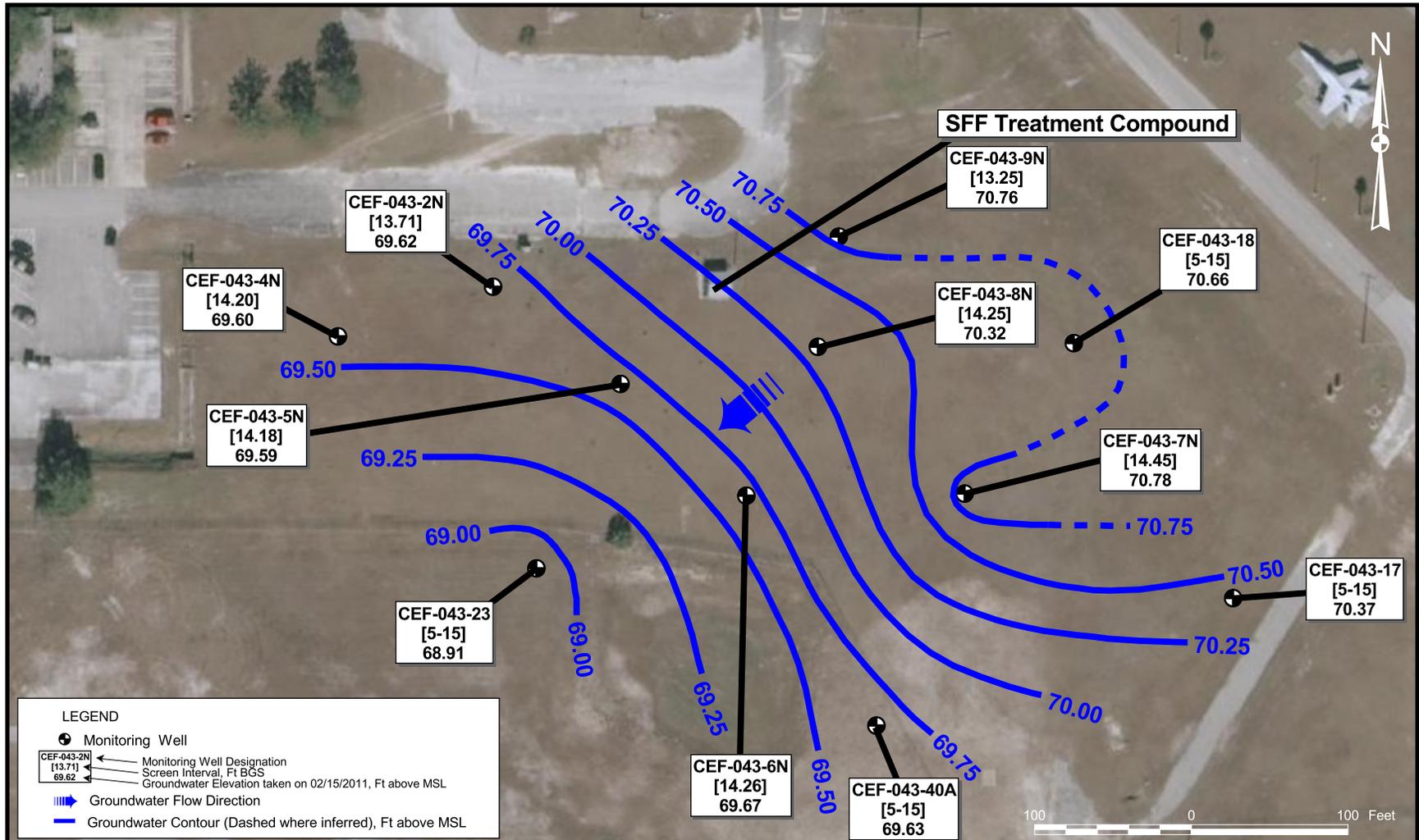


DATE	MJJ	05Feb11
CHECKED BY		
COST/SCHEDULE-AREA		
SCALE	AS NOTED	



GROUNDWATER FLOW MAP, JUNE 2010
 SITE ASSESSMENT REPORT
 SOUTH FUEL FARM
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

DRAWN BY	CONTRACT NUMBER 2267	
APPROVED BY		DATE
APPROVED BY		DATE
DRAWING NO.	FIGURE 2-1	REV 0

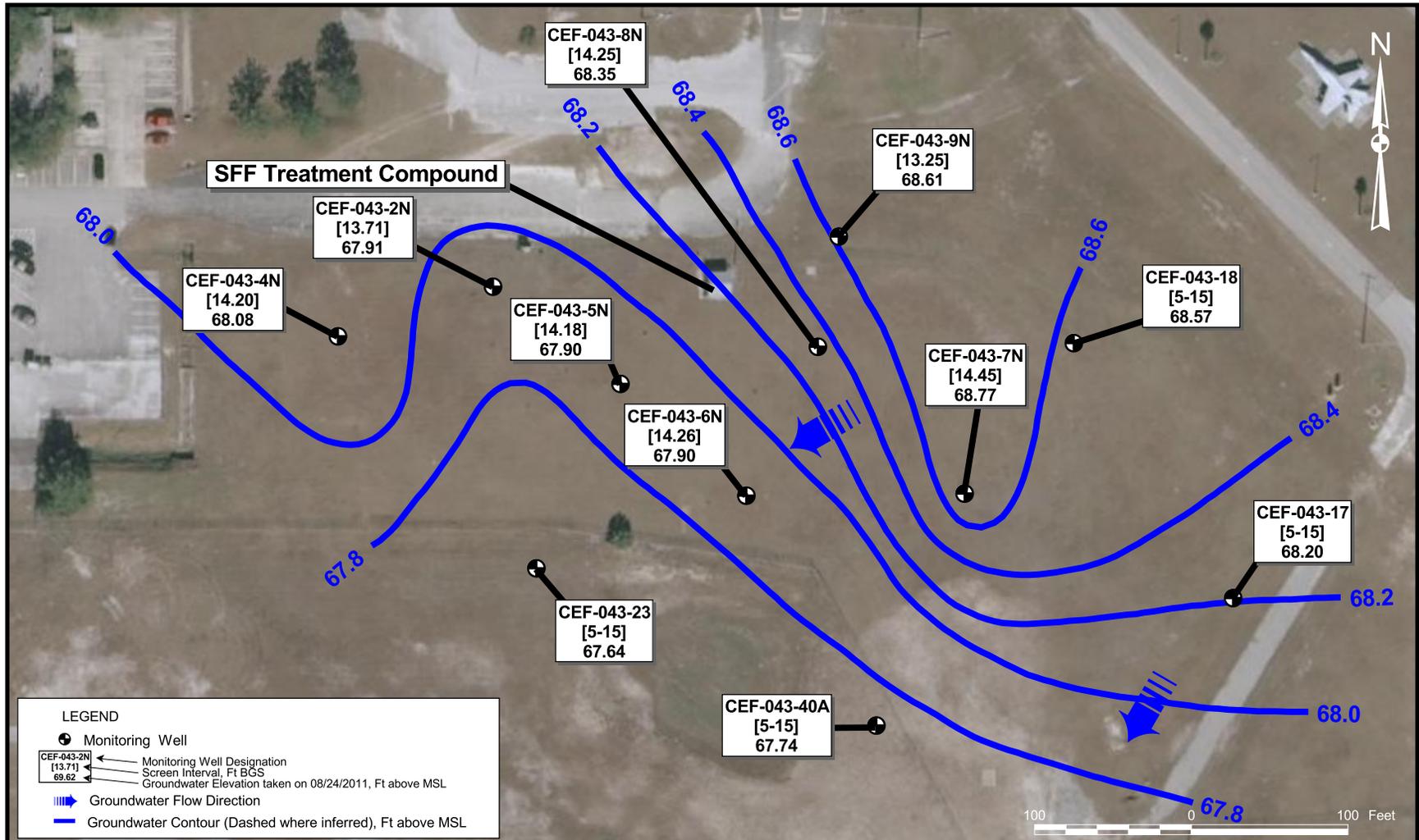


DATE	05Feb11
CHECKED BY	
COST/SCHEDULE-AREA	
SCALE	AS NOTED



GROUNDWATER FLOW MAP, FEBRUARY 2011
 SITE ASSESSMENT REPORT
 SOUTH FUEL FARM
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

DRAWN BY	CONTRACT NUMBER 2267	
APPROVED BY	DATE	
APPROVED BY	DATE	
DRAWING NO.	FIGURE 2-2	REV 0

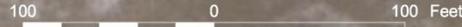
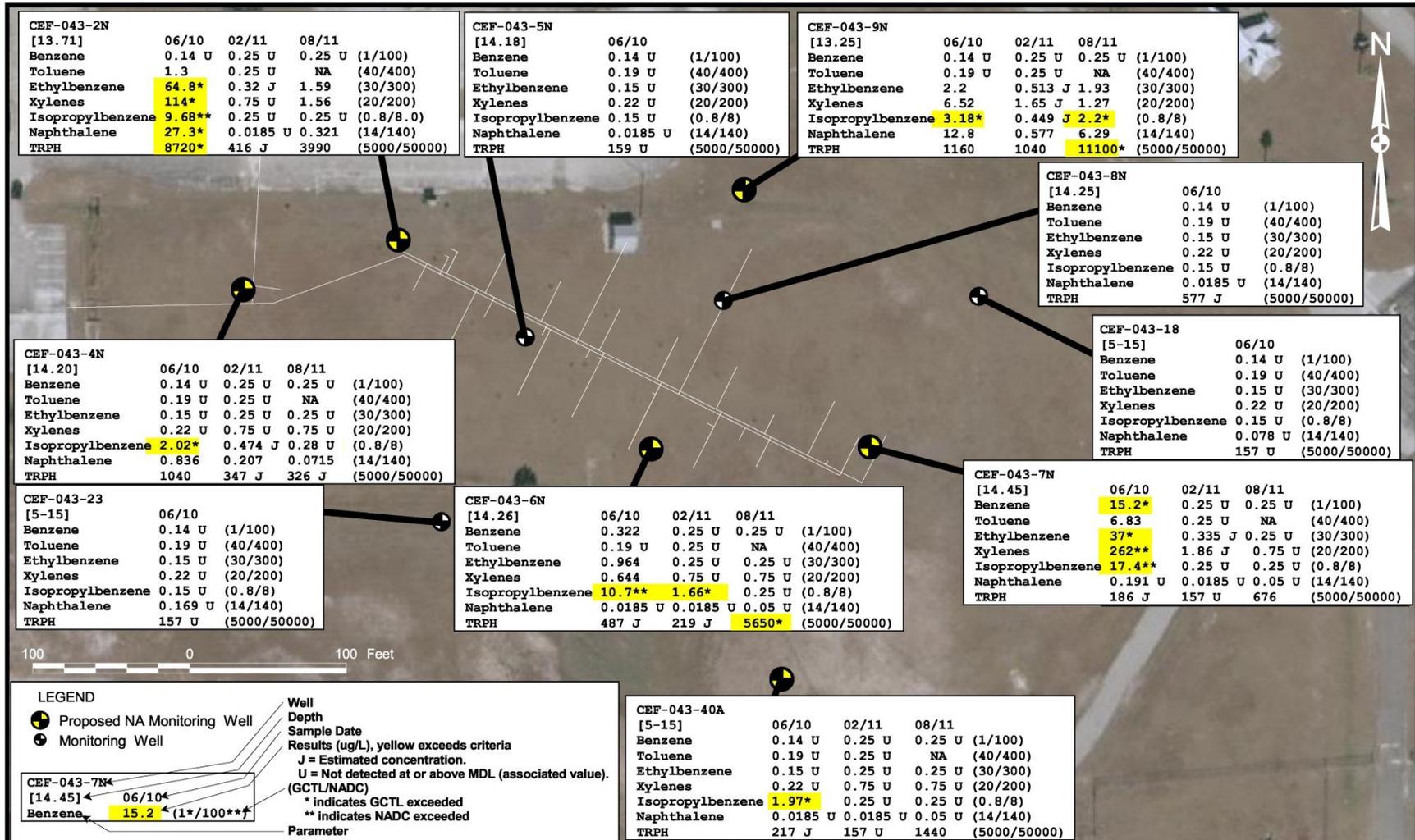


DATE	05Feb11
CHECKED BY	
COST/SCHEDULE-AREA	
SCALE	AS NOTED



GROUNDWATER FLOW MAP, AUGUST 2011
 SITE ASSESSMENT REPORT
 SOUTH FUEL FARM
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

DRAWN BY	CONTRACT NUMBER	2267
APPROVED BY	DATE	
APPROVED BY	DATE	
DRAWING NO.	FIGURE 2-3	REV 0



LEGEND

- Proposed NA Monitoring Well
- Monitoring Well

Well
Depth
Sample Date
Results (ug/L), yellow exceeds criteria
J = Estimated concentration.
U = Not detected at or above MDL (associated value).
(GCTL/NADC)
* indicates GCTL exceeded
** indicates NADC exceeded
Parameter

CEF-043-7N	[14.45]	06/10			
Benzene	15.2	(1*/100***)			

CEF-043-40A						
[5-15]						
	06/10	02/11	08/11			
Benzene	0.14 U	0.25 U	0.25 U	(1/100)		
Toluene	0.19 U	0.25 U	NA	(40/400)		
Ethylbenzene	0.15 U	0.25 U	0.25 U	(30/300)		
Xylenes	0.22 U	0.75 U	0.75 U	(20/200)		
Isopropylbenzene	1.97*	0.25 U	0.25 U	(0.8/8)		
Naphthalene	0.0185 U	0.0185 U	0.05 U	(14/140)		
TRPH	217 J	157 U	1440	(5000/50000)		

DATE	
MJJ	05Feb11
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE	
AS NOTED	



GROUNDWATER SAMPLE RESULTS
SITE ASSESSMENT REPORT
 SOUTH FUEL FARM
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

DRAWN BY	CONTRACT NUMBER
	2267
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO.	REV
FIGURE 3-1	0

APPENDIX A

FIELD DATA SHEETS



Tetra Tech NUS, Inc.

YSI EQUIPMENT CALIBRATION SHEET

PROJECT NAME : Cecil Field INSTRUMENT NAME/MODEL: YSI 556 MPS
 SITE NAME: South Fuel Farm MANUFACTURER: YSI
 PROJECT No.: 112G01264 SERIAL NUMBER: See below

		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.)	08/01/09	Jeff Kern	09D10199		3.93	4.00	Lot# 2909313 Exp.Date: 8/11	
pH (7)	(S.U.)					6.99	7.00	Lot# 2909171 Exp.Date: 8/11	
D.O.	%				100%	81.9	99.9	Lot# Exp.Date:	
Cond.	(mS/cm)				1.413	1434	1.413	Lot# 7806 Exp.Date: 9/11	
ORP	(mV)	6/1/10			240	236.6	240.0	Lot# 1630 Exp.Date: 5/14	
								Lot# Exp.Date:	
pH (4)	(S.U.)	08/02/09				3.99	4.00	Lot# 2909313 Exp.Date: 8/11	
pH (7)	(S.U.)					7.01	7.00	Lot# 2909171 Exp.Date: 8/11	
D.O.	%					115.4	100.0	Lot# Exp.Date:	
Cond.	(mS/cm)					1483	1413	Lot# 7806 Exp.Date: 3/11	
								Lot# Exp.Date:	
ORP	(mV)	6/2/10				244.3	240.0	Lot# 1630 Exp.Date: 5/14	



Tetra Tech NUS, Inc.

YSI EQUIPMENT CALIBRATION SHEET

PROJECT NAME : Cecil Field INSTRUMENT NAME/MODEL: YSI 556 MPS
 SITE NAME: South Fuel Farm MANUFACTURER: YSI
 PROJECT No.: 112G01264 SERIAL NUMBER: See below

		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.)	08/03/09	Jeff K...	090101399		3.96	4.00	Lot# 2909313 Exp.Date: 8/11	
pH (10)	(S.U.)					7.08	7.00	Lot# 2909171 Exp.Date: 8/11	
D.O.	%				100%	93.8	100%	Lot# Exp.Date:	
Cond.	(mS/cm)				1715	1445	1413	Lot# 7806 Exp.Date: 3/11	
								Lot# Exp.Date:	
ORP	(mV)				210	239.6	210	Lot# 1630 Exp.Date: 5/11	
								Lot# Exp.Date:	
pH (4)	(S.U.)	08/ /09						Lot# Exp.Date:	
pH (10)	(S.U.)							Lot# Exp.Date:	
D.O.	%							Lot# Exp.Date:	
Cond.	(mS/cm)							Lot# Exp.Date:	
								Lot# Exp.Date:	
ORP	(mV)							Lot# Exp.Date:	

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: Cecil Field South Fuel Farm	SITE LOCATION: Jacksonville, FL
WELL NO: CEF-043-02N	SAMPLE ID: CEF-043-GW-02N-201006 03
DATE: 06/3 /10	

PURGING DATA

WELL DIAMETER (inches): 2"	TUBING DIAMETER (inches): 3/16"	WELL SCREEN INTERVAL DEPTH: 3.8 feet to 13.8 feet	STATIC DEPTH TO WATER (feet): 9.51	PURGE PUMP TYPE OR BAILER: Peristaltic
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable) 2.59L gallons				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) _____ gallons				

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 10	PURGING INITIATED AT: 0845	PURGING ENDED AT: 0936	TOTAL VOLUME PURGED (gallons): 5.1L							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	ODOR (describe)
0845	—	—	100	—	—	—	—	—	—	—	—
0930	4.5	4.5	100	9.84	5.74	25.05	0.171	0.71	19.3	-105.1	—
0933	.3	4.8	100	9.85	5.74	25.05	0.169	0.69	18.4	-109.6	—
0936	.3	5.1	100	9.85	5.75	25.10	0.170	0.69	17.9	-113.7	—
0944 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 / TINUS	SAMPLER(S) SIGNATURES: 	SAMPLING INITIATED AT: 0944	SAMPLING ENDED AT: 1000
PUMP OR TUBING DEPTH IN WELL (feet): 10	SAMPLE PUMP FLOW RATE (mL per minute): 100	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y <input checked="" type="radio"/> N	FIELD-FILTERED: Y <input checked="" type="radio"/> N FILTER SIZE: _____ µm	DUPLICATE: Y <input checked="" type="radio"/> 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		
1	3	CG	40 ml	HCL	NONE	<2	Select VOCs	RFPP
2	2	AG	1 L	NONE	NONE	-	Select SVOCs,(NAPHTHALENE)	APP
3	2	AG	1 L	H2SO4	None		TRPH	APP

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: Cecil Field South Fuel Farm	SITE LOCATION: Jacksonville, FL
WELL NO: CEF-043-04N	SAMPLE ID: CEF-043-04N-20100603
DATE: 06/3/10	

PURGING DATA

WELL DIAMETER (inches): "	TUBING DIAMETER (inches): 3/16"	WELL SCREEN INTERVAL DEPTH: 4.6 feet to 14.6 feet	STATIC DEPTH TO WATER (feet): 9.47	PURGE PUMP TYPE OR BAILER: Peristaltic
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY only fill out if applicable <div style="text-align: center; font-size: 1.2em;"> $3.10L \text{ gallons} \quad 14.6 - 9.47 = 5.13 \times .76 = .82 \times 3.785 = 3.10L$ </div>				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable)				

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 10	PURGING INITIATED AT: 0835	PURGING ENDED AT: 1006	TOTAL VOLUME PURGED (gallons): 9.1L							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	ODOR (describe)
0835	—	—	100	—	—	—	—	—	—	—	—
1000	8.5	8.5	100	10.14	6.03	26.22	.501	1.54	8.13	12.7	
1003	.3	8.8	100	10.14	6.04	26.21	.502	1.53	7.23	12.7	
1006	.3	9.1	100	10.14	6.04	26.21	.503	1.53	5.12	12.9	
1017 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 / TINUS	SAMPLER(S) SIGNATURES: 	SAMPLING INITIATED AT: 1017	SAMPLING ENDED AT: 1035					
PUMP OR TUBING DEPTH IN WELL (feet): 10	SAMPLE PUMP FLOW RATE (mL per minute):	TUBING MATERIAL CODE: Teflon CEF-043-DUP012100						
FIELD DECONTAMINATION: Y <input checked="" type="radio"/> N	FIELD-FILTERED: Y <input checked="" type="radio"/> N	FILTER SIZE: _____ µm	DUPLICATE: <input checked="" type="radio"/> Y <input type="radio"/> 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		
1	3	CG	40 ml	HCL	NONE	<2	Select VOCs (naphthalene)	RFPP
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: Cecil Field South Fuel Farm	SITE LOCATION: Jacksonville, FL
WELL NO: CEF-043-05N	SAMPLE ID: CEF-043-05N-20100603
DATE: 06/3/10	

PURGING DATA

WELL DIAMETER (inches): "	TUBING DIAMETER (inches): 3/16"	WELL SCREEN INTERVAL DEPTH: 4.6 feet to 14.6 feet	STATIC DEPTH TO WATER (feet): 10.03	PURGE PUMP TYPE OR BAILER: Peristaltic
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY only fill out if applicable <div style="text-align: center; font-size: 1.2em;"> $0.762 \text{ gallons} \quad 14.6 - 10.03 = 4.57 \times 0.16 = .73 \times 2.785 = 2.076$ </div>				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) _____ gallons				

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 11		FINAL PUMP OR TUBING DEPTH IN WELL (feet): 11		PURGING INITIATED AT: 1030		PURGING ENDED AT: 1146		TOTAL VOLUME PURGED (gallons): 2.16L			
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	ODOR (describe)
1030	—	—	100	—	—	—	—	—	—	—	—
1140	7.0	7.0	100	10.21	5.23	28.04	0.090	0.50	9.17	244.4	—
1143	3	7.3	100	10.21	5.22	27.96	0.090	0.49	8.11	241.0	—
1146	3	7.6	100	10.21	5.22	27.96	0.090	0.49	7.66	233.8	—
1151 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 / TINUS			SAMPLER(S) SIGNATURES: 			SAMPLING INITIATED AT: 1151		SAMPLING ENDED AT: 1210	
PUMP OR TUBING DEPTH IN WELL (feet): 11			SAMPLE PUMP FLOW RATE (mL per minute): 100			TUBING MATERIAL CODE: Teflon			
FIELD DECONTAMINATION: Y <input checked="" type="checkbox"/> N			FIELD-FILTERED: Y <input checked="" type="checkbox"/> N			FILTER SIZE: _____ µm		DUPLICATE: Y <input checked="" type="checkbox"/> 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			
1	3	CG	40 ml	HCL	NONE	<2	Select VOCs (naphthalene)	RFPP	

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: Cecil Field South Fuel Farm	SITE LOCATION: Jacksonville, FL
WELL NO: CEF-043-06N	SAMPLE ID: CEF-043-06N-201006 02
DATE: 06/2/10	

PURGING DATA

WELL DIAMETER (inches): "	TUBING DIAMETER (inches): 3/16"	WELL SCREEN INTERVAL DEPTH: 4.6 feet to 14.6 feet	STATIC DEPTH TO WATER (feet): 9.31	PURGE PUMP TYPE OR BAILER: Peristaltic
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable)				
0.84 gallons 3.17L				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable)				
_____ gallons				

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 10	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 10	PURGING INITIATED AT: 1120	PURGING ENDED AT: 1149	TOTAL VOLUME PURGED (gallons): 5800 ml
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TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	ODOR (describe)
1120			200	9.31							
1140	4000 ml	4000 ml	200	9.68	5.29	25.99	174	0.99	10.15	-59.6	none
1143	600 ml	4600 ml	200	9.69	5.38	27.34	175	0.56	9.80	-75.8	none
1146	600 ml	5200 ml	200	9.69	5.40	27.33	175	0.46	9.62	-93.3	none
1149	600 ml	5800 ml	200	9.69	5.42	27.30	175	0.38	9.41	-104.8	none
1155 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 / TINUS	SAMPLER(S) SIGNATURES: 	SAMPLING INITIATED AT: 1155	SAMPLING ENDED AT: 1215
PUMP OR TUBING DEPTH IN WELL (feet): 10	SAMPLE PUMP FLOW RATE (mL per minute):	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y <input checked="" type="radio"/> N	FIELD-FILTERED: Y <input checked="" type="radio"/> N	FILTER SIZE: _____ µm	DUPLICATE: Y <input checked="" type="radio"/> 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		
1	3	CG	40 ml	HCL	NONE	<2	Select VOCs (naphthalene)	RFPP

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: Cecil Field South Fuel Farm	SITE LOCATION: Jacksonville, FL
WELL NO: CEF-043-07N	SAMPLE ID: CEF-043-07N-20100602
DATE: 06/2/10	

PURGING DATA

WELL DIAMETER (inches): 3"	TUBING DIAMETER (inches): 3/16"	WELL SCREEN INTERVAL DEPTH: 4.5 feet to 14.5 feet	STATIC DEPTH TO WATER (feet): 8.44	PURGE PUMP TYPE OR BAILER: Peristaltic
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY only fill out if applicable <div style="text-align: center; margin-top: 10px;"> <u>0.96</u> gallons <u>3.632</u> </div>				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) <div style="text-align: center; margin-top: 10px;"> _____ gallons </div>				

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 9	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 9	PURGING INITIATED AT: 1050	PURGING ENDED AT: 1119	TOTAL VOLUME PURGED (gallons): 5.82							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	ODOR (describe)
1050			200ml	8.44							
1113	4600ml	4600ml	200	9.23	5.33	26.87	111	1.80	3.85	217.3	none.
1116	600ml	5200ml	200	9.23	5.31	26.72	113	1.39	4.38	213.4	none.
1119	600ml	5800ml	200	9.23	5.29	26.75	112	0.99	4.52	214.9	none.
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 / TiNUS	SAMPLER(S) SIGNATURES: 	SAMPLING INITIATED AT: 1119	SAMPLING ENDED AT: 1138					
PUMP OR TUBING DEPTH IN WELL (feet): 9	SAMPLE PUMP FLOW RATE (mL per minute): 200	TUBING MATERIAL CODE: Teflon						
FIELD DECONTAMINATION: Y <input checked="" type="radio"/> N	FIELD-FILTERED: Y <input checked="" type="radio"/> N	FILTER SIZE: _____ µm	DUPLICATE: Y <input checked="" type="radio"/> 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		
1	3	CG	40 ml	HCL	NONE	<2	Select VOCs (naphthalene)	RFPP

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: Cecil Field South Fuel Farm	SITE LOCATION: Jacksonville, FL
WELL NO: CEF-043-09N	SAMPLE ID: CEF-043-09N-20100609
DATE: 06/09/10	

PURGING DATA

WELL DIAMETER (inches): "	TUBING DIAMETER (inches): 3/16"	WELL SCREEN INTERVAL DEPTH: 4.6 feet to 14.6 feet	STATIC DEPTH TO WATER (feet): 8.22	PURGE PUMP TYPE OR BAILER: Peristaltic
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable) $1.02 \text{ gallons} \times 3.8 \text{ (from table)} = 3.876$				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) $19.4 \text{ L} = 5X$				
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 9	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 14	PURGING INITIATED AT: 1227	PURGING ENDED AT: 1320	TOTAL VOLUME PURGED (gallons): 6.6 L

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	ODOR (describe)
1227			200	8.22							
1248	4200	4200	200	8.95	5.85	27.31	152	0.92	61.0	-126.7	none
1251	600	4800	200	8.98	5.84	27.82	152	0.54	74.9	-130.9	none
1254	600	5400	200	9.02	5.89	28.48	152	0.44	79.9	-138.9	none
1257	600	6000	200	9.02	5.90	28.96	152	0.47	81.2	-145.7	none
1300	600	6600	500	Well purged dry							
1315	Resumed Purge										
1320	Well purged dry										
1340	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 / Tetra Tech				SAMPLER(S) SIGNATURES:				SAMPLING INITIATED AT: 1340		SAMPLING ENDED AT: 1400	
PUMP OR TUBING DEPTH IN WELL (feet): 14				SAMPLE PUMP FLOW RATE (mL per minute): 200/500				TUBING MATERIAL CODE: Teflon			
FIELD DECONTAMINATION: Y <input checked="" type="radio"/> N				FIELD-FILTERED: Y <input checked="" type="radio"/> N				FILTER SIZE: _____ µm		DUPLICATE: Y <input checked="" type="radio"/> 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					
1	3	CG	40 ml	HCL	NONE	<2	Select VOCs (naphthalene)		RFPP		
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: Cecil Field South Fuel Farm	SITE LOCATION: Jacksonville, FL
WELL NO: CEF-043-17	SAMPLE ID: CEF-043-17-201006 02
DATE: 06/07/10	

PURGING DATA

WELL DIAMETER (inches): "	TUBING DIAMETER (inches): 3/16"	WELL SCREEN INTERVAL DEPTH: 4.6 feet to 14.6 feet	STATIC DEPTH TO WATER (feet): 8.24	PURGE PUMP TYPE OR BAILER: Peristaltic
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY only fill out if applicable 3.85 gallons $14.6 - 8.24 = 6.36 \times .16 = 1.01 \times 3.75 = 3.85$				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) _____ gallons				

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 9	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 9	PURGING INITIATED AT: 0915	PURGING ENDED AT: 1006	TOTAL VOLUME PURGED (gallons): 5.42							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	ODOR (describe)
0915	—	—	100	—	—	—	—	—	—	—	—
1000	1.5	1.5	100	8.45	4.43	20.44	0.148	1.98	6.23	219.9	—
1003	.3	1.8	100	8.45	4.31	20.84	0.146	1.97	5.75	233.6	—
1006	.3	5.1	100	8.46	4.31	20.90	0.146	1.97	4.81	236.6	—
1009	.3	5.4	100	8.46	4.31	20.92	0.146	1.91	3.88	235.2	—
1016 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 / TINUS			SAMPLER(S) SIGNATURES: 			SAMPLING INITIATED AT: 1016		SAMPLING ENDED AT: 1030	
PUMP OR TUBING DEPTH IN WELL (feet): 9			SAMPLE PUMP FLOW RATE (mL per minute): 100			TUBING MATERIAL CODE: Teflon			
FIELD DECONTAMINATION: Y <input checked="" type="radio"/> N <input type="radio"/>			FIELD-FILTERED: Y <input checked="" type="radio"/> N <input type="radio"/> FILTER SIZE: _____ µm			DUPLICATE: Y <input checked="" type="radio"/> N <input type="radio"/>			
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			
1	3	CG	40 ml	HCL	NONE	<2	Select VOCs (naphthalene)	RFPP	

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: Cecil Field South Fuel Farm	SITE LOCATION: Jacksonville, FL
WELL NO: CEF-043-23	SAMPLE ID: CEF-043-23-20100601
DATE: 06/01/10	

PURGING DATA

WELL DIAMETER (inches): "	TUBING DIAMETER (inches): 3/16"	WELL SCREEN INTERVAL DEPTH: 4.6 feet to 14.6 feet	STATIC DEPTH TO WATER (feet): 7.74	PURGE PUMP TYPE OR BAILER: Peristaltic
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY (only fill out if applicable) $4.15L$ $14.6 - 7.74 = 6.86 \times .16 = 1.06 \times 3.785 = 4.15$				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) _____ gallons				

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 9		FINAL PUMP OR TUBING DEPTH IN WELL (feet): 9		PURGING INITIATED AT: 1435		PURGING ENDED AT: 1606		TOTAL VOLUME PURGED (gallons): 8.82			
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	ODOR (describe)
1435	—	—	100	—	—	—	—	—	—	—	—
1600	8.5	8.5	100	7.79	5.89	22.85	102	1.18	1.75	109.6	—
1603	.3	8.8	100	7.80	5.89	22.91	100	1.17	1.16	117.6	—
1606	.3	9.1	100	7.80	5.88	22.92	100	1.17	0.93	122.9	—
1613 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 / TiNUS			SAMPLER(S) SIGNATURES: 			SAMPLING INITIATED AT: 1613		SAMPLING ENDED AT: 1630	
PUMP OR TUBING DEPTH IN WELL (feet): 9			SAMPLE PUMP FLOW RATE (mL per minute): 100			TUBING MATERIAL CODE: Teflon			
FIELD DECONTAMINATION: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>			FIELD-FILTERED: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> FILTER SIZE: _____ µm			DUPLICATE: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>			
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			
1	3	CG	40 ml	HCL	NONE	<2	Select VOCs (naphthalene)	RFPP	

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: Cecil Field South Fuel Farm	SITE LOCATION: Jacksonville, FL
WELL NO: CEF-043-40A	SAMPLE ID: CEF-043-40A-20100601
DATE: 06/29/10	

PURGING DATA

WELL DIAMETER (inches): "	TUBING DIAMETER (inches): 3/16"	WELL SCREEN INTERVAL DEPTH: 4.6 feet to 14.6 feet	STATIC DEPTH TO WATER (feet): 7.79	PURGE PUMP TYPE OR BAILER: Peristaltic
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY only fill out if applicable $4.122 \text{ gallons} = (14.6 - 7.79) \times 6.81 \times 1.16 \times 3.785 = 4.122$				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) _____ gallons				

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 9	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 9	PURGING INITIATED AT: 1425	PURGING ENDED AT: 1531	TOTAL VOLUME PURGED (gallons): 6.6L							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	ODOR (describe)
1425	—	—	100	—	—	—	—	—	—	—	—
1525	6.0	6.0	100	8.31	6.64	21.01	.410	1.22	2.62	25.8	—
1528	0.3	6.3	100	8.51	6.64	23.79	.409	1.20	2.17	23.6	—
1531	0.6	6.6	100	8.50	6.63	23.84	.409	1.19	1.83	21.1	—
1539 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 / TiNUS	SAMPLER(S) SIGNATURES: 	SAMPLING INITIATED AT: 1539	SAMPLING ENDED AT: 1600
PUMP OR TUBING DEPTH IN WELL (feet): 9	SAMPLE PUMP FLOW RATE (mL per minute): 100	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y <input checked="" type="radio"/> N	FIELD-FILTERED: Y <input checked="" type="radio"/> N	FILTER SIZE: _____ µm	DUPLICATE: Y <input checked="" type="radio"/> 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		
1	3	CG	40 ml	HCL	NONE	<2	Select VOCs (naphthalene)	RFPP

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)

Personnel: Jeff Krone
 Truck: Rental
 PPE: Level D
 Objective: GW monitoring
 Weather: Sunny 90°

- 1100 Departed office for Cecil Field
- 1230 Arrived at site, began uncapping wells for groundwater level measurements. Pete Johnson on site to assist
- 1320 Completed uncapping wells, commenced measurements, Pete Johnson departed site
- 1429 Completed measurements, began well purge and instrument calibration
- 1525 Completed calibration commenced sampling event. See table below for details.

Well ID	Sample ID	Start	Stop	Sample time	Analyses
043-40A	CEF-043-40A-20100601	1425	1531	1539	1,2,3
043-23	CEF-043-23-20100601	1435	1606	1613	1,2,3

Sample analysis Key 1= VOCs 2= Napthalene 3= TRPH
 All samples cooled to 4° C

- 1630 Completed sampling for the day, proceeded to IDW building 536
- 1715 Transferred IDW to drum SFF-1 ~ 8 gal, departed Cecil Field

NAS Cecil Field South Fuel Farm GW Sampling

02 JUN10

Personnel: Jeff Krona

Truck: Rental

PPE: Level D

Objective: GW Sampling

Weather Partly Cloudy 88°

0745 Departed home for Cecil Field

0915 Arrived on site, commenced calibration and purge

1000 Gary Braganza on site to assist, Commenced Sampling event
See table below for details.

Well ID	Sample ID	Start	Stop	Sample time	Analyses
043-17	CEF-043-17-20100602	0915	1009	1016	1, 2, 3
043-18	CEF-043-18-20100602	0925	1027	1027	1, 2, 3
043-07N	CEF-043-07N-20100608	1050	1119	1119	1, 2, 3
043-06N	CEF-043-06N-20100602	1120	1149	1155	1, 2, 3
043-08N	CEF-043-08N-20100602	1151	1223	1235	1, 2, 3
043-09N	CEF-043-09N-20100602	1227	1300 *	1340	1, 2, 3

Analysis Key 1=VOCs 2=Naphthalene 3=TRPH

* Indicates well purged dry All samples cooled to 4°C

1300 Gary Braganza departed site.

1400 Completed sampling for the day, departed site.

1600 Transferred IDW to drum SFF-1 ~ 15 gal, packed samples for transport to lab.

1712 Relinquished samples to Empirical Labs via FEDEX airbill
8660 1730 2105.

NAS Cecil Field South Fuel Farm GW Sampling 03 Jun 10

Personnel: Jeff Krone

Truck: Rental

PPE: Level D

Objective: GW Sampling

Weather: Partly Cloudy 92°

0745 Departed home for Cecil Field

0835 Arrived at site, commenced purge and equipment calibration

0930 Completed calibration, commenced sampling event See table below for details.

Well ID	Sample ID	Start	Stop	Sample time	Analyses
043-02N	CEF-043-02N-20100603	0845	1036	1044	1,2,3
043-04N	CEF-043-04N-20100603 *	0835	1006	1017	1,2,3
043-05N	CEF-043-05N-20100603	1030	1146	1151	1,2,3

Analysis Key 1= VOCs 2= Naphthalene 3= TRPH

All samples cooled to 4° C

* Indicates duplicate sample CEF-043-DUP01-20100603

1215 Completed sampling, packed up equipment and departed site.

1330 Transferred IDW to drum SFF-1 ~15 gal pH 6.52. Packed samples for shipment to Empirical Labs.



PROJECT NO: 112501264	FACILITY: Cecil Field South Fuel Farm	PROJECT MANAGER Rob Simcik	PHONE NUMBER 412 921 8163	LABORATORY NAME AND CONTACT: Empirical Laboratories
SAMPLERS (SIGNATURE) 		FIELD OPERATIONS LEADER Jeff Krone	PHONE NUMBER 904 699-7473	ADDRESS 621 Mainstream Dr Suite 270
CARRIER/WAYBILL NUMBER 866017302105			CITY, STATE Nashville, TN 37203	

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

CONTAINER TYPE
PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

DATE YEAR	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	TYPE OF ANALYSIS				COMMENTS	
6/1	1539	CEF-043-40A-20100601				GW	G	7	X	X	X			cool to 4°C
6/1	1613	CEF-043-23-20100601				GW	G	7	X	X	X			
6/1		trip blank				OC	G	2	X					

1. RELINQUISHED BY	DATE 6/8/10	TIME 1700	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS



PROJECT NO: 112601264	FACILITY: Cecil Field South Fuel Farm	PROJECT MANAGER Rob Simcik	PHONE NUMBER 412 921 8163	LABORATORY NAME AND CONTACT: Emerical Labs/ Kim Kostzer
SAMPLERS (SIGNATURE) 		FIELD OPERATIONS LEADER Jeff Krone	PHONE NUMBER 904 699-7473	ADDRESS 621 Mainstream Dr Suite 270
		CARRIER/WAYBILL NUMBER 8660 1730 2105		CITY, STATE Nashville, TN 37228

DATE YEAR	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	TYPE OF ANALYSIS			COMMENTS
									TCL VOCs (8260)	Naphthalene (8270)	TRPH (FL-PRO)	
6/2	1016	CEF-043-17-20100602				GW	G	7	X	X	X	Cool to 4° C
6/2	1027	CEF-043-18-20100602				GW	G	7	X	X	X	
6/2	1119	CEF-043-07M-20100602				GW	G	7	X	X	X	
6/2	1155	CEF-043-06N-20100602				GW	G	7	X	X	X	
6/2	1235	CEF-043-08N-20100602				GW	G	7	X	X	X	
6/2	1340	CEF-043-09N-20100602				GW	G	7	X	X	X	

1. RELINQUISHED BY 	DATE 6/2/10	TIME 1100	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS



Tetra Tech NUS, Inc.

YSI EQUIPMENT CALIBRATION SHEET

PROJECT NAME : Cecil Field INSTRUMENT NAME/MODEL: YSI 556 MPS
 SITE NAME: South Fuel Farm MANUFACTURER: YSI
 PROJECT No.: 112G02267 SERIAL NUMBER: 105100598

		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.)	02/16/11	Jeff Kronk	105100598		4.05	4.00	Lot# 2004466 Exp.Date: 4/12	
pH (10)	(S.U.)					11.71	10.00	Lot# 1007143 Exp.Date: 12/11	
D.O.	100%				100%	94.5	100.7	Lot# Exp.Date:	
Cond.	1.413 (mS/cm)				1.413	1999	1413	Lot# 814 Exp.Date: 7/11	
								Lot# Exp.Date:	
ORP	(mV)				240	226.0	240	Lot# 8741 Exp.Date: 10/15	
								Lot# Exp.Date:	
pH (4)	(S.U.)	02/16/11	Jeff Kronk	105100598		4.02	4.00	Lot# 2004466 Exp.Date: 4/12	
pH (10)	(S.U.)					10.03	10.00	Lot# 1007143 Exp.Date: 12/11	
D.O.	%				100%	100.3	100.7	Lot# Exp.Date:	
Cond.	(mS/cm)				1.413	1427	1413	Lot# 814 Exp.Date: 7/11	
								Lot# Exp.Date:	
ORP	(mV)				240	239.3	240	Lot# 2741 Exp.Date: 10/15	

**SAFE WORK PERMIT
MOBILIZATION AND DEMOBILIZATION ACTIVITIES
CECIL FIELD IR SITES**

Permit No. 1 Date: 2/15 - 2/16/11 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: _____

IV. On-site Inspection conducted Yes No Initials of Inspector X Tetra Tech
Equipment inspection required Yes No Initials of Inspector _____ Tetra Tech

V. Protective equipment required Respiratory equipment required
Level D Level B Yes Specify on the reverse
Level C Level A 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
<u>None anticipated</u>	<u>None</u>	<u>None</u>	<u>None</u>

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.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Hearing Protection (Plugs/Muffs)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Safety Glasses	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Safety belt/harness	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Chemical/splash goggles	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Radio/Cellular Phone	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash Shield.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Barricades	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash suits/coveralls.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Gloves (Type - <u>Work</u>)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Impermeable apron.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Work/rest regimen	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Safety toe work shoes/boots	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Chemical Resistant Boot Covers	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
High visibility vest.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Tape up/use insect repellent	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
First Aid Kit.....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Fire Extinguisher	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Safety Shower/Eyewash	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Other	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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

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

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: [Signature] Permit Accepted by: _____

**SAFE WORK PERMIT
MULTI-MEDIA SAMPLING ACTIVITIES
CECIL FIELD IR SITES**

Permit No. 2 Date: 2/15-2/16/11 Time: From 0800 to 1800

I. **Work limited to the following (description, area, equipment used):** Sampling activities, including groundwater surface water, and sediment sampling

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 JK Tetra Tech

Equipment Inspection required Yes No Initials of Inspector _____ Tetra Tech

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**

VOCs

Hazard Monitoring / Action Level(s)

FID with a reading
of 1.25 ppm above BG in BZ for noreport to an unaffected area.
more than 4 exps. of 5 mins in any
one work day.

Response Measures

Suspend site activities and

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

(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
Safety Glasses Yes No
Chemical/splash goggles Yes No
Splash Shield Yes No
Splash suits/coveralls..... Yes No
Impermeable apron Yes No
Safety toe work shoes/boots Yes No
High visibility vest..... Yes No
First Aid Kit..... Yes No
Safety Shower/Eyewash Yes No

Hearing Protection (Plugs/Muffs) Yes No
Safety belt/harness Yes No
Radio/Cellular Phone Yes No
Barricades..... Yes No
Gloves (Type - nitrile)..... Yes No
Work/rest regimen..... Yes No
Chemical Resistant Boot Covers Yes No
Tape up/use insect repellent Yes No
Fire Extinguisher..... 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.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers).....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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: [Signature] Permit Accepted by: _____

**SAFE WORK PERMIT
IDW MANAGEMENT
CECIL FIELD IR SITES**

Permit No. 3 Date: 2/15/11 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
- III. Field Crew: _____
- IV. On-site inspection conducted Yes No Initials of Inspector JT Tetra Tech
 Equipment inspection required Yes No Initials of Inspector _____ Tetra Tech

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

- V. Protective equipment required Respiratory equipment required
- Level D Level B Yes See Reverse
 Level C Level A No
- Modifications/Exceptions: None anticipated

- VI. Chemicals of Concern Hazard Monitoring / Action Level(s) Response Measures
- NA NA NA

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 or No)
- VII. Additional Safety Equipment/Procedures
- | | | | |
|-----------------------------------|---|-------------------------------------|---|
| Hard-hat..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Hearing Protection (Plugs/Muffs)... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Safety Glasses | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Safety belt/harness | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical/splash goggles | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio/Cellular Phone | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Splash Shield..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Barricades..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Splash suits/coveralls | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Gloves (Type - Leather/Cotton)..... | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Impermeable apron..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Work/rest regimen | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Safety toe work shoes/boots | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Chemical Resistant Boot Covers ... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| High visibility vest..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Tape up/use insect repellent | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| First Aid Kit | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Fire Extinguisher..... | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Shower/Eyewash | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Other..... | <input type="checkbox"/> Yes <input type="checkbox"/> 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.

- VIII. Site Preparation
- | | | | |
|---|--------------------------|--------------------------|-------------------------------------|
| Utility Locating and Excavation Clearance completed..... | Yes | No | NA |
| Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Physical Hazards Identified and Isolated | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc) | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

- 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. Use 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.

Permit Issued by: _____ Permit Accepted by: _____

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 Site 37 SFF
Name Jeff Krom Home Telephone 904 260-6062
Address 3667 Torre Grande Drive, Jacksonville, FL 32257

Age 52 Height 5'11" Weight 210

Name of Next Kin Bennie Krom

Drug or other Allergies none

Particular Sensitivities none

Do You Wear Contacts? _____

Provide a Checklist of Previous Illnesses or Exposure to Hazardous Chemicals no

What medications are you presently using? metoprolol

Do you have any medical restrictions? no

Name, Address, and Phone Number of personal physician: Dr. Browning
10898 Baymeadows Road Suite 100
Jacksonville, FL 32256 904 519 5338

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

[Signature]
Signature

2/15/11
Date

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

ITE NAME: Cecil Field South Fuel Farm	SITE LOCATION: Jacksonville, FL
WELL NO: CEF-043-02N	SAMPLE ID: CEF-043-GW-02N-201102 16
DATE: 02/16/11	

PURGING DATA

WELL DIAMETER (inches): 2"	TUBING DIAMETER (inches): 3/16"	WELL SCREEN INTERVAL DEPTH: 3.8 feet to 13.8 feet	STATIC DEPTH TO WATER (feet): 7.18	PURGE PUMP TYPE OR BAILER: Peristaltic
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY only fill out if applicable 4 L $13.8 - 7.18 = 6.62 \times .16 = 1.05 \times 3.985 = 4$				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) _____ gallons				

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 8	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 8	PURGING INITIATED AT: 0920	PURGING ENDED AT: 1116	TOTAL VOLUME PURGED (gallons): 11.6 L							
TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	ODOR (describe)
0920	—	—	100	7.18	—	—	—	—	—	—	—
1110	11.0	11.0	100	7.37	6.10	19.96	182	1.50	9.97	-26.5	-
1113	.3	11.3	100	7.36	6.10	19.98	183	1.49	9.36	-23.5	-
1116	.3	11.6	100	7.36	6.09	19.99	183	1.51	8.44	-25.6	-
1121 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 / TINUS	SAMPLER(S) SIGNATURES: 	SAMPLING INITIATED AT: 1121	SAMPLING ENDED AT: 1135					
PUMP OR TUBING DEPTH IN WELL (feet): 8	SAMPLE PUMP FLOW RATE (mL per minute): 100	TUBING MATERIAL CODE: Teflon						
FIELD DECONTAMINATION: Y <input checked="" type="radio"/> N	FIELD-FILTERED: Y <input checked="" type="radio"/> N	FILTER SIZE: _____ µm	DUPLICATE: Y <input checked="" type="radio"/> 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		
1	3	CG	40 ml	HCL	NONE	<2	Select VOCs	RFPP
2	2	AG	1 L	NONE	NONE	-	Select SVOCs,(NAPHTHALENE)	APP
3	2	AG	1 L	H2SO4	None		TRPH	APP

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 = Bailor; 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: Cecil Field South Fuel Farm	SITE LOCATION: Jacksonville, FL
WELL NO: CEF-043-04N	SAMPLE ID: CEF-043-GW-04N-20110216
DATE: 02/16/11	

PURGING DATA

WELL DIAMETER (inches): 3"	TUBING DIAMETER (inches): 3/16"	WELL SCREEN INTERVAL DEPTH: 4.6 feet to 14.6 feet	STATIC DEPTH TO WATER (feet): 7.13	PURGE PUMP TYPE OR BAILER: Peristaltic
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY only fill out if applicable <div style="text-align: center; font-size: 1.2em;"> $4.5 \text{ L } 14.6 - 7.13 = 7.47 \times .16 = 1.19 \times 3.785$ </div>				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) _____ gallons				

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 8		FINAL PUMP OR TUBING DEPTH IN WELL (feet): 8		PURGING INITIATED AT: 0905		PURGING ENDED AT: 1006		TOTAL VOLUME PURGED (gallons): 6.1L			
TIME	VOLUME PURGED (gallons) L	CUMUL. VOLUME PURGED (gallons) L	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	ODOR (describe)
0905	—	—	100	7.13	—	—	—	—	—	—	—
1000	5.5	5.5	100	7.35	6.87	18.60	576	2.03	2.58	5.7	—
1003	.3	5.8	100	7.35	6.86	18.60	575	2.03	1.98	4.0	—
1006	.3	6.1	100	7.36	6.87	18.59	575	2.04	1.73	2.6	—
1010 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 / TITNUS			SAMPLER(S) SIGNATURES: 			SAMPLING INITIATED AT: 1010		SAMPLING ENDED AT: 1030		
PUMP OR TUBING DEPTH IN WELL (feet): 8			SAMPLE PUMP FLOW RATE (mL per minute): 100			TUBING MATERIAL CODE: Teflon				
FIELD DECONTAMINATION: Y <input checked="" type="radio"/> N			FIELD-FILTERED: Y <input checked="" type="radio"/> N			FILTER SIZE: _____ µm		DUPLICATE: <input checked="" type="radio"/> Y <input type="radio"/> 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				
1	3	CG	40 ml	HCL	NONE	<2	Select VOCs (naphthalene)	RFPP		
2	2	AG	1 L	NONE	NONE	-	Select SVOCs, SIM	APP		
3	2	AG	1 L	H2SO4	None		TRPH	APP		

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: Cecil Field South Fuel Farm	SITE LOCATION: Jacksonville, FL
WELL NO: CEF-043-06N	SAMPLE ID: CEF-043-GW-06N-20110216
DATE: 02/16/11	

PURGING DATA

WELL DIAMETER (inches): 2"	TUBING DIAMETER (inches): 3/16"	WELL SCREEN INTERVAL DEPTH: 4.6 feet to 14.6 feet	STATIC DEPTH TO WATER (feet): 6.78	PURGE PUMP TYPE OR BAILER: Peristaltic
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY only fill out if applicable <div style="text-align: center; font-size: 1.2em;"> $4.73 \text{ gallons} = (14.6 - 6.78) \times 1.6 = 1.25 \times 3.785 = 4.73$ </div>				

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

_____ gallons

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 8	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 8	PURGING INITIATED AT: 1110	PURGING ENDED AT: 1206	TOTAL VOLUME PURGED (gallons): 5.6
---	---	-----------------------------------	-------------------------------	---

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	ODOR (describe)
1110	—	—	100	6.78	—	—	—	—	—	—	—
1200	5.0	5.0	100	7.14	5.72	20.40	201	1.99	9.40	-52.0	—
1203	.3	5.3	100	7.14	5.72	20.39	201	1.98	9.17	-51.6	—
1206	.3	5.6	100	7.14	5.72	20.40	201	1.98	9.02	-52.4	—
1212 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 / TITNUS	SAMPLER(S) SIGNATURES: 	SAMPLING INITIATED AT: 1212	SAMPLING ENDED AT: 1225
PUMP OR TUBING DEPTH IN WELL (feet): 8	SAMPLE PUMP FLOW RATE (mL per minute): 100	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y <input checked="" type="radio"/> N	FIELD-FILTERED: Y <input checked="" type="radio"/> N	FILTER SIZE: _____ µm	DUPLICATE: Y <input checked="" type="radio"/> 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		
1	3	CG	40 ml	HCL	NONE	<2	Select VOCs (naphthalene)	RFPP
2	2	AG	1 L	NONE	NONE	-	Select SVOCs, SIM	APP
3	2	AG	1 L	H2SO4	None		TRPH	APP

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 = Bailor; 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: Cecil Field South Fuel Farm	SITE LOCATION: Jacksonville, FL
WELL NO: CEF-043-09N	SAMPLE ID: CEF-043-GW-09N-201102 16
DATE: 02/16/11	

PURGING DATA

WELL DIAMETER (inches): 2"	TUBING DIAMETER (inches): 3/16"	WELL SCREEN INTERVAL DEPTH: 4.6 feet to 14.6 feet	STATIC DEPTH TO WATER (feet): 5.39	PURGE PUMP TYPE OR BAILER: Peristaltic
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY $5.57 \text{ L} \quad 14.6 - 5.39 = 9.21 \times .16 = 1.47 \times 3.785 = 5.57 \text{ L}$				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME _____ gallons				
INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 7	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 7.5	PURGING INITIATED AT: 1150	PURGING ENDED AT: 1256	TOTAL VOLUME PURGED (gallons): 6.6

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	ODOR (describe)
1150	—	—	100	5.39	—	—	—	—	—	—	—
1256	6.0	6.0	100	6.62	5.80	22.45	223	1.84	7.17	-51.5	-
1253	.3	6.3	100	6.61	5.78	22.51	224	1.88	4.53	-51.7	-
1256	.3	6.6	100	6.60	5.78	22.50	223	1.88	3.29	-51.5	-
1303 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 / TINUS	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1303	SAMPLING ENDED AT: 1320
PUMP OR TUBING DEPTH IN WELL (feet): 7.5	SAMPLE PUMP FLOW RATE (mL per minute): 100	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y <input checked="" type="radio"/> N	FIELD-FILTERED: Y <input checked="" type="radio"/> N	FILTER SIZE: _____ µm	DUPLICATE: Y <input checked="" type="radio"/> 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		
1	3	CG	40 ml	HCL	NONE	<2	Select VOCs (naphthalene)	RFPP
2	2	AG	1 L	NONE	NONE	-	Select SVOCs, SIM	APP
3	2	AG	1 L	H2SO4	None		TRPH	APP

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)

NAS Cecil Field CTO-1md9 112602267 South Fuel Farm 15 Feb 11

Personnel: Jeff Krone / Pete Johnson

Truck: 2006 F-250

PPE: Level D

Weather: Partly Cloudy 70°

Objective: Measure groundwater levels of wells

1100 Directed from BP Well area to conduct gw levels at SFF

1105 Arrived at SFF, began uncapping wells to equilibrate.

1120 Commenced groundwater measurements, see measurement sheet for details. Reviewed HASP for project

1330 Completed measurements, departed site. Unable to locate well CEF-043-13R. Area appears to have been excavated and backfilled.

x

NAS Cecil Field CTO Jmo9 112602267 South Fuel Farm 16 Feb 11

Personnel: Jeff Krone

Truck: 2006 F-250

PPE: Level D

Weather: Partly Cloudy 70°

Objective: Groundwater sampling

0815 Departed office for Cecil Field

0851 Arrived at site, began calibration of instruments and purge of wells. Reviewed HASP and signed off on work Permits.

0950 Completed calibration, commenced sampling event. See table below for details.

Well ID	Sample ID	Start	Stop	Sample time	analyses
43-04N	CEF-043-GW-04N-20110216*	0905	1006	1010	1, 2, 3
43-02N	CEF-043-GW-02N-20110216	0920	1116	1121	1, 2, 3
43-06N	CEF-043-GW-06N-20110216	1110	1206	1212	1, 2, 3
43-09N	CEF-043-GW-09N-20110216	1150	1256	1303	1, 2, 3
43-07N	CEF-043-GW-07N-20110216**	1245	1351	1357	1, 2, 3
43-40A	CEF-043-GW-40A-20110216	1510	1546	1550	1, 2, 3

Analysis Key 1: VOCs 2: Naphthalene only 3: TRPH

* Indicates Duplicate Sample CEF-043-Dup 01 - 20110216

** indicates ms/msd

1330 Unable to collect full set of ms/msd samples due to lack of bottleware. Collected only 1 full set vice 2. Advised Dave Siefken of situation.

1610 Completed sampling effort, packed samples and equipment for transportation. Checked calibration of monitoring equipment

1700 Transferred IDW to Tote 3 ~ 15gal, measured pH 7.25.

1715 Departed Cecil Field

1800 Arrived at office, placed samples in dedicated sample refrigerator.

17 Feb 10

1100 Relinquished samples to Empirical Labs via FedEx Airbill 8660 1730 1977, packed on ice for transport

J

JK



PROJECT NO: <u>CEC-1</u> <u>Field South Field Farm</u>	FACILITY: <u>112602267</u>	PROJECT MANAGER <u>Rob Simcik</u>	PHONE NUMBER <u>412 921 8163</u>	LABORATORY NAME AND CONTACT: <u>Empirical Labs / Kim Kostzer</u>
SAMPLERS (SIGNATURE) 		FIELD OPERATIONS LEADER <u>Jeff Krone</u>	PHONE NUMBER <u>904 699 7473</u>	ADDRESS <u>(22) Mainstream Drive Suite 870</u>
		CARRIER/WAYBILL NUMBER <u>FEDEX Airbill</u> <u>8660 1730 1977</u>	CITY, STATE <u>Nashville, TN 37228</u>	

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

DATE YEAR	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	CONTAINER TYPE PLASTIC (P) or GLASS (G)		PRESERVATIVE USED		COMMENTS	
									1	2	1	2		
<u>2/16</u>	<u>0000</u>	<u>CEF-043-DUPd1-20110216</u>		<u>16</u>		<u>GW</u>	<u>G</u>	<u>7</u>	<u>3</u>	<u>2</u>	<u>2</u>	<u>HCl G</u>	<u>HCl G</u>	<u>Cool to 4°C</u>
<u>2/16</u>	<u>1020</u>	<u>TB-20110216</u>				<u>QC</u>	<u>G</u>	<u>2</u>	<u>X</u>					
<u>2/16</u>	<u>1010</u>	<u>CEF-043-GW-04N-20110216</u>				<u>GW</u>	<u>G</u>	<u>7</u>	<u>X</u>	<u>X</u>	<u>X</u>			
<u>2/16</u>	<u>1121</u>	<u>CEF-043-GW-02N-20110216</u>				<u>GW</u>	<u>G</u>	<u>7</u>	<u>X</u>	<u>X</u>	<u>X</u>			
<u>2/16</u>	<u>1212</u>	<u>CEF-043-GW-06N-20110216</u>				<u>GW</u>	<u>G</u>	<u>7</u>	<u>X</u>	<u>X</u>	<u>X</u>			
<u>2/16</u>	<u>1303</u>	<u>CEF-043-GW-09N-20110216</u>				<u>GW</u>	<u>G</u>	<u>7</u>	<u>X</u>	<u>X</u>	<u>X</u>			
<u>2/16</u>	<u>1357</u>	<u>CEF-043-GW-07N-20110216</u>				<u>GW</u>	<u>G</u>	<u>14</u>	<u>X</u>	<u>X</u>	<u>X</u>			<u>ms/msd *</u>
<u>2/16</u>	<u>1550</u>	<u>CEF-043-GW-40A-20110216</u>				<u>GW</u>	<u>G</u>	<u>7</u>	<u>X</u>	<u>X</u>	<u>X</u>			

1. RELINQUISHED BY 	DATE <u>2/17/11</u>	TIME <u>12:00</u>	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS * only duplicate sample collected due to lack of bottleware provided for ms/msd.

AB

From Please print and press hard.
Date 2/17/11 **Sender's FedEx Account Number** 1772-0315-7
Sender's Name DISTRIBUTION **Phone** (904) 636-6125
Company TETRA TECH NUS INC/QOVT
Address 8640 PHILIPS HWY STE 16
City JACKSONVILLE **State** FL **ZIP** 32256-1209

Your Internal Billing Reference 112602267
 First 24 characters will appear on invoice.

To Recipient's Name Sample Receiving **Phone** (615) 345-1115
Company Empirical Laboratories

Recipient's Address 621 Mainstream Drive
 We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address Nashville, TN 37228
 To request a package be held at a specific FedEx location, print FedEx address here.
City Nashville **State** TN **ZIP** 37228

0383105710

4a Express Package Service
 FedEx Priority Overnight Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
 FedEx Standard Overnight Next business afternoon.* Saturday Delivery NOT available.
 FedEx First Overnight Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.
 FedEx 2Day Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
 FedEx Express Saver Third business day.** Saturday Delivery NOT available.
 FedEx Envelope rate not available. Minimum charge: One-pound rate. *To most locations.

4b Express Freight Service
 FedEx 1Day Freight* Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
 FedEx 2Day Freight Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
 FedEx 3Day Freight Third business day.** Saturday Delivery NOT available.
 * Call for Confirmation. ** To most locations.

5 Packaging
 FedEx Envelope* **FedEx Pak*** Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak. **FedEx Box** **FedEx Tube** **Other**
 * Declared value limit \$500.

6 Special Handling include FedEx address in Section 3.
 SATURDAY Delivery NOT Available for FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 3Day Freight. Does this shipment contain dangerous goods?
 No **Yes** As per attached Shipper's Declaration. **Yes** Shipper's Declaration not required. **Dry Ice** Dry Ice, 4 UN 1845 x _____ to _____
 Cargo Aircraft Only
 Dangerous goods (including dry ice) cannot be shipped in FedEx packaging.

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below.
 Sender Acct. No. will be billed. **Recipient** **Third Party** **Credit Card** **Cash/Check**

FedEx Acct. No. Credit Card No. Exp. Date
Total Packages 4 **Total Weight** **Total Declared Value*** \$.00

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519

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10400 SAN JOSE BLVD
 JACKSONVILLE, FL 32257

Location: NRBKK
Device ID: NRBKK-POS2
Employee: 2264346
Transaction: 76011597866

PRIORITY OVERNIGHT
 866017301977 223.45 lb (S) 182.25
 795536597066
 795536597077
 795536597088

Scheduled Delivery Date 02/18/2011

Shipment subtotal: 182.25
 Total Due: 182.25
 FedEx Account: 182.25
 *****3157

H = Weight entered manually
 S = Weight read from scale
 T = Taxable item

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EMPIRICAL LABORATORIES, LLC BOTTLE KIT FORM

Completed By: KAK **Project:** CTOJM09 Cecil Field South Fuel Farm

Client / Job#: TTNUS/ CTOJM09 **Shipping Contact / Address / Tel#:**

Dave Siefken/ Jeff

Contact Name/#: Krone

Jeff Krone

Tetra Tech NUS

8640

Shipping Method: Fed Ex Ground

Phillips HWY Suite 16

Date to Client By: 2/11/2011

Jacksonville, FL 32256

904-730-4667 ext 229

VOC Trip Blank Sets Needed: 1

Org. Free Water Litres Needed: no

Number of Coolers Required:

MS/MSD Required: yes

Please include blank labels, COCs, custody seals,

Navy Stds. Bottle COA Required: yes

temperature blanks, and return address labels.

Bottle Kit Method Listing

Individual Methods or Group of Methods	Matrix	# of Samples	# of Cont. per Sample	Container Type / Preservative	Initials (Kit Prep)	2nd Check (Kit Prep)
VOC 8260B	water	8	3	40mL vials/ HCL Cool@ 4 degrees C		
TRPH by FLPRO	water	8	2	1L glass/ HCL Cool @ 4 degrees C		
8270C LL (Naphthalene only)	water	8	2	1L glass/ Cool @ 4 degrees C		

Special Instructions:

Questions, contact Kim Kostzer @ 877-345-1113

February 8th event
South Fuel Farm

Well	Sample number*	Analysis
CEF-043-2N	CEF-043-2N-20110208	VOCs (8260 B), naphthalene (8270 C) , TRPH (FL-PRO)
CEF-043-4N	CEF-043-4N-20110208	VOCs (8260 B), naphthalene (8270 C) , TRPH (FL-PRO)
CEF-043-6N	CEF-043-6N-20110208	VOCs (8260 B), naphthalene (8270 C) , TRPH (FL-PRO)
CEF-043-7N	CEF-043-7N-20110208	VOCs (8260 B), naphthalene (8270 C) , TRPH (FL-PRO)
CEF-043-9N	CEF-043-9N-20110208	VOCs (8260 B), naphthalene (8270 C) , TRPH (FL-PRO)
CEF-043-40A	CEF-043-40A-20110208	VOCs (8260 B), naphthalene (8270 C) , TRPH (FL-PRO)
Dup	CEF-043-DUP-01-20110208	VOCs (8260 B), naphthalene (8270 C) , TRPH (FL-PRO)

WATER LEVELS OF ALL wells analyzed, plus: CEF-043-5N, CEF-043-8N, CEF-043-18, CEF-043-17
CEF-043-23, CEF-043-13R, CEF-043-29, CEF-043-44

Collect 1 duplicate samples.
Collect MS/MSD.
Use Trip Blanks.

112G02267

GW SAMPLING

8-24-11

PERSONNEL: K. WEICHERT

TRUCK: 2006 F-250

PPE: LEVEL "D"

WEATHER: HOT, HUMID, 90°, LT BREEZE

OBJECTIVE: COLLECT A ROUND OF GW LEVEL MEASUREMENT AND GW SAMPLES AT SOUTH FUEL FARM (SFF)

0615 KW AT TENDS OFFICE LOADING TRUCK

0630 KW DEPARTS FOR CECIL - WILL STOP FOR ICE ON THE WAY

0710 KW ON SITE - BEGINS UNCAPPING WELLS

0740 KW COLLECTS GW LEVELS - SEE TABLE BELOW + GW LEVEL MEASUREMENT SHEET FOR DETAILS

WELL ID	TOTAL DEPTH	H ₂ O LEVEL	TIME
43-2N	13.8'	8.77'	0749
43-4N	14.5'	8.67'	0747
43-5N	14.6'	9.24'	0745
43-6N	14.6'	8.53'	0742
43-7N	14.6'	7.36'	0757
43-8N	14.6'	8.68'	0753
43-9N	13.3'	7.52'	0752
43-17	15.0'	7.76'	0740
43-18	15.0'	7.13'	0755
43-23	15.0'	6.98'	0807
43-40A	14.7'	6.95'	0804

0815 KW BEGINS SETTING UP AND SAMPLING WELLS - SEE TABLE BELOW. GW SAMPLE SHEETS FOR DETAILS

WELL ID	SAMPLE ID	PURGE START	PURGE STOP	SAMPLE TIME	ANALYSE
43-04N	CEF-043-GW-04N-20110824	0830	0855	0900	①
43-02N	CEF-043-GW-02N-20110824	0920	1000	1005	①
43-09N	CEF-043-GW-09N-20110824	1015	1050	1055	① ③
43-07N	CEF-043-GW-07N-20110824	1200	1225	1230	①
43-06N	CEF-043-GW-06N-20110824	1240	1305	1310	①
43-40A	CEF-043-GW-40A-20110824	1345	1415	1420	① ②

① ANALYZED FOR SELECT VOCs, SELECT PAHs, + TRPH

② MS-MSD COLLECTED

③ DUPLICATE CEF-043-DUP01-20110824 COLLECTED

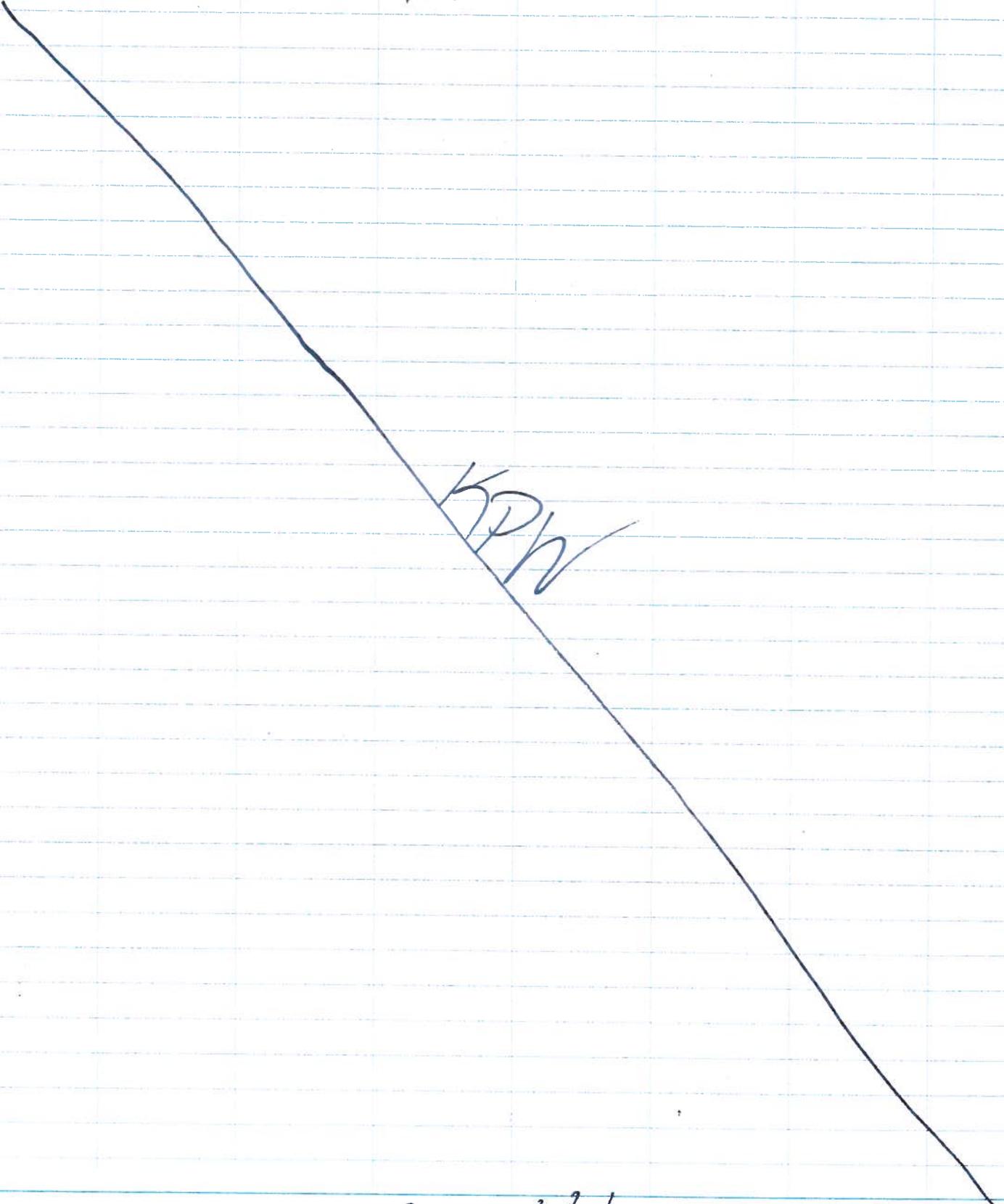
V. 1 2 1 1

112602267

GW SAMPLING

8-24-11

- 1500 KW BEGINS PACKING UP
- 1520 KW HEADS FOR BUILDING 536
- 1530 KW EMPTIES PURGE WATER INTO TOTE.
- 1545 KW DEPARTS CECIL FIELD



KPN

V. Hilt

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: Cecil Field South Fuel Farm	SITE LOCATION: Jacksonville, FL
WELL NO: CEF-043-02N	SAMPLE ID: CEF-043-GW-02N-20110324
DATE: 08/24/11	

PURGING DATA

WELL DIAMETER (inches): 2"	TUBING DIAMETER (inches): 3/16"	WELL SCREEN INTERVAL DEPTH: 3.8 feet to 13.8 feet	STATIC DEPTH TO WATER (feet): 8.77	PURGE PUMP TYPE OR BAILER: Peristaltic
WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH - STATIC DEPTH TO WATER) X WELL CAPACITY only fill out if applicable) _____ gallons (13.8 - 8.77)(.16)(3.94/GAL) = 3.1 L				
EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME (only fill out if applicable) _____ gallons				

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 9.7	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 9.7	PURGING INITIATED AT: 0920	PURGING ENDED AT: 1000	TOTAL VOLUME PURGED (gallons): 1204
---	---	-----------------------------------	-------------------------------	--

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	ODOR (describe)
0920	—	—	300	8.77	—	—	—	—	—	—	—
0950	9.0	9.0	300	8.99	5.59	27.05	0.134	0.73	13.36	15.2	—
0955	1.5	10.5	300	8.99	5.60	27.08	0.135	0.60	12.24	7.1	—
1000	1.5	12.0	300	8.99	5.60	27.07	0.135	0.56	11.63	5.4	—
1005- 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 Krohn / TINUS KEVIN WELCHER	SAMPLER(S) SIGNATURES: KE WELCHER	SAMPLING INITIATED AT: 1005	SAMPLING ENDED AT: 1012
PUMP OR TUBING DEPTH IN WELL (feet): 9.7	SAMPLE PUMP FLOW RATE (mL per minute): _____	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y <input checked="" type="radio"/> N	FIELD-FILTERED: Y <input checked="" type="radio"/> N	FILTER SIZE: _____ µm	DUPLICATE: Y <input checked="" type="radio"/> 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		
1	3	CG	40 ml	HCL	NONE	<2	Select VOCs	RFPP
2	2	AG	1 L	NONE	NONE	-	Select SVOCs, (NAPHTHALENE)	APP
3	2	AG	1 L	HCL	None	-	TRPH	APP

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 = Bailor; 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)

APPENDIX B

**ANALYTICAL LABORATORY REPORT
JUNE 2010, FEBRUARY 2011, AND AUGUST 2011**

trip blank contamination. Nondetected results reported for all other samples were qualified as estimated (UJ).

The following contaminants were detected in the laboratory method/preparation blank at the following maximum concentration:

<u>Analyte</u>	<u>Maximum Concentration</u>	<u>Action Level</u>
Chloromethane	0.988 mg/L	4.94 mg/L
Acetone	3.11 mg/L	31.1 mg/L
Naphthalene ⁽¹⁾	0.111	0.555

(1) Method blank contamination.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Sample aliquot and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. The positive results less than the blank action level for chloromethane, acetone, and naphthalene and was qualified "U" as a result of laboratory blank contamination.

PET:

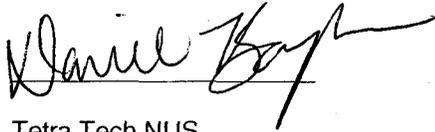
Positive results reported below the estimated quantitation limit (EQL) but above the method detection limit (MDL) were qualified as estimated, "J".

EXECUTIVE SUMMARY

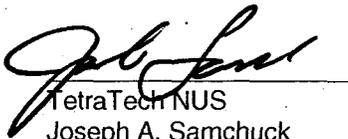
Laboratory Performance Issues: The CCV for chloromethane was >25% quality control limit.

Other Factors Affecting Data Quality: Positive results reported below the estimated quantitation limit (EQL) but above the method detection limit (MDL) for TPH were qualified as estimated.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99) and the Department of Defense (DoD) Quality Systems Manual (QSM) (January 2006). The text of this report has been formulated to address only those problem areas affecting data quality.



Tetra Tech NUS
Danielle Baughman
Project Engineer



TetraTech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

- Appendix A – Qualified Analytical Results
- Appendix B – Results as Reported by the Laboratory
- 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 $r < 0.995$ / ICP PDS Recovery Noncompliance
- 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 ($< 2 \times$ IDL for inorganics and $<$ CRQL for organics)
- Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DOT 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: 01264 SDG: CTO102_001 FRACTION: OV MEDIA: WATER	NSAMPLE	CEF-043-06N-20100602			CEF-043-07N-20100602			CEF-043-08N-20100602			CEF-043-09N-20100602		
	LAB_ID	1006024-07			1006024-06			1006024-08			1006024-09		
	SAMP_DATE	6/2/2010			6/2/2010			6/2/2010			6/2/2010		
	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												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
1,1,1-TRICHLOROETHANE	0.29	U		0.29	U		0.29	U		0.29	U		
1,1,2,2-TETRACHLOROETHANE	0.23	U		0.23	U		0.23	U		0.23	U		
1,1,2-TRICHLOROETHANE	0.26	U		0.26	U		0.26	U		0.26	U		
1,1,2-TRICHLOROTRIFLUOROETHANE	0.33	U		0.33	U		0.33	U		0.33	U		
1,1-DICHLOROETHANE	0.24	U		0.24	U		0.24	U		0.24	U		
1,1-DICHLOROETHENE	0.28	U		0.28	U		0.28	U		0.28	U		
1,2,3-TRICHLOROBENZENE	0.43	U		0.43	U		0.43	U		0.43	U		
1,2,4-TRICHLOROBENZENE	1.1			0.28	U		0.28	U		1.48			
1,2-DIBROMO-3-CHLOROPROPANE	0.55	U		0.55	U		0.55	U		0.55	U		
1,2-DIBROMOETHANE	0.24	U		0.24	U		0.24	U		0.24	U		
1,2-DICHLOROBENZENE	0.16	U		0.16	U		0.16	U		0.16	U		
1,2-DICHLOROETHANE	0.22	U		0.22	U		0.22	U		0.22	U		
1,2-DICHLOROPROPANE	0.27	U		0.27	U		0.27	U		0.27	U		
1,3-DICHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
1,4-DICHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
2-BUTANONE	1.6	U		1.6	U		1.6	U		1.6	U		
2-HEXANONE	0.5	U		0.5	U		0.5	U		0.5	U		
4-METHYL-2-PENTANONE	0.5	U		0.5	U		0.5	U		0.5	U		
ACETONE	3.88	U	B	3.5	U	B	4.48	U	B	3.99	U	B	
BENZENE	0.322			15.2			0.14	U		0.14	U		
BROMOCHLOROMETHANE	0.31	U		0.31	U		0.31	U		0.31	U		
BROMODICHLOROMETHANE	0.18	U		0.18	U		0.18	U		0.18	U		
BROMOFORM	0.5	U		0.5	U		0.5	U		0.5	U		
BROMOMETHANE	0.32	U		0.32	U		0.32	U		0.32	U		
CARBON DISULFIDE	0.26	U		0.26	U		0.26	U		0.26	U		
CARBON TETRACHLORIDE	0.24	U		0.24	U		0.24	U		0.24	U		
CHLOROBENZENE	0.21	U		0.21	U		0.21	U		0.21	U		
CHLORODIBROMOMETHANE	0.18	U		0.18	U		0.18	U		0.18	U		
CHLOROETHANE	0.27	U		0.27	U		0.27	U		0.27	U		
CHLOROFORM	0.23	U		0.23	U		0.23	U		0.23	U		
CHLOROMETHANE	0.36	UJ	C	0.36	UJ	C	0.36	UJ	C	0.36	UJ	C	
CIS-1,2-DICHLOROETHENE	0.45	U		0.45	U		0.45	U		0.45	U		
CIS-1,3-DICHLOROPROPENE	0.15	U		0.15	U		0.15	U		0.15	U		
CYCLOHEXANE	0.2	U		19.2			0.2	U		0.2	U		
DICHLORODIFLUOROMETHANE	0.26	U		0.26	U		0.26	U		0.26	U		
ETHYLBENZENE	0.964			37			0.15	U		2.2			

PROJ_NO: 01264 SDG: CTO102_001 FRACTION: OV MEDIA: WATER	NSAMPLE	CEF-043-17-20100602			CEF-043-18-20100602			CEF-043-23-20100601			CEF-043-40A-20100601		
	LAB_ID	1006024-04			1006024-05			1006024-02			1006024-01		
	SAMP_DATE	6/2/2010			6/2/2010			6/1/2010			6/1/2010		
	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												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
1,1,1-TRICHLOROETHANE	0.29	U		0.29	U		0.29	U		0.29	U		
1,1,2,2-TETRACHLOROETHANE	0.23	U		0.23	U		0.23	U		0.23	U		
1,1,2-TRICHLOROETHANE	0.26	U		0.26	U		0.26	U		0.26	U		
1,1,2-TRICHLOROTRIFLUOROETHANE	0.33	U		0.33	U		0.33	U		0.33	U		
1,1-DICHLOROETHANE	0.24	U		0.24	U		0.24	U		0.24	U		
1,1-DICHLOROETHENE	0.28	U		0.28	U		0.28	U		0.28	U		
1,2,3-TRICHLOROBENZENE	0.43	U		0.43	U		0.43	U		0.43	U		
1,2,4-TRICHLOROBENZENE	0.28	U		0.28	U		0.28	U		0.28	U		
1,2-DIBROMO-3-CHLOROPROPANE	0.55	U		0.55	U		0.55	U		0.55	U		
1,2-DIBROMOETHANE	0.24	U		0.24	U		0.24	U		0.24	U		
1,2-DICHLOROBENZENE	0.16	U		0.16	U		0.16	U		0.16	U		
1,2-DICHLOROETHANE	0.22	U		0.22	U		0.22	U		0.22	U		
1,2-DICHLOROPROPANE	0.27	U		0.27	U		0.27	U		0.27	U		
1,3-DICHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
1,4-DICHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
2-BUTANONE	1.6	U		1.6	U		1.6	U		1.6	U		
2-HEXANONE	0.5	U		0.5	U		0.5	U		0.5	U		
4-METHYL-2-PENTANONE	0.5	U		0.5	U		0.5	U		0.5	U		
ACETONE	3.94	U	B	3.67	U	B	1.8	U		3.08	U	B	
BENZENE	0.14	U		0.14	U		0.14	U		0.14	U		
BROMOCHLOROMETHANE	0.31	U		0.31	U		0.31	U		0.31	U		
BROMODICHLOROMETHANE	0.18	U		0.18	U		0.18	U		0.18	U		
BROMOFORM	0.5	U		0.5	U		0.5	U		0.5	U		
BROMOMETHANE	0.32	U		0.32	U		0.32	U		0.32	U		
CARBON DISULFIDE	0.26	U		0.26	U		0.26	U		0.26	U		
CARBON TETRACHLORIDE	0.24	U		0.24	U		0.24	U		0.24	U		
CHLOROBENZENE	0.21	U		0.21	U		0.21	U		0.21	U		
CHLORODIBROMOMETHANE	0.18	U		0.18	U		0.18	U		0.18	U		
CHLOROETHANE	0.27	U		0.27	U		0.27	U		0.27	U		
CHLOROFORM	0.23	U		0.23	U		0.23	U		0.23	U		
CHLOROMETHANE	0.36	UJ	C	0.36	UJ	C	1.29	U	B	1.37	U	B	
CIS-1,2-DICHLOROETHENE	0.45	U		0.45	U		0.45	U		0.45	U		
CIS-1,3-DICHLOROPROPENE	0.15	U		0.15	U		0.15	U		0.15	U		
CYCLOHEXANE	0.2	U		0.2	U		0.2	U		0.332			
DICHLORODIFLUOROMETHANE	0.26	U		0.26	U		0.26	U		0.26	U		
ETHYLBENZENE	0.15	U		0.15	U		0.15	U		0.15	U		

PROJ_NO: 01264 SDG: CTO102_001 FRACTION: OV MEDIA: WATER	NSAMPLE	Trip Blank		
	LAB_ID	1006024-03RE1		
	SAMP_DATE	6/1/2010		
	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER	RESULT	VQL	QLCD	
1,1,1-TRICHLOROETHANE	0.29	U		
1,1,2,2-TETRACHLOROETHANE	0.23	U		
1,1,2-TRICHLOROETHANE	0.26	U		
1,1,2-TRICHLOROTRIFLUOROETHANE	0.33	U		
1,1-DICHLOROETHANE	0.24	U		
1,1-DICHLOROETHENE	0.28	U		
1,2,3-TRICHLOROBENZENE	0.43	U		
1,2,4-TRICHLOROBENZENE	0.28	U		
1,2-DIBROMO-3-CHLOROPROPANE	0.55	U		
1,2-DIBROMOETHANE	0.24	U		
1,2-DICHLOROBENZENE	0.16	U		
1,2-DICHLOROETHANE	0.22	U		
1,2-DICHLOROPROPANE	0.27	U		
1,3-DICHLOROBENZENE	0.25	U		
1,4-DICHLOROBENZENE	0.25	U		
2-BUTANONE	1.6	U		
2-HEXANONE	0.5	U		
4-METHYL-2-PENTANONE	0.5	U		
ACETONE	3.11			
BENZENE	0.14	U		
BROMOCHLOROMETHANE	0.31	U		
BROMODICHLOROMETHANE	0.18	U		
BROMOFORM	0.5	U		
BROMOMETHANE	0.32	U		
CARBON DISULFIDE	0.26	U		
CARBON TETRACHLORIDE	0.24	U		
CHLOROBENZENE	0.21	U		
CHLORODIBROMOMETHANE	0.18	U		
CHLOROETHANE	0.27	U		
CHLOROFORM	2.38			
CHLOROMETHANE	0.988	J		P
CIS-1,2-DICHLOROETHENE	0.45	U		
CIS-1,3-DICHLOROPROPENE	0.15	U		
CYCLOHEXANE	0.2	U		
DICHLORODIFLUOROMETHANE	0.26	U		
ETHYLBENZENE	0.15	U		

PROJ_NO: 01264 SDG: CTO102_001 FRACTION: OV MEDIA: WATER	NSAMPLE	CEF-043-06N-20100602			CEF-043-07N-20100602			CEF-043-08N-20100602			CEF-043-09N-20100602		
	LAB_ID	1006024-07			1006024-06			1006024-08			1006024-09		
	SAMP_DATE	6/2/2010			6/2/2010			6/2/2010			6/2/2010		
	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												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
ISOPROPYLBENZENE	10.7			17.4			0.15	U		3.18			
METHYL ACETATE	0.59	U		0.59	U		0.59	U		0.59	U		
METHYL CYCLOHEXANE	0.424			3.42			0.18	U		0.836			
METHYL TERT-BUTYL ETHER	0.25	U		0.25	U		0.25	U		0.25	U		
METHYLENE CHLORIDE	0.27	U		0.27	U		0.27	U		0.27	U		
STYRENE	0.24	U		0.24	U		0.24	U		0.24	U		
TETRACHLOROETHENE	0.17	U		0.17	U		0.17	U		0.17	U		
TOLUENE	0.19	U		6.83			0.19	U		0.19	U		
TOTAL XYLENES	0.644			262			0.22	U		6.52			
TRANS-1,2-DICHLOROETHENE	0.53	U		0.53	U		0.53	U		0.53	U		
TRANS-1,3-DICHLOROPROPENE	0.17	U		0.17	U		0.17	U		0.17	U		
TRICHLOROETHENE	0.5	U		0.5	U		0.5	U		0.5	U		
TRICHLOROFUOROMETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
VINYL CHLORIDE	0.2	U		0.2	U		0.2	U		0.2	U		

PROJ_NO: 01264 SDG: CTO102_001 FRACTION: OV MEDIA: WATER	NSAMPLE	CEF-043-17-20100602			CEF-043-18-20100602			CEF-043-23-20100601			CEF-043-40A-20100601		
	LAB_ID	1006024-04			1006024-05			1006024-02			1006024-01		
	SAMP_DATE	6/2/2010			6/2/2010			6/1/2010			6/1/2010		
	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												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
ISOPROPYLBENZENE	0.15	U		0.15	U		0.15	U		1.97			
METHYL ACETATE	0.59	U		0.59	U		0.59	U		0.59	U		
METHYL CYCLOHEXANE	0.18	U		0.18	U		0.18	U		0.18	U		
METHYL TERT-BUTYL ETHER	0.25	U		0.25	U		0.25	U		0.25	U		
METHYLENE CHLORIDE	0.27	U		0.27	U		0.27	U		0.27	U		
STYRENE	0.24	U		0.24	U		0.24	U		0.24	U		
TETRACHLOROETHENE	0.17	U		0.17	U		0.17	U		0.17	U		
TOLUENE	0.19	U		0.19	U		0.19	U		0.19	U		
TOTAL XYLENES	0.22	U		0.22	U		0.22	U		0.22	U		
TRANS-1,2-DICHLOROETHENE	0.53	U		0.53	U		0.53	U		0.53	U		
TRANS-1,3-DICHLOROPROPENE	0.17	U		0.17	U		0.17	U		0.17	U		
TRICHLOROETHENE	0.5	U		0.5	U		0.5	U		0.5	U		
TRICHLOROFLUOROMETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
VINYL CHLORIDE	0.2	U		0.2	U		0.2	U		0.2	U		

PROJ_NO: 01264	NSAMPLE	Trip Blank		
SDG: CTO102_001	LAB_ID	1006024-03RE1		
FRACTION: OV	SAMP_DATE	6/1/2010		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER	RESULT	VQL	QLCD	
ISOPROPYLBENZENE	0.15	U		
METHYL ACETATE	0.59	U		
METHYL CYCLOHEXANE	0.18	U		
METHYL TERT-BUTYL ETHER	0.25	U		
METHYLENE CHLORIDE	0.27	U		
STYRENE	0.24	U		
TETRACHLOROETHENE	0.17	U		
TOLUENE	0.19	U		
TOTAL XYLENES	0.22	U		
TRANS-1,2-DICHLOROETHENE	0.53	U		
TRANS-1,3-DICHLOROPROPENE	0.17	U		
TRICHLOROETHENE	0.5	U		
TRICHLOROFLUOROMETHANE	0.25	U		
VINYL CHLORIDE	0.2	U		

PROJ_NO: 01264 SDG: CTO102_001 FRACTION: PAH MEDIA: WATER	NSAMPLE	CEF-043-06N-20100602			CEF-043-07N-20100602			CEF-043-08N-20100602			CEF-043-09N-20100602		
	LAB_ID	1006024-07			1006024-06			1006024-08			1006024-09		
	SAMP_DATE	6/2/2010			6/2/2010			6/2/2010			6/2/2010		
	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												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
NAPHTHALENE	0.0185	U		0.191	U	A	0.0185	U		12.8			

PROJ_NO: 01264 SDG: CTO102_001 FRACTION: PAH MEDIA: WATER	NSAMPLE	CEF-043-17-20100602			CEF-043-18-20100602			CEF-043-23-20100601			CEF-043-40A-20100601		
	LAB_ID	1006024-04			1006024-05			1006024-02			1006024-01		
	SAMP_DATE	6/2/2010			6/2/2010			6/1/2010			6/1/2010		
	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												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
NAPHTHALENE	0.284	U	A	0.078	U	A	0.169	U	A	0.0185	U		

PROJ_NO: 01264 SDG: CTO102_001 FRACTION: PET MEDIA: WATER	NSAMPLE	CEF-043-06N-20100602			CEF-043-07N-20100602			CEF-043-08N-20100602			CEF-043-09N-20100602		
	LAB_ID	1006024-07			1006024-06			1006024-08			1006024-09		
	SAMP_DATE	6/2/2010			6/2/2010			6/2/2010			6/2/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
TPH (C08-C40)	0.487	J	P	0.186	J	P	0.577	J	P	1.16			

PROJ_NO: 01264 SDG: CTO102_001 FRACTION: PET MEDIA: WATER	NSAMPLE	CEF-043-17-20100602			CEF-043-18-20100602			CEF-043-23-20100601			CEF-043-40A-20100601		
	LAB_ID	1006024-04			1006024-05			1006024-02			1006024-01		
	SAMP_DATE	6/2/2010			6/2/2010			6/1/2010			6/1/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
TPH (C08-C40)	0.157	U		0.157	U		0.157	U		0.217	J	P	

APPENDIX B
RESULTS AS REPORTED BY THE LABORATORY

ANALYSIS DATA SHEET

CEF-043-07N-20100602

Laboratory: Empirical Laboratories, LLC SDG: CTO102_001
 Client: Tetra Tech NUS, Inc. (T010) Project: NAS Cecil Field CTO102
 Matrix: Ground Water Laboratory ID: 1006024-06 File ID: 0602406.D
 Sampled: 06/02/10 11:19 Prepared: 06/06/10 12:00 Analyzed: 06/06/10 20:42
 Solids: Preparation: 5030B Dilution: 1
 Batch: 0F06003 Sequence: 0F16010 Calibration: 0153002 Instrument: MS-VOA3

CAS NO.	COMPOUND	CONC. (ug/L)	MDL	MRL	Q
67-64-1	Acetone	3.50	1.80	10.0	I
71-43-2	Benzene	15.2	0.140	1.00	
74-97-5	Bromochloromethane		0.310	2.00	U
75-27-4	Bromodichloromethane		0.180	1.00	U
75-25-2	Bromoform		0.500	2.00	U
74-83-9	Bromomethane		0.320	2.00	U
78-93-3	2-Butanone		1.60	10.0	U
75-15-0	Carbon disulfide		0.260	1.00	U
56-23-5	Carbon tetrachloride		0.240	1.00	U
108-90-7	Chlorobenzene		0.210	1.00	U
75-00-3	Chloroethane		0.270	2.00	U
67-66-3	Chloroform		0.230	1.00	U
74-87-3	Chloromethane		0.360	2.00	X, U
110-82-7	Cyclohexane	19.2	0.200	2.00	
124-48-1	Dibromochloromethane		0.180	1.00	U
96-12-8	1,2-Dibromo-3-chloropropane		0.550	2.00	U
106-93-4	1,2-Dibromoethane (EDB)		0.240	1.00	U
95-50-1	1,2-Dichlorobenzene		0.160	1.00	U
541-73-1	1,3-Dichlorobenzene		0.250	1.00	U
106-46-7	1,4-Dichlorobenzene		0.250	1.00	U
75-71-8	Dichlorodifluoromethane		0.260	2.00	U
75-34-3	1,1-Dichloroethane		0.240	1.00	U
107-06-2	1,2-Dichloroethane		0.220	1.00	U
75-35-4	1,1-Dichloroethene		0.280	1.00	U
156-59-2	cis-1,2-Dichloroethene		0.450	2.00	U
156-60-5	trans-1,2-Dichloroethene		0.530	2.00	U
78-87-5	1,2-Dichloropropane		0.270	1.00	U
10061-01-5	cis-1,3-Dichloropropene		0.150	1.00	U
10061-02-6	trans-1,3-Dichloropropene		0.170	1.00	U
100-41-4	Ethylbenzene	37.0	0.150	1.00	
591-78-6	2-Hexanone		0.500	5.00	U
98-82-8	Isopropylbenzene	17.4	0.150	1.00	Q
75-09-2	Methylene chloride		0.270	2.00	U
79-20-9	Methyl Acetate		0.590	2.00	U
108-87-2	Methylcyclohexane	3.42	0.180	1.00	
108-10-1	4-Methyl-2-pentanone		0.500	5.00	U
1634-04-4	Methyl t-Butyl Ether		0.250	1.00	U
100-42-5	Styrene		0.240	1.00	U
79-34-5	1,1,2,2-Tetrachloroethane		0.230	1.00	U
127-18-4	Tetrachloroethene		0.170	1.00	U

APPENDIX C
SUPPORT DOCUMENTATION

Sample Delivery Group Case Narrative

Receipt Information

The samples were received within the preservation guidelines for the associated methods. The information associated with sample receipt and the Sample Delivery Group (SDG) are included within section 4 of this package, which also provides information on the link between the client sample ID listed on the COC and laboratory's assigned unique sample ID or WorkOrder #. The sample is tracked through the laboratory for all analysis via the assigned WorkOrder #.

All samples that were received were analyzed and none of the samples were placed on hold without analyses. There were no subcontracted analyses for this SDG.

Changes to the Revision

This is an original submittal of the final report package.

Analytical Information

All samples were prepped (where applicable) and analyzed within the standard allowed holding times, unless noted within the exceptions listed below. The laboratory analyzed all samples within the program and method guidelines. The following information is provided specific to individual methods:

Chromatographic Flags for Manual Integration:

The following letters are used to denote manual integrations on the laboratory's raw data in association with chromatographic integrations:

- A:** The peak was manually integrated as it was not integrated in the original chromatogram.
- B:** The peak was manually integrated due to resolution or coelution issues in the original chromatogram.
- C:** The peak was manually integrated to correct the baseline from the original chromatogram.
- D:** The peak was manually integrated to identify the correct peak as the wrong peak was identified in the original chromatogram.
- E:** The peak was manually integrated to include the entire peak as the original chromatogram only integrated part of the peak.

SW8260B:

The continuing calibration verification standard failed criteria for 0F16010-CCV1 for Chloromethane, in 0F16602-CCV1 for Cyclohexane, cis-1,3-Dichloropropene, Methylcyclohexane. The blank spikes failed criteria for accuracy and/or precision in batch 0F06003 for Isopropylbenzene, in 0F06001 for Bromomethane, Isopropylbenzene. No additional anomalies or deviations are noted and the data are properly qualified.

SW8270C PAHs:

No anomalies or deviations are noted.

FLPRO:

The sample 1006024-01, 02, 04, 05, 06, 08, and 09 failed criteria for surrogate 0-Terphenyl. No additional anomalies or deviations are noted and the data are properly qualified.

Data Qualifiers

As applicable and where required, the following general qualifiers are associated with the sample results. Additional qualifiers will be specified within the reporting sections of the data package or within the body of the Case Narrative.

Analytical Report Terms and Qualifiers

- MDL:** The method detection limit (MDL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. The MDL is determined from analysis of a sample containing the analyte in a given matrix.
- EQL:** The estimated quantitation limit (EQL), also known as Reporting Limit (**RL**), is defined as the estimated concentration above which quantitative results can be obtained with a specific degree of confidence. Empirical Laboratories defines the EQL to be at or near the lowest standard of the calibration curve.
- *:** A failing quality control criteria is associated with the reported result. **For Florida DEP reports this qualifier could be listed as "J3".**
- B:** The presence of a "B" to the right of an analytical value indicates that this compound was also detected in the method blank and the data should be interpreted with caution. One should consider the possibility that the correct sample result might be less than the reported result and, perhaps, zero. **For Florida DEP reports this qualifier is "V".**
- D:** When a sample (or sample extract) is rerun diluted because one of the compound concentrations exceeded the highest concentration range for the standard curve, all of the values obtained in the dilution run will be flagged with a "D".
- E:** The concentration for any compound found which exceeds the highest concentration level on the standard curve for that compound will be flagged with an "E". Usually the sample will be rerun at a dilution to quantitate the flagged compound. **For Florida DEP reports this qualifier is "L"**
- H1:** The result was analyzed outside of the EPA recommended holding time.
- H2:** The result was extracted outside of the EPA recommended holding time.
- J:** The presence of a "J" to the right of an analytical result indicates that the reported result is estimated. The mass spectral data pass the identification criteria showing that the compound is present, but the calculated result is less than the EQL. One should feel confident that the result is greater than zero and less than the EQL. **For Florida DEP reports this qualifier is "I".**
- M:** Indicates that the sample matrix interfered with the quantitation of the analyte.

In dual column analysis the result is reported from the column with the lower concentration. In metals, the qualifier indicates that the parameters MDL/RL has been raised.

- N:** The predigested spike recovery is not within control limits for the associated parameter. **For Florida DEP reports this qualifier could be listed as "J3".**
- P:** The associated numerical value is an estimated quantity. There is greater than a 40% difference between the two GC columns for the detected concentrations. The higher of the two values is reported unless matrix interference is obvious or for HPLC analysis where the primary column is reported.
- Q:** The RPD and/or percent recovery failed in the associated Blank Spike and/or Blank Spike Duplicate.
- R:** The RPD and/or percent recovery failed in the associated Matrix Spike and/or Matrix Spike Duplicate.
- S:** The Internal Standard failed criteria.
- U:** The presence of a "U" indicates that the analyte was analyzed for but was not detected or the concentration of the analyte quantitated below the DL.
- X:** The parameter shows a potential positive bias on a reported concentration due to an ICV or CCV exceeding the upper control limit on the high side.
- Y:** The parameter shows a potential negative bias on a reported concentration due to an ICV or CCV exceeding the lower control limit on the low side.

LIMS Definitions / Naming Conventions:

The following are general naming conventions that are used throughout the laboratory; however, on a method by method basis, there are additional QAQC items that are named in a consistent format.

- BLK:** LIMS assigns a unique identifier to the Method Blank by naming it as the letters BLK appended to the Batch ID. A Method Blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The Method Blank is used to assess for possible contamination during preparation and/or analysis steps. Method Blanks within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally.
- BS:** LIMS assigns a unique identifier to the Blank Spike by naming it as the letters BS appended to the Batch ID. The Blank Spike or Lab Control Sample is a controlled analyte-free matrix, which is spiked with known and verified concentrations of target analytes. Spiking concentrations can be referenced in

the method SOP. The BS is used to evaluate the viability of analytes taken through the entire prep (when applicable) and analytical process. Blank Spikes within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally. A duplicate Blank Spike will be designated as a BSD.

MS: The LIMS assigns each Client sample with a unique identifier. The Matrix Spike is designated with a MS at the end of the sample's unique identifier. The Matrix Spike sample is used to assess the effect of the sample matrix on the precision and accuracy of the results generated using the selected method. A duplicate Matrix Spike will be designated as a MSD.

IDs: The LIMS assigns each Client sample with a unique identifier. The letter "RE" may potentially be appended to the end of the LIMS Sample ID. And "RE" implies that the sample was either re-prepped, re-analyzed straight, or re-analyzed at a dilution. Subsequent re-analysis for the sample will be appended with a numerical value beginning with 1 that will increase incrementally. Eg: RE1, RE2, RE3, etc.

Statement of Data Authenticity:

I certify that, based upon my inquiry of those individuals immediately responsible for obtaining the information and to the best of my knowledge, 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 this Case Narrative, as verified by my signature below. During absences, Ms. Marcia K. McGinnity is authorized to sign this Statement of Data Authenticity.



Mr. Rick D. Davis
Laboratory Technical Director / VP Operations



PROJECT NO: <u>112501264</u>	FACILITY: <u>Cec. Field South Fuel Farm</u>	PROJECT MANAGER <u>Rob Simcik</u>	PHONE NUMBER <u>412 921 8163</u>	LABORATORY NAME AND CONTACT: <u>Empirical Laboratories</u>
SAMPLERS (SIGNATURE) 		FIELD OPERATIONS LEADER <u>Jeff Kane</u>	PHONE NUMBER <u>904 699-7423</u>	ADDRESS <u>621 Mainstream Dr Suite 270</u>
CARRIER/WAYBILL NUMBER <u>866017302105</u>			CITY, STATE <u>Nashville, TN 37208</u>	

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

DATE YEAR	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	CONTAINER TYPE PLASTIC (P) or GLASS (G)	PRESERVATIVE USED	TYPE OF ANALYSIS	COMMENTS
6/1	1539	CEF-043-40A-20100601				GW	G	1	G		VOCS (8860) Naphthalene (8270) TRPH (FLPRO) HCl H504	cool to 4°C -01
6/1	1613	CEF-043-23-20100601				GW	G	1	G			-02
6/1		trip blank				OC	G	2	G			1006024 -03

1. RELINQUISHED BY	DATE <u>6/2/10</u>	TIME <u>1700</u>	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE <u>6/3/10</u>	TIME <u>08:30</u>

COMMENTS: 5.5°C

9 CTO102_001 Summ Package



PROJECT NO: <u>112601264</u>	FACILITY: <u>Cecil Field South Fuel Farm</u>	PROJECT MANAGER <u>Rob Simcik</u>	PHONE NUMBER <u>412 921 8163</u>	LABORATORY NAME AND CONTACT: <u>Empirical Labs/ Kim Koszter</u>
SAMPLERS (SIGNATURE) 		FIELD OPERATIONS LEADER <u>Jeff Krone</u>	PHONE NUMBER <u>904 699-7473</u>	ADDRESS <u>621 Mainstream Dr Suite 270</u>
CARRIER/WAYBILL NUMBER <u>8660 1730 2105</u>			CITY, STATE <u>Nashville, TN 37228</u>	

DATE YEAR	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (G)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)	PRESERVATIVE USED	TYPE OF ANALYSIS	COMMENTS
<u>6/2</u>	<u>1016</u>	<u>CEF-043-17-20100602</u>				<u>GW</u>	<u>G</u>	<u>1</u>	<u>G</u>		<u>TCL VOCs (8260) HCl G</u>	<u>Cool to 4°C -04</u>
<u>6/2</u>	<u>1027</u>	<u>CEF-043-18-20100602</u>				<u>GW</u>	<u>G</u>	<u>1</u>	<u>G</u>		<u>Naphthalene (8270) HCl G</u>	<u>-05</u>
<u>6/2</u>	<u>1119</u>	<u>CEF-043-07N-20100602</u>				<u>GW</u>	<u>G</u>	<u>1</u>	<u>G</u>		<u>IRPH (FLPRO) H2SO4 G</u>	<u>1006024 -06</u>
<u>6/2</u>	<u>1155</u>	<u>CEF-043-06N-20100602</u>				<u>GW</u>	<u>G</u>	<u>1</u>	<u>G</u>			<u>-07</u>
<u>6/2</u>	<u>1235</u>	<u>CEF-043-08N-20100602</u>				<u>GW</u>	<u>G</u>	<u>1</u>	<u>G</u>			<u>-08</u>
<u>6/2</u>	<u>1340</u>	<u>CEF-043-09N-20100602</u>				<u>GW</u>	<u>G</u>	<u>1</u>	<u>G</u>			<u>-09</u>

1. RELINQUISHED BY	DATE <u>6/2/10</u>	TIME <u>1700</u>	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE <u>6/3/10</u>	TIME <u>08:30</u>
COMMENTS <u>5.5°C</u>					

HOLDTIME

SDG CTO102_001

SORT	UNITS	NSAMPLE	LAB ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP EXTR	EXTR ANL	SMP_ANL
OV	UG/L	CEF-043-07N-20100602	1006024-06	NM	06/02/2010	06/06/2010	06/06/2010	4	0	4
OV	UG/L	CEF-043-08N-20100602	1006024-08	NM	06/02/2010	06/06/2010	06/06/2010	4	0	4
OV	UG/L	CEF-043-09N-20100602	1006024-09	NM	06/02/2010	06/06/2010	06/06/2010	4	0	4
OV	UG/L	CEF-043-17-20100602	1006024-04	NM	06/02/2010	06/06/2010	06/06/2010	4	0	4
OV	UG/L	CEF-043-18-20100602	1006024-05	NM	06/02/2010	06/06/2010	06/06/2010	4	0	4
OV	UG/L	CEF-043-23-20100601	1006024-02	NM	06/01/2010	06/06/2010	06/06/2010	5	0	5
OV	UG/L	CEF-043-40A-20100601	1006024-01	NM	06/01/2010	06/06/2010	06/06/2010	5	0	5
OV	UG/L	Trip Blank	1006024-03RE1	NM	06/01/2010	06/09/2010	06/09/2010	8	0	8
OV	UG/L	CEF-043-06N-20100602	1006024-07	NM	06/02/2010	06/06/2010	06/06/2010	4	0	4
SIM	UG/L	CEF-043-17-20100602	1006024-04	NM	06/02/2010	06/04/2010	06/19/2010	2	15	17
SIM	UG/L	CEF-043-06N-20100602	1006024-07	NM	06/02/2010	06/04/2010	06/20/2010	2	16	18
SIM	UG/L	CEF-043-07N-20100602	1006024-06	NM	06/02/2010	06/04/2010	06/20/2010	2	16	18
SIM	UG/L	CEF-043-09N-20100602	1006024-09	NM	06/02/2010	06/04/2010	06/20/2010	2	16	18
SIM	UG/L	CEF-043-18-20100602	1006024-05	NM	06/02/2010	06/04/2010	06/19/2010	2	15	17
SIM	UG/L	CEF-043-23-20100601	1006024-02	NM	06/01/2010	06/04/2010	06/19/2010	3	15	18

SORT	UNITS	NSAMPLE	LAB ID	QC TYPE	SAMP DATE	EXTR DATE	ANAL DATE	SMP EXTR	EXTR ANL	SMP ANL
SIM	UG/L	CEF-043-40A-20100601	1006024-01	NM	06/01/2010	06/04/2010	06/19/2010	3	15	18
SIM	UG/L	CEF-043-08N-20100602	1006024-08	NM	06/02/2010	06/04/2010	06/20/2010	2	16	18
TPH	MG/L	CEF-043-40A-20100601	1006024-01	NM	06/01/2010	06/04/2010	06/23/2010	3	19	22
TPH	MG/L	CEF-043-06N-20100602	1006024-07	NM	06/02/2010	06/04/2010	06/24/2010	2	20	22
TPH	MG/L	CEF-043-07N-20100602	1006024-06	NM	06/02/2010	06/04/2010	06/24/2010	2	20	22
TPH	MG/L	CEF-043-08N-20100602	1006024-08	NM	06/02/2010	06/04/2010	06/24/2010	2	20	22
TPH	MG/L	CEF-043-09N-20100602	1006024-09	NM	06/02/2010	06/04/2010	06/24/2010	2	20	22
TPH	MG/L	CEF-043-17-20100602	1006024-04	NM	06/02/2010	06/04/2010	06/23/2010	2	19	21
TPH	MG/L	CEF-043-18-20100602	1006024-05	NM	06/02/2010	06/04/2010	06/23/2010	2	19	21
TPH	MG/L	CEF-043-23-20100601	1006024-02	NM	06/01/2010	06/04/2010	06/23/2010	3	19	22

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8260B

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>CTO102_001</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>NAS Cecil Field CTO102</u>
Lab File ID: <u>SEQ-TUN1.D</u>	Injection Date: <u>05/28/10</u>
Instrument ID: <u>MS-VOA3</u>	Injection Time: <u>13:21</u>
Sequence: <u>0F15305</u>	Lab Sample ID: <u>0F15305-TUN1</u>

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	23.3	PASS
75	30 - 60% of 95	52.3	PASS
95	Base peak, 100% relative abundance	100	PASS
96	5 - 9% of 95	6.7	PASS
173	Less than 2% of 174	1.28	PASS
174	50 - 200% of 95	63.6	PASS
175	5 - 9% of 174	8.16	PASS
176	95 - 101% of 174	98.5	PASS
177	5 - 9% of 176	8.35	PASS

ANALYSIS SEQUENCE SUMMARY

SW8260B

Laboratory: Empirical Laboratories, LLC
 Client: Tetra Tech NUS, Inc. (T010)
 Sequence: 0F15305
 Calibration: 0153002

SDG: CTO102_001
 Project: NAS Cecil Field CTO102
 Instrument: MS-VOA3

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	0F15305-TUN1	SEQ-TUN1.D	05/28/10 13:21
Cal Standard	0F15305-CAL1	SEQ-CAL1.D	05/28/10 13:51
Cal Standard	0F15305-CAL2	SEQ-CAL2.D	05/28/10 14:22
Cal Standard	0F15305-CAL3	SEQ-CAL3.D	05/28/10 14:52
Cal Standard	0F15305-CAL4	SEQ-CAL4.D	05/28/10 15:22
Cal Standard	0F15305-CAL5	SEQ-CAL5.D	05/28/10 15:52
Cal Standard	0F15305-CAL6	SEQ-CAL6.D	05/28/10 16:23
Cal Standard	0F15305-CAL7	SEQ-CAL7.D	05/28/10 16:53
Cal Standard	0F15305-CAL8	SEQ-CAL8.D	05/28/10 17:23
Cal Standard	0F15305-CAL9	SEQ-CAL9.D	05/28/10 17:53
Initial Cal Check	0F15305-ICV1	SEQ-ICV1.D	05/28/10 18:23
Cal Standard	0F15305-CALA	SEQ-CALA.D	05/28/10 18:54
Cal Standard	0F15305-CALB	SEQ-CALB.D	05/28/10 19:24
Cal Standard	0F15305-CALC	SEQ-CALC.D	05/28/10 19:54
Cal Standard	0F15305-CALD	SEQ-CALD.D	05/28/10 20:24
Cal Standard	0F15305-CALE	SEQ-CALE.D	05/28/10 20:54
Cal Standard	0F15305-CALF	SEQ-CALF.D	05/28/10 21:24
Cal Standard	0F15305-CALG	SEQ-CALG.D	05/28/10 21:54
Cal Standard	0F15305-CALH	SEQ-CALH.D	05/28/10 22:24
Cal Standard	0F15305-CALI	SEQ-CALI.D	05/28/10 22:55
Initial Cal Check	0F15305-ICV2	SEQ-ICV2.D	05/28/10 23:25

INITIAL CALIBRATION DATA

SW8260B

Laboratory: Empirical Laboratories, LLC
 Client: Tetra Tech NUS, Inc. (T010)
 Calibration: 0153002
 Matrix: Water

SDG: CTO102_001
 Project: NAS Cecil Field CTO102
 Instrument: MS-VOA3
 Calibration Date: 5/28/2010 1:06:49PM

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Acetone												
Benzene	0.5	0.8836695	1	0.849982	2	0.8864501	5	0.8772784	10	0.9172855	50	0.9013845
Bromochloromethane	0.5	0.1059575	1	0.1078582	2	0.1225772	5	0.1127702	10	0.1144224	50	0.1102821
Bromodichloromethane	0.5	0.2843632	1	0.2785369	2	0.2806353	5	0.2847791	10	0.2911439	50	0.3000171
Bromoform	0.5	0.1053263	1	0.2348929	2	0.2453074	5	0.2592778	10	0.2810705	50	0.3434286
Bromomethane	0.5	0.1229621	1	0.1090558	2	8.171213E-02	5	9.416213E-02	10	8.811274E-02	50	0.1210111
Bromofluorobenzene	30	0.809546	30	0.8349992	30	0.8410831	30	0.8570103	30	0.8468459	30	0.8407881
2-Butanone												
Carbon disulfide	0.5	0.7419165	1	0.6666013	2	0.6956569	5	0.6939883	10	0.6932789	50	0.6761892
Carbon tetrachloride	0.5	0.2241325	1	0.2141558	2	0.241547	5	0.2360083	10	0.2383592	50	0.2488865
Chlorobenzene	0.5	1.550402	1	1.475808	2	1.51338	5	1.425009	10	1.412503	50	1.419966
Chloroethane	0.5	0.312228	1	0.2921462	2	0.2750538	5	0.266171	10	0.2623139	50	0.2421322
Chloroform	0.5	0.5442198	1	0.5225243	2	0.4671393	5	0.4210583	10	0.4171117	50	0.3973071
Chloromethane	0.5	0.4801309	1	0.4153919	2	0.3992103	5	0.3908325	10	0.389024	50	0.3409115
Cyclohexane	0.5	0.2086998	1	0.1968811	2	0.2410983	5	0.2493018	10	0.267864	50	0.294112
Dibromochloromethane	0.5	0.4386703	1	0.4293696	2	0.4147852	5	0.4200971	10	0.4493284	50	0.5123479
1,2-Dibromo-3-chloropropane	0.5	0.0647406	1	7.685784E-02	2	0.1016267	5	9.470208E-02	10	0.1082186	50	0.1246468
1,2-Dibromoethane (EDB)	0.5	0.5010119	1	0.5148303	2	0.4930557	5	0.4937364	10	0.5208128	50	0.5346833
1,2-Dichlorobenzene	0.5	1.08931	1	1.04188	2	1.060993	5	1.045313	10	1.062478	50	1.121024
1,3-Dichlorobenzene	0.5	1.09459	1	1.135227	2	1.118985	5	1.112089	10	1.138396	50	1.143436
1,4-Dichlorobenzene	0.5	1.292646	1	1.271833	2	1.27149	5	1.23089	10	1.254568	50	1.243194
Dichlorodifluoromethane	0.5	0.3428077	1	0.3086225	2	0.3812635	5	0.3685505	10	0.3612703	50	0.3304912
1,1-Dichloroethane	0.5	0.4161849	1	0.4250455	2	0.4370782	5	0.4164869	10	0.4195916	50	0.4134882
1,2-Dichloroethane	0.5	0.3188012	1	0.3244818	2	0.3268126	5	0.321245	10	0.3195183	50	0.3082246
1,1-Dichloroethene	0.5	0.1516128	1	0.1613881	2	0.170621	5	0.168987	10	0.1711984	50	0.175432
cis-1,2-Dichloroethene	0.5	0.2012692	1	0.2250433	2	0.2267408	5	0.2188306	10	0.2253663	50	0.2382279
trans-1,2-Dichloroethene	0.5	0.1916237	1	0.2101638	2	0.2019203	5	0.2042821	10	0.2044751	50	0.2084953
1,2-Dichloroethene (total)	1	0.1964464	2	0.2176035	4	0.2143306	10	0.2115563	20	0.2149207	100	0.2233616
1,2-Dichloropropane	0.5	0.2529975	1	0.2483424	2	0.2524946	5	0.2470582	10	0.2518008	50	0.2517967
cis-1,3-Dichloropropene	0.5	0.2717884	1	0.289134	2	0.2860912	5	0.2875766	10	0.3108542	50	0.3620732
trans-1,3-Dichloropropene	0.5	0.4656904	1	0.4474701	2	0.4821532	5	0.5184433	10	0.5627869	50	0.6743961

INITIAL CALIBRATION DATA

SW8260B

Laboratory: Empirical Laboratories, LLC
 Client: Tetra Tech NUS, Inc. (T010)
 Calibration: 0153002
 Matrix: Water

SDG: CTO102_001
 Project: NAS Cecil Field CTO102
 Instrument: MS-VOA3
 Calibration Date: 5/28/2010 1:06:49PM

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Ethylbenzene	0.5	1.918267	1	1.890549	2	2.003466	5	2.045857	10	2.155504	50	2.312872
2-Hexanone												
Isopropylbenzene	0.5	1.256925	1	1.315383	2	1.376773	5	1.497926	10	1.568882	50	1.773389
Methylene chloride	0.5	0.4075397	1	0.3851249	2	0.3425879	5	0.277929	10	0.2689605	50	0.2502402
Methyl Acetate	0.5	0.1796204	1	0.1887155	2	0.1869167	5	0.1884645	10	0.1871468	50	0.1860297
Methylcyclohexane	0.5	0.4715468	1	0.1814935	2	0.2340991	5	0.2494771	10	0.2558124	50	0.2597566
4-Methyl-2-pentanone												
Methyl t-Butyl Ether	0.5	0.4299029	1	0.4354974	2	0.4495872	5	0.4621867	10	0.4826565	50	0.5428822
Styrene	0.5	0.8176032	1	0.9667635	2	1.047703	5	1.120697	10	1.281583	50	1.538222
1,1,2,2-Tetrachloroethane	0.5	0.7900414	1	0.7301052	2	0.7857853	5	0.7560755	10	0.7441946	50	0.7325637
Tetrachloroethene	0.5	0.4992214	1	0.4914402	2	0.5121759	5	0.4768747	10	0.4810146	50	0.4916347
Toluene	0.5	1.294525	1	1.256206	2	1.270676	5	1.218803	10	1.270665	50	1.276688
1,2,3-Trichlorobenzene	0.5	0.4909543	1	0.4978473	2	0.5046864	5	0.5068898	10	0.5229422	50	0.5637286
1,2,4-Trichlorobenzene	0.5	0.5772399	1	0.5265693	2	0.5359293	5	0.5180841	10	0.5440077	50	0.6117867
1,1,2-Trichloroethane	0.5	0.4726896	1	0.4623472	2	0.4579886	5	0.4457024	10	0.4599776	50	0.4437744
1,1,1-Trichloroethane	0.5	0.2782902	1	0.2724762	2	0.2994436	5	0.2825355	10	0.2883334	50	0.2899607
Trichloroethene	0.5	0.23042	1	0.2257328	2	0.2285535	5	0.2208007	10	0.2303158	50	0.2283966
Trichlorofluoromethane	0.5	0.3217306	1	0.333845	2	0.3655958	5	0.3510502	10	0.3455952	50	0.3243796
1,1,2-Trichloro-1,2,2-trifluoroethane	0.5	0.175405	1	0.1843243	2	0.2125449	5	0.1997387	10	0.1924404	50	0.1819648
Vinyl chloride	0.5	0.460697	1	0.4172791	2	0.4494257	5	0.4250828	10	0.4196489	50	0.3726217
m,p-Xylene	1	1.382178	2	1.414977	4	1.525056	10	1.619672	20	1.71237	100	1.791134
o-Xylene	0.5	1.375423	1	1.420598	2	1.587135	5	1.721941	10	1.816982	50	1.945945
Xylenes (total)	1.5	1.379926	3	1.416851	6	1.545749	15	1.653762	30	1.74724	150	1.842737
Dibromofluoromethane	30	0.2729435	30	0.27953	30	0.2739148	30	0.274067	30	0.2657991	30	0.2606684
1,2-Dichloroethane-d4	30	5.865409E-02	30	5.922765E-02	30	0.0606772	30	5.702079E-02	30	5.589988E-02	30	5.328272E-02
Toluene-d8	30	2.316906	30	2.380509	30	2.280315	30	2.302919	30	2.262876	30	2.166853

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0153002

Instrument: MS-VOA3

Matrix: Water

Calibration Date: 5/28/2010 1:06:49PM

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/L	RF	ug/L	RF								
Acetone							1	0.1148152	2	8.497838E-02	4	8.007977E-02
Benzene	100	0.8757935	150	0.8309889	200	0.804194						
Bromochloromethane	100	0.1108504	150	0.1087208	200	0.1097542						
Bromodichloromethane	100	0.2993063	150	0.2897243	200	0.2890356						
Bromoform	100	0.3559158	150	0.3512783	200	0.3449674						
Bromomethane	100	0.1568274	150	0.1732271	200	0.1843399						
Bromofluorobenzene	30	0.7991269	30	0.7474056	30	0.7004594						
2-Butanone							1		2		4	5.095774E-02
Carbon disulfide	100	0.678964	150	0.6568992	200	0.6443153						
Carbon tetrachloride	100	0.2621837	150	0.2631193	200	0.2619392						
Chlorobenzene	100	1.337404	150	1.243685	200	1.156182						
Chloroethane	100	0.2321846	150	0.2106471	200	0.1984544						
Chloroform	100	0.3916161	150	0.3787396	200	0.3761144						
Chloromethane	100	0.3031339	150	0.2641053	200	0.2407841						
Cyclohexane	100	0.3084477	150	0.3061926	200	0.299146						
Dibromochloromethane	100	0.5110016	150	0.4937416	200	0.4773399						
1,2-Dibromo-3-chloropropane	100	0.1287199	150	0.1269407	200	0.1237539						
1,2-Dibromoethane (EDB)	100	0.5203449	150	0.4849778	200	0.4551328						
1,2-Dichlorobenzene	100	1.081532	150	1.042498	200	1.002944						
1,3-Dichlorobenzene	100	1.116644	150	1.055936	200	1.016721						
1,4-Dichlorobenzene	100	1.230951	150	1.184238	200	1.135602						
Dichlorodifluoromethane	100	0.3241078	150	0.3035808	200	0.2806864						
1,1-Dichloroethane	100	0.4085088	150	0.3937776	200	0.3863391						
1,2-Dichloroethane	100	0.3047566	150	0.2930949	200	0.2856276						
1,1-Dichloroethene	100	0.1884297	150	0.1882188	200	0.1910657						
cis-1,2-Dichloroethene	100	0.2357412	150	0.23668	200	0.2343952						
trans-1,2-Dichloroethene	100	0.2155328	150	0.2103322	200	0.2080458						
1,2-Dichloroethene (total)	200	0.225637	300	0.2235061	400	0.2212205						
1,2-Dichloropropane	100	0.2517624	150	0.2425453	200	0.238407						
cis-1,3-Dichloropropene	100	0.3670929	150	0.3563162	200	0.3496497						
trans-1,3-Dichloropropene	100	0.6826648	150	0.6364837	200	0.6059394						

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0153002

Instrument: MS-VOA3

Matrix: Water

Calibration Date: 5/28/2010 1:06:49PM

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Ethylbenzene	100	2.150813	150	1.914095	200	1.685976						
2-Hexanone							1		2	0.1827121	4	0.2265088
Isopropylbenzene	100	1.720304	150	1.555654	200	1.392535						
Methylene chloride	100	0.245099	150	0.2344199	200	0.2319979						
Methyl Acetate	100	0.1842704	150	0.1761715	200	0.1692025						
Methylcyclohexane	100	0.2684947	150	0.2620894	200	0.2577718						
4-Methyl-2-pentanone							1		2	0.1020345	4	0.133399
Methyl t-Butyl Ether	100	0.5621111	150	0.5571677	200	0.5615385						
Styrene	100	1.513406	150	1.392546	200	1.280392						
1,1,2,2-Tetrachloroethane	100	0.7010542	150	0.6826604	200	0.6514267						
Tetrachloroethene	100	0.4935154	150	0.4729313	200	0.4528307						
Toluene	100	1.221756	150	1.145501	200	1.067513						
1,2,3-Trichlorobenzene	100	0.5522724	150	0.5499148	200	0.5248423						
1,2,4-Trichlorobenzene	100	0.6003625	150	0.5921497	200	0.5867084						
1,1,2-Trichloroethane	100	0.4222794	150	0.3950371	200	0.3715264						
1,1,1-Trichloroethane	100	0.3005281	150	0.2986079	200	0.2930804						
Trichloroethene	100	0.2332952	150	0.2296634	200	0.2280358						
Trichlorofluoromethane	100	0.3469164	150	0.3398797	200	0.3374462						
1,1,2-Trichloro-1,2,2-trifluoroethane	100	0.1871965	150	0.1844287	200	0.178959						
Vinyl chloride	100	0.3499803	150	0.2997384	200	0.2673541						
m,p-Xylene	200	1.660936	300	1.413578	400	1.205097						
o-Xylene	100	1.862008	150	1.670678	200	1.485215						
Xylenes (total)	300	1.72796	450	1.499279	600	1.29847						
Dibromofluoromethane	30	0.2595552	30	0.2597724	30	0.2566712						
1,2-Dichloroethane-d4	30	5.312415E-02	30	5.192585E-02	30	5.175453E-02						
Toluene-d8	30	2.029438	30	1.917248	30	1.814692						

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0153002

Instrument: MS-VOA3

Matrix: Water

Calibration Date: 5/28/2010 1:06:49PM

Compound	Level 13		Level 14		Level 15		Level 16		Level 17		Level 18	
	ug/L	RF										
Acetone	10	6.926401E-02	20	6.945935E-02	100	6.585042E-02	200	6.562578E-02	300	6.658448E-02	400	6.632646E-02
Benzene												
Bromochloromethane												
Bromodichloromethane												
Bromoform												
Bromomethane												
Bromofluorobenzene												
2-Butanone	10	8.257789E-02	20	8.967779E-02	100	9.824597E-02	200	0.1044158	300	0.1060121	400	0.1074744
Carbon disulfide												
Carbon tetrachloride												
Chlorobenzene												
Chloroethane												
Chloroform												
Chloromethane												
Cyclohexane												
Dibromochloromethane												
1,2-Dibromo-3-chloropropane												
1,2-Dibromoethane (EDB)												
1,2-Dichlorobenzene												
1,3-Dichlorobenzene												
1,4-Dichlorobenzene												
Dichlorodifluoromethane												
1,1-Dichloroethane												
1,2-Dichloroethane												
1,1-Dichloroethene												
cis-1,2-Dichloroethene												
trans-1,2-Dichloroethene												
1,2-Dichloroethene (total)												
1,2-Dichloropropane												
cis-1,3-Dichloropropene												
trans-1,3-Dichloropropene												

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC
 Client: Tetra Tech NUS, Inc. (T010)
 Calibration: 0153002
 Matrix: Water

SDG: CTO102_001
 Project: NAS Cecil Field CTO102
 Instrument: MS-VOA3
 Calibration Date: 5/28/2010 1:06:49PM

Compound	Level 13		Level 14		Level 15		Level 16		Level 17		Level 18	
	ug/L	RF										
Ethylbenzene												
2-Hexanone	10	0.2382939	20	0.2717325	100	0.3406569	200	0.3487166	300	0.339507	400	0.3521897
Isopropylbenzene												
Methylene chloride												
Methyl Acetate												
Methylcyclohexane												
4-Methyl-2-pentanone	10	0.1558189	20	0.1765288	100	0.2156187	200	0.2282985	300	0.2288307	400	0.2264228
Methyl t-Butyl Ether												
Styrene												
1,1,2,2-Tetrachloroethane												
Tetrachloroethene												
Toluene												
1,2,3-Trichlorobenzene												
1,2,4-Trichlorobenzene												
1,1,2-Trichloroethane												
1,1,1-Trichloroethane												
Trichloroethene												
Trichlorofluoromethane												
1,1,2-Trichloro-1,2,2-trifluoroethane												
Vinyl chloride												
m,p-Xylene												
o-Xylene												
Xylenes (total)												
Dibromofluoromethane												
1,2-Dichloroethane-d4												
Toluene-d8												

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0153002

Instrument: MS-VOA3

Matrix: Water

Calibration Date: 5/28/2010 1:06:49PM

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Acetone	7.102108E-02	10.37367	5.6375	4.964546E-02			15	
Benzene	0.8696696	4.068798	12.35333	2.547432E-02			15	
Bromochloromethane	0.1114659	4.366422	10.07633	4.546303E-02			15	
Bromodichloromethane	0.2886157	2.59903	13.32778	1.732744E-02			15	
Bromoform	0.3020173	17.195	16.68925	1.873979E-02	0.9996593		SPCC (0.1)	
Bromomethane	0.1257123	29.91641	4.602667	4.075829E-02		0.9982742	0.99	
Bromofluorobenzene	0.808585	6.503745	17.225	2.379649E-02			15	
2-Butanone	9.133739E-02	21.91746	9.297428	0.3386742	0.9997021		0.995	
Carbon disulfide	0.68309	4.129969	6.912445	5.213256E-02			15	
Carbon tetrachloride	0.2433702	7.154531	12.31511	0.0295426			15	
Chlorobenzene	1.392704	9.143365	16.282	1.462598E-02			SPCC (0.3)	
Chloroethane	0.2616096	12.54463	4.77575	6.449603E-02	0.9961025		0.995	
Chloroform	0.4350923	14.32388	10.22567	5.317791E-02			CCC (20)	
Chloromethane	0.3429242	19.42856	3.923	8.206086E-02		0.9997416	SPCC (0.1)	
Cyclohexane	0.2703804	14.54924	12.212	2.286287E-02			15	
Dibromochloromethane	0.4607424	8.377666	15.27933	1.747892E-02			15	
1,2-Dibromo-3-chloropropane	0.1106833	16.87872	18.956	2.053257E-02	0.9995113		0.995	
1,2-Dibromoethane (EDB)	0.5020651	4.754663	15.51033	1.877192E-03			15	
1,2-Dichlorobenzene	1.060886	3.188263	18.56978	1.542489E-02			15	
1,3-Dichlorobenzene	1.103558	3.814735	18.223	2.242414E-02			15	
1,4-Dichlorobenzene	1.235046	3.940876	18.27133	8.267862E-03			15	
Dichlorodifluoromethane	0.3334867	9.92737	3.695	1.172349E-02			15	
1,1-Dichloroethane	0.4129445	3.723423	8.275333	4.671998E-02			SPCC (0.1)	
1,2-Dichloroethane	0.3113958	4.653411	11.55367	4.491358E-02			15	
1,1-Dichloroethene	0.1741059	7.620389	6.310333	3.373038E-02			CCC (20)	
cis-1,2-Dichloroethene	0.2269216	5.134897	9.684111	6.678292E-02			15	
trans-1,2-Dichloroethene	0.2060968	3.281462	7.740334	4.761152E-02			15	
1,2-Dichloroethene (total)	0.2165092	4.121235	0	0			15	
1,2-Dichloropropane	0.2485783	2.051097	13.21467	1.865879E-02			CCC (20)	
cis-1,3-Dichloropropene	0.320064	11.97274	14.14833	3.645283E-02			15	
trans-1,3-Dichloropropene	0.5640031	16.01896	14.63044	3.052116E-02		0.9996698	0.99	
Ethylbenzene	2.0086	9.16174	16.444	1.813218E-02			CCC (20)	

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0153002

Instrument: MS-VOA3

Matrix: Water

Calibration Date: 5/28/2010 1:06:49PM

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
2-Hexanone	0.2875397	23.0813	15.21675	0.1473151	0.9995357		0.995	
Isopropylbenzene	1.508154	12.25048	17.19575	1.749313E-02			15	
Methylene chloride	0.2937666	22.87977	6.533333	6.626487E-02	0.9994054		0.995	
Methyl Acetate	0.1829487	3.637319	6.583	0.1703319			15	
Methylcyclohexane	0.2461243	11.39259	13.943	2.715972E-02			15	
4-Methyl-2-pentanone	0.183369	26.79369	14.2915	6.183596E-02	0.9998143		0.995	
Methyl t-Butyl Ether	0.49817	11.45858	8.015222	0.1623958			15	
Styrene	1.267664	16.6025	16.8555	4.209826E-03		0.9993908	0.99	
1,1,2,2-Tetrachloroethane	0.7304341	6.284204	16.921	1.260648E-02			SPCC (0.3)	
Tetrachloroethene	0.4857377	3.533216	15.69533	2.723335E-02			15	
Toluene	1.224704	6.043187	14.972	1.482227E-02			CCC (20)	
1,2,3-Trichlorobenzene	0.5237865	5.002455	20.76067	1.253389E-02			15	
1,2,4-Trichlorobenzene	0.5658708	6.170826	20.237	0.0139756			15	
1,1,2-Trichloroethane	0.4368136	7.793052	14.78222	0.025063			15	
1,1,1-Trichloroethane	0.2892507	3.416456	11.74333	1.524411E-02			15	
Trichloroethene	0.2283571	1.535134	13.293	3.309073E-02			15	
Trichlorofluoromethane	0.3407154	3.983908	5.521333	4.825066E-02			15	
1,1,2-Trichloro-1,2,2-trifluoroethane	0.1885558	6.107329	6.642555	0.1069054			15	
Vinyl chloride	0.3846476	17.49269	4.126333	8.608735E-02		0.9985669	CCC (20)	
m,p-Xylene	1.525	12.28158	16.59833	6.699701E-03			15	
o-Xylene	1.653992	12.18602	16.915	1.710043E-02			15	
Xylenes (total)	1.567997	11.85934	0	0			15	
Dibromofluoromethane	0.2669913	3.094148	10.49144	0.0337586			15	
1,2-Dichloroethane-d4	5.572965E-02	6.018834	11.41233	2.874966E-02			15	
Toluene-d8	2.163528	9.155275	14.901	1.850725E-02			15	

INITIAL CALIBRATION CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Instrument ID: MS-VOA3

Calibration: 0153002

Lab File ID: SEQ-ICV1.D

Calibration Date: 05/28/10 13:06

Sequence: 0F15305

Injection Date: 05/28/10

Lab Sample ID: 0F15305-ICV1

Injection Time: 18:23

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	ICV	ICAL	ICV	MIN (#)	ICV	LIMIT (#)
Benzene	A	100.0	103.3	0.8696696	0.8980238		3.3	20
Bromochloromethane	A	100.0	106.8	0.1114659	0.1189942		6.8	20
Bromodichloromethane	A	100.0	110.0	0.2886157	0.3174763		10.0	20
Bromoform	L	100.0	106.5	0.3020173	0.370199	0.1	6.5	20
Bromomethane	Q	100.0	101.0	0.1257123	0.1568561		1.0	20
Carbon disulfide	A	100.0	106.4	0.68309	0.7266192		6.4	20
Carbon tetrachloride	A	100.0	114.5	0.2433702	0.2785772		14.5	20
Chlorobenzene	A	100.0	98.77	1.392704	1.375642	0.3	-1.2	20
Chloroethane	L	100.0	89.55	0.2616096	0.1974725		-10.5	20
Chloroform	A	100.0	91.75	0.4350923	0.3991764		-8.3	20
Chloromethane	Q	100.0	86.36	0.3429242	0.2677515	0.1	-13.6	20
Cyclohexane	A	100.0	119.4	0.2703804	0.322789		19.4	20
Dibromochloromethane	A	100.0	116.3	0.4607424	0.535842		16.3	20
1,2-Dibromo-3-chloropropane	L	100.0	103.3	0.1106833	0.1294365		3.3	20
1,2-Dibromoethane (EDB)	A	100.0	103.7	0.5020651	0.5207665		3.7	20
1,2-Dichlorobenzene	A	100.0	105.0	1.060886	1.114306		5.0	20
1,3-Dichlorobenzene	A	100.0	101.4	1.103558	1.118953		1.4	20
1,4-Dichlorobenzene	A	100.0	98.94	1.235046	1.221919		-1.1	20
Dichlorodifluoromethane	A	100.0	96.70	0.3334867	0.3224744		-3.3	20
1,1-Dichloroethane	A	100.0	101.2	0.4129445	0.4178477	0.1	1.2	20
1,2-Dichloroethane	A	100.0	98.95	0.3113958	0.3081388		-1.0	20
1,1-Dichloroethene	A	100.0	117.7	0.1741059	0.2049638		17.7	20
cis-1,2-Dichloroethene	A	100.0	108.9	0.2269216	0.2471758		8.9	20
trans-1,2-Dichloroethene	A	100.0	110.0	0.2060968	0.2267543		10.0	20
1,2-Dichloropropane	A	100.0	102.4	0.2485783	0.2544608		2.4	20
cis-1,3-Dichloropropene	A	100.0	118.7	0.320064	0.3797631		18.7	20
trans-1,3-Dichloropropene	Q	100.0	114.9	0.5640031	0.7577196		14.9	20
Ethylbenzene	A	100.0	105.7	2.0086	2.123863		5.7	20
Isopropylbenzene	A	100.0	119.6	1.508154	1.804384		19.6	20

INITIAL CALIBRATION CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Instrument ID: MS-VOA3

Calibration: 0153002

Lab File ID: SEQ-ICV1.D

Calibration Date: 05/28/10 13:06

Sequence: 0F15305

Injection Date: 05/28/10

Lab Sample ID: 0F15305-ICV1

Injection Time: 18:23

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	ICV	ICAL	ICV	MIN (#)	ICV	LIMIT (#)
Methylene chloride	L	100.0	107.1	0.2937666	0.2528777		7.1	20
Methyl Acetate	A	100.0	94.13	0.1829487	0.1722148		-5.9	20
Methylcyclohexane	A	100.0	109.4	0.2461243	0.269368		9.4	20
Methyl t-Butyl Ether	A	100.0	116.2	0.49817	0.5788614		16.2	20
Styrene	Q	100.0	99.36	1.267664	1.484119		-0.6	20
1,1,2,2-Tetrachloroethane	A	100.0	94.23	0.7304341	0.6883228	0.3	-5.8	20
Tetrachloroethene	A	100.0	106.0	0.4857377	0.5148547		6.0	20
Toluene	A	100.0	100.5	1.224704	1.230678		0.5	20
1,2,3-Trichlorobenzene	A	100.0	111.3	0.5237865	0.5827422		11.3	20
1,2,4-Trichlorobenzene	A	100.0	111.3	0.5658708	0.6296033		11.3	20
1,1,2-Trichloroethane	A	100.0	96.79	0.4368136	0.4227951		-3.2	20
1,1,1-Trichloroethane	A	100.0	110.0	0.2892507	0.3182893		10.0	20
Trichloroethene	A	100.0	105.3	0.2283571	0.2403736		5.3	20
Trichlorofluoromethane	A	100.0	101.8	0.3407154	0.3469433		1.8	20
1,1,2-Trichloro-1,2,2-trifluoroethane	A	100.0	104.3	0.1885558	0.196677		4.3	20
Vinyl chloride	Q	100.0	97.47	0.3846476	0.3327136		-2.5	20
Xylenes (total)	A	300.0	323.1	1.567997	1.689729		7.8	20
Bromofluorobenzene	A	30.00	29.32	0.808585	0.7902025		-2.3	20
Dibromofluoromethane	A	30.00	29.98	0.2669913	0.2668221		-0.06	20
1,2-Dichloroethane-d4	A	30.00	30.79	5.572965E-02	0.0571896		2.6	20
Toluene-d8	A	30.00	28.90	2.163528	2.084473		-3.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

INITIAL CALIBRATION CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Instrument ID: MS-VOA3

Calibration: 0153002

Lab File ID: SEQ-ICV2.D

Calibration Date: 05/28/10 13:06

Sequence: 0F15305

Injection Date: 05/28/10

Lab Sample ID: 0F15305-ICV2

Injection Time: 23:25

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	ICV	ICAL	ICV	MIN (#)	ICV	LIMIT (#)
Acetone	A	200.0	197.4	7.102108E-02	0.0701055		-1.3	20
2-Butanone	L	200.0	198.1	9.133739E-02	0.1045753		-0.9	20
2-Hexanone	L	200.0	208.8	0.2875397	0.3614081		4.4	20
4-Methyl-2-pentanone	L	200.0	205.7	0.183369	0.2324622		2.8	20
Bromofluorobenzene	A	30.00	0.000	0.808585				20
Dibromofluoromethane	A	30.00	0.000	0.2669913				20
1,2-Dichloroethane-d4	A	30.00	0.000	5.572965E-02				20
Toluene-d8	A	30.00	0.000	2.163528				20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Lab File ID: SEQ-TUNI.D

Injection Date: 06/09/10

Instrument ID: MS-VOA3

Injection Time: 11:09

Sequence: 0F16602

Lab Sample ID: 0F16602-TUNI

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	20.1	PASS
75	30 - 60% of 95	49.9	PASS
95	Base peak, 100% relative abundance	100	PASS
96	5 - 9% of 95	7.57	PASS
173	Less than 2% of 174	0.672	PASS
174	50 - 200% of 95	76.4	PASS
175	5 - 9% of 174	7.64	PASS
176	95 - 101% of 174	97.5	PASS
177	5 - 9% of 176	6.75	PASS

ANALYSIS SEQUENCE SUMMARY

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Sequence: 0F16602

Instrument: MS-VOA3

Calibration: 0153002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	0F16602-TUN1	SEQ-TUN1.D	06/09/10 11:09
Calibration Check	0F16602-CCV1	SEQ-CCV1.D	06/09/10 11:39
LCS	0F06001-BS1	V3LCS01.D	06/09/10 12:08
Blank	0F06001-BLK1	V3BLK01.D	06/09/10 13:36
Trip Blank	1006024-03RE1	0602403.D	06/09/10 14:05
LCS Dup	0F06001-BSD1	V3LCSD01.D	06/09/10 22:33

CONTINUING CALIBRATION CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Instrument ID: MS-VOA3

Calibration: 0153002

Lab File ID: SEQ-CCV1.D

Calibration Date: 05/28/10 13:06

Sequence: 0F16602

Injection Date: 06/09/10

Lab Sample ID: 0F16602-CCV1

Injection Time: 11:39

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Acetone	A	200.0	177.2	7.102108E-02	6.294206E-02		-11.4	20
Benzene	A	100.0	106.1	0.8696696	0.9230465		6.1	20
Bromochloromethane	A	100.0	110.6	0.1114659	0.1232856		10.6	20
Bromodichloromethane	A	100.0	106.3	0.2886157	0.3068799		6.3	20
Bromoform	L	100.0	108.4	0.3020173	0.3769368	0.1	8.4	20
Bromomethane	Q	100.0	88.24	0.1257123	0.1343341		-11.8	20
2-Butanone	L	200.0	184.0	9.133739E-02	9.697999E-02		-8.0	20
Carbon disulfide	A	100.0	102.4	0.68309	0.6998504		2.5	20
Carbon tetrachloride	A	100.0	115.9	0.2433702	0.282012		15.9	20
Chlorobenzene	A	100.0	99.86	1.392704	1.390703	0.3	-0.1	20
Chloroethane	L	100.0	100.7	0.2616096	0.2216175		0.7	20
Chloroform	A	100.0	94.61	0.4350923	0.4116273		-5.4	20
Chloromethane	Q	100.0	94.39	0.3429242	0.2858285	0.1	-5.6	20
Cyclohexane	A	100.0	122.0	0.2703804	0.3300219		22.1	20 *
Dibromochloromethane	A	100.0	114.9	0.4607424	0.5293285		14.9	20
1,2-Dibromo-3-chloropropane	L	100.0	103.5	0.1106833	0.1296171		3.5	20
1,2-Dibromoethane (EDB)	A	100.0	106.0	0.5020651	0.5320467		6.0	20
1,2-Dichlorobenzene	A	100.0	102.5	1.060886	1.087789		2.5	20
1,3-Dichlorobenzene	A	100.0	99.73	1.103558	1.100617		-0.3	20
1,4-Dichlorobenzene	A	100.0	103.1	1.235046	1.273471		3.1	20
Dichlorodifluoromethane	A	100.0	82.90	0.3334867	0.2764474		-17.1	20
1,1-Dichloroethane	A	100.0	102.2	0.4129445	0.4221922	0.1	2.2	20
1,2-Dichloroethane	A	100.0	101.8	0.3113958	0.3170823		1.8	20
1,1-Dichloroethene	A	100.0	117.8	0.1741059	0.2050183		17.8	20
cis-1,2-Dichloroethene	A	100.0	115.1	0.2269216	0.2612648		15.1	20
trans-1,2-Dichloroethene	A	100.0	112.7	0.2060968	0.2323452		12.7	20
1,2-Dichloropropane	A	100.0	103.5	0.2485783	0.2571896		3.5	20
cis-1,3-Dichloropropene	A	100.0	120.9	0.320064	0.3869589		20.9	20 *
trans-1,3-Dichloropropene	Q	100.0	105.4	0.5640031	0.702252		5.4	20

CONTINUING CALIBRATION CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Instrument ID: MS-VOA3

Calibration: 0153002

Lab File ID: SEQ-CCV1.D

Calibration Date: 05/28/10 13:06

Sequence: 0F16602

Injection Date: 06/09/10

Lab Sample ID: 0F16602-CCV1

Injection Time: 11:39

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Ethylbenzene	A	100.0	110.4	2.0086	2.218251		10.4	20
2-Hexanone	L	200.0	183.6	0.2875397	0.3171279		-8.2	20
Isopropylbenzene	A	100.0	119.2	1.508154	1.797042		19.2	20
Methylene chloride	L	100.0	111.0	0.2937666	0.2618776		11.0	20
Methyl Acetate	A	100.0	100.9	0.1829487	0.1845559		0.9	20
Methylcyclohexane	A	100.0	120.8	0.2461243	0.2974381		20.8	20 *
4-Methyl-2-pentanone	L	200.0	190.0	0.183369	0.2144851		-5.0	20
Methyl t-Butyl Ether	A	100.0	117.6	0.49817	0.5857681		17.6	20
Styrene	Q	100.0	101.7	1.267664	1.512482		1.7	20
1,1,2,2-Tetrachloroethane	A	100.0	92.17	0.7304341	0.6732385	0.3	-7.8	20
Tetrachloroethene	A	100.0	113.0	0.4857377	0.5488846		13.0	20
Toluene	A	100.0	100.8	1.224704	1.234763		0.8	20
1,2,3-Trichlorobenzene	A	100.0	111.7	0.5237865	0.5852721		11.7	20
1,2,4-Trichlorobenzene	A	100.0	112.6	0.5658708	0.637158		12.6	20
1,1,2-Trichloroethane	A	100.0	99.42	0.4368136	0.4342819		-0.6	20
1,1,1-Trichloroethane	A	100.0	112.4	0.2892507	0.3252229		12.4	20
Trichloroethene	A	100.0	106.2	0.2283571	0.2424061		6.2	20
Trichlorofluoromethane	A	100.0	110.4	0.3407154	0.3759834		10.4	20
1,1,2-Trichloro-1,2,2-trifluoroethane	A	100.0	108.9	0.1885558	0.2053696		8.9	20
Vinyl chloride	Q	100.0	84.16	0.3846476	0.2998067		-15.8	20
Xylenes (total)	A	300.0	335.7	1.567997	1.755431		12.0	20
Bromofluorobenzene	A	30.00	29.26	0.808585	0.7886361		-2.5	20
Dibromofluoromethane	A	30.00	30.70	0.2669913	0.273256		2.3	20
1,2-Dichloroethane-d4	A	30.00	30.01	5.572965E-02	5.575566E-02		0.05	20
Toluene-d8	A	30.00	27.95	2.163528	2.016		-6.8	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Lab File ID: SEQ-TUN1.D

Injection Date: 06/06/10

Instrument ID: MS-VOA3

Injection Time: 14:17

Sequence: 0F16010

Lab Sample ID: 0F16010-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	23.7	PASS
75	30 - 60% of 95	52	PASS
95	Base peak, 100% relative abundance	100	PASS
96	5 - 9% of 95	8.89	PASS
173	Less than 2% of 174	0.692	PASS
174	50 - 200% of 95	66.1	PASS
175	5 - 9% of 174	7.17	PASS
176	95 - 101% of 174	97.2	PASS
177	5 - 9% of 176	6.29	PASS

ANALYSIS SEQUENCE SUMMARY

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Sequence: 0F16010

Instrument: MS-VOA3

Calibration: 0153002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	0F16010-TUN1	SEQ-TUN1.D	06/06/10 14:17
Calibration Check	0F16010-CCV1	SEQ-CCV1.D	06/06/10 14:47
LCS	0F06003-BS1	V3LCS01.D	06/06/10 15:17
Blank	0F06003-BLK1	V3BLK01.D	06/06/10 16:44
CEF-043-40A-20100601	1006024-01	0602401.D	06/06/10 18:43
CEF-043-23-20100601	1006024-02	0602402.D	06/06/10 19:13
CEF-043-17-20100602	1006024-04	0602404.D	06/06/10 19:43
CEF-043-18-20100602	1006024-05	0602405.D	06/06/10 20:12
CEF-043-07N-20100602	1006024-06	0602406.D	06/06/10 20:42
CEF-043-06N-20100602	1006024-07	0602407.D	06/06/10 21:12
CEF-043-08N-20100602	1006024-08	0602408.D	06/06/10 21:42
CEF-043-09N-20100602	1006024-09	0602409.D	06/06/10 22:11
LCS Dup	0F06003-BSD1	V3LCSD01.D	06/07/10 01:10

CONTINUING CALIBRATION CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC
 Client: Tetra Tech NUS, Inc. (T010)
 Instrument ID: MS-VOA3
 Lab File ID: SEQ-CCV1.D
 Sequence: 0F16010
 Lab Sample ID: 0F16010-CCV1

SDG: CTO102_001
 Project: NAS Cecil Field CTO102
 Calibration: 0153002
 Calibration Date: 05/28/10 13:06
 Injection Date: 06/06/10
 Injection Time: 14:47

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Acetone	A	200.0	194.0	7.102108E-02	6.890849E-02		-3.0	20
Benzene	A	100.0	97.97	0.8696696	0.8520375		-2.0	20
Bromochloromethane	A	100.0	101.0	0.1114659	0.1125686		1.0	20
Bromodichloromethane	A	100.0	97.33	0.2886157	0.2809065		-2.7	20
Bromoform	L	100.0	96.55	0.3020173	0.3353866	0.1	-3.4	20
Bromomethane	Q	100.0	99.89	0.1257123	0.1548288		-0.1	20
2-Butanone	L	200.0	190.7	9.133739E-02	0.1005821		-4.6	20
Carbon disulfide	A	100.0	94.71	0.68309	0.6469845		-5.3	20
Carbon tetrachloride	A	100.0	105.8	0.2433702	0.2574677		5.8	20
Chlorobenzene	A	100.0	92.43	1.392704	1.287339	0.3	-7.6	20
Chloroethane	L	100.0	105.3	0.2616096	0.2316695		5.3	20
Chloroform	A	100.0	88.73	0.4350923	0.3860725		-11.3	20
Chloromethane	Q	100.0	133.9	0.3429242	0.366827	0.1	33.9	20 *
Cyclohexane	A	100.0	115.0	0.2703804	0.3108779		15.0	20
Dibromochloromethane	A	100.0	104.2	0.4607424	0.4800768		4.2	20
1,2-Dibromo-3-chloropropane	L	100.0	91.68	0.1106833	0.1147741		-8.3	20
1,2-Dibromoethane (EDB)	A	100.0	95.46	0.5020651	0.4792618		-4.5	20
1,2-Dichlorobenzene	A	100.0	96.76	1.060886	1.026576		-3.2	20
1,3-Dichlorobenzene	A	100.0	97.84	1.103558	1.079759		-2.2	20
1,4-Dichlorobenzene	A	100.0	93.09	1.235046	1.14974		-6.9	20
Dichlorodifluoromethane	A	100.0	85.76	0.3334867	0.286014		-14.2	20
1,1-Dichloroethane	A	100.0	96.35	0.4129445	0.3978866	0.1	-3.6	20
1,2-Dichloroethane	A	100.0	95.26	0.3113958	0.2966484		-4.7	20
1,1-Dichloroethene	A	100.0	103.5	0.1741059	0.1801455		3.5	20
cis-1,2-Dichloroethene	A	100.0	103.6	0.2269216	0.2350343		3.6	20
trans-1,2-Dichloroethene	A	100.0	100.4	0.2060968	0.2070211		0.4	20
1,2-Dichloropropane	A	100.0	95.67	0.2485783	0.2378068		-4.3	20
cis-1,3-Dichloropropene	A	100.0	110.7	0.320064	0.3544083		10.7	20
trans-1,3-Dichloropropene	Q	100.0	94.27	0.5640031	0.6354621		-5.7	20

CONTINUING CALIBRATION CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Instrument ID: MS-VOA3

Calibration: 0153002

Lab File ID: SEQ-CCV1.D

Calibration Date: 05/28/10 13:06

Sequence: 0F16010

Injection Date: 06/06/10

Lab Sample ID: 0F16010-CCV1

Injection Time: 14:47

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Ethylbenzene	A	100.0	103.7	2.0086	2.083807		3.7	20
2-Hexanone	L	200.0	195.6	0.2875397	0.3382265		-2.2	20
Isopropylbenzene	A	100.0	111.8	1.508154	1.686299		11.8	20
Methylene chloride	L	100.0	103.0	0.2937666	0.243338		3.0	20
Methyl Acetate	A	100.0	94.91	0.1829487	0.1736388		-5.1	20
Methylcyclohexane	A	100.0	109.3	0.2461243	0.2689828		9.3	20
4-Methyl-2-pentanone	L	200.0	200.6	0.183369	0.2266326		0.3	20
Methyl t-Butyl Ether	A	100.0	104.0	0.49817	0.5178837		4.0	20
Styrene	Q	100.0	95.28	1.267664	1.433256		-4.7	20
1,1,2,2-Tetrachloroethane	A	100.0	85.88	0.7304341	0.6273252	0.3	-14.1	20
Tetrachloroethene	A	100.0	98.62	0.4857377	0.4790437		-1.4	20
Toluene	A	100.0	92.98	1.224704	1.138726		-7.0	20
1,2,3-Trichlorobenzene	A	100.0	100.5	0.5237865	0.5264961		0.5	20
1,2,4-Trichlorobenzene	A	100.0	103.7	0.5658708	0.5867834		3.7	20
1,1,2-Trichloroethane	A	100.0	87.92	0.4368136	0.384061		-12.1	20
1,1,1-Trichloroethane	A	100.0	102.4	0.2892507	0.2962224		2.4	20
Trichloroethene	A	100.0	98.96	0.2283571	0.2259872		-1.0	20
Trichlorofluoromethane	A	100.0	100.6	0.3407154	0.3426829		0.6	20
1,1,2-Trichloro-1,2,2-trifluoroethane	A	100.0	99.36	0.1885558	0.1873507		-0.6	20
Vinyl chloride	Q	100.0	101.3	0.3846476	0.3417211		1.3	20
Xylenes (total)	A	300.0	322.9	1.567997	1.688379		7.7	20
Bromofluorobenzene	A	30.00	29.98	0.808585	0.8080231		-0.07	20
Dibromofluoromethane	A	30.00	30.36	0.2669913	0.2701901		1.2	20
1,2-Dichloroethane-d4	A	30.00	28.67	5.572965E-02	5.326121E-02		-4.4	20
Toluene-d8	A	30.00	27.49	2.163528	1.982388		-8.4	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Lab File ID: SEQ-TUN1.D

Injection Date: 06/16/10

Instrument ID: MS-BNA4

Injection Time: 17:15

Sequence: 0F16801

Lab Sample ID: 0F16801-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30 - 60% of 198	38.9	PASS
68	Less than 2% of 69	1.65	PASS
69	Less than 200% of 198	39	PASS
70	Less than 2% of 69	0.484	PASS
127	40 - 60% of 198	50.3	PASS
197	Less than 1% of 198	0	PASS
198	Base peak, 100% relative abundance	100	PASS
199	5 - 9% of 198	6.63	PASS
275	10 - 30% of 198	28	PASS
365	1 - 200% of 198	4.15	PASS
441	0.001 - 100% of 443	84.3	PASS
442	40 - 200% of 198	139	PASS
443	17 - 23% of 442	19.9	PASS

ANALYSIS SEQUENCE SUMMARY

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Sequence: 0F16801

Instrument: MS-BNA4

Calibration: 0168002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	0F16801-TUN1	SEQ-TUN1.D	06/16/10 17:15
Cal Standard	0F16801-CAL1	SEQ-CAL1.D	06/16/10 17:32
Cal Standard	0F16801-CAL2	SEQ-CAL2.D	06/16/10 18:07
Cal Standard	0F16801-CAL3	SEQ-CAL3.D	06/16/10 18:41
Cal Standard	0F16801-CAL4	SEQ-CAL4.D	06/16/10 19:15
Cal Standard	0F16801-CAL5	SEQ-CAL5.D	06/16/10 19:49
Cal Standard	0F16801-CAL6	SEQ-CAL6.D	06/16/10 20:24
Cal Standard	0F16801-CAL7	SEQ-CAL7.D	06/16/10 20:58
Cal Standard	0F16801-CAL8	SEQ-CAL8.D	06/16/10 21:32
Cal Standard	0F16801-CAL9	SEQ-CAL9.D	06/16/10 22:06
Cal Standard	0F16801-CALA	SEQ-CALA.D	06/16/10 22:40
Cal Standard	0F16801-CALB	SEQ-CALB.D	06/16/10 23:15
Initial Cal Check	0F16801-ICV1	SEQ-ICV1.D	06/16/10 23:49

INITIAL CALIBRATION DATA
SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0168002

Instrument: MS-BNA4

Matrix: Water

Calibration Date: 6/16/2010 6:56:21AM

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/mL	RF	ug/mL	RF	ug/mL	RF	ug/mL	RF	ug/mL	RF	ug/mL	RF
Acenaphthene	0.05	0.7556015	0.1	0.6830116	0.25	0.6767092	0.5	0.6719937	1	0.7589151	2	0.7012635
Acenaphthylene	0.05	0.9342985	0.1	0.9344103	0.25	0.997953	0.5	0.9719652	1	1.102716	2	1.070352
Anthracene	0.05	0.9966219	0.1	1.008099	0.25	0.9716746	0.5	0.9422452	1	1.091277	2	1.031591
Benzo(a)anthracene	0.05	0.9194071	0.1	0.891342	0.25	0.876871	0.5	0.7609904	1	0.8930523	2	0.8462305
Benzo(a)pyrene	0.05	1.068261	0.1	0.9464577	0.25	0.9223266	0.5	0.9072162	1	1.052855	2	0.9990917
Benzo(b)fluoranthene	0.05	1.140509	0.1	1.145752	0.25	1.042005	0.5	1.061189	1	1.290525	2	1.22068
Benzo(g,h,i)perylene	0.05	1.073771	0.1	1.186395	0.25	1.089882	0.5	0.9870898	1	1.128469	2	1.082718
Benzo(k)fluoranthene	0.05	1.245054	0.1	0.8601019	0.25	0.994405	0.5	0.980802	1	1.118929	2	1.005763
Chrysene	0.05	1.086936	0.1	0.8648714	0.25	0.8825566	0.5	0.836357	1	1.006096	2	0.8925457
Dibenz(a,h)anthracene	0.05	0.8463122	0.1	0.6445962	0.25	0.8849446	0.5	0.832463	1	0.9822108	2	0.9979985
Fluoranthene	0.05	0.9798001	0.1	1.043726	0.25	0.9630239	0.5	0.9847527	1	1.098773	2	1.025953
Fluorene	0.05	0.6508101	0.1	0.6541087	0.25	0.6482274	0.5	0.6672918	1	0.7355272	2	0.6924678
2-Fluorobiphenyl	0.05	0.4715615	0.1	0.5198958	0.25	0.5735271	0.5	0.6608232	1	0.7512582	2	0.7375526
2-Fluorophenol	0.1		0.2		0.5		1		2		4	
Indeno(1,2,3-cd)pyrene	0.05	1.229747	0.1	1.278283	0.25	0.8593544	0.5	0.8745788	1	1.008959	2	0.9721472
1-Methylnaphthalene	0.05	0.4883833	0.1	0.610468	0.25	0.5962419	0.5	0.5912321	1	0.6434021	2	0.6264588
2-Methylnaphthalene	0.05	0.5963461	0.1	0.5954442	0.25	0.6068239	0.5	0.6051205	1	0.6907296	2	0.6905377
Naphthalene	0.05	0.8915546	0.1	0.9112307	0.25	0.860141	0.5	0.9496243	1	1.01166	2	1.013314
Nitrobenzene-d5	0.05		0.1		0.25		0.5		1		2	
Phenanthrene	0.05	0.879283	0.1	0.9874945	0.25	0.9552982	0.5	0.9526819	1	1.070069	2	1.016213
Phenol-d6	0.1		0.2		0.5		1		2		4	
Pyrene	0.05	1.118787	0.1	1.146103	0.25	1.018192	0.5	1.003656	1	1.13084	2	1.070042
Terphenyl-d14	0.05	0.8199931	0.1	0.7041165	0.25	0.6721935	0.5	0.6714909	1	0.7679648	2	0.7472203
2,4,6-Tribromophenol	0.1		0.2	7.672881E-02	0.5	0.0833373	1	0.1014513	2	0.1220496	4	0.1212906
Acenaphthene-d10	1		1		1		1		1		1	
Chrysene-d12	1		1		1		1		1		1	

INITIAL CALIBRATION DATA (Continued)

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0168002

Instrument: MS-BNA4

Matrix: Water

Calibration Date: 6/16/2010 6:56:21AM

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/mL	RF	ug/mL	RF								
Acenaphthene	5	0.6991548	10	0.6843157	20	0.6809107	40	0.6586902	50	0.6543729		
Accnaphthylene	5	1.076275	10	1.070941	20	1.067114	40	1.026007	50	1.005941		
Anthracene	5	1.038091	10	1.036316	20	1.026143	40	0.9750479	50	0.9743981		
Benzo(a)anthracene	5	0.8852177	10	0.9518021	20	0.9486512	40	0.9427277	50	0.9326279		
Benzo(a)pyrene	5	1.018936	10	1.041784	20	1.029623	40	0.9992045	50	1.00639		
Benzo(b)fluoranthene	5	1.155985	10	1.357773	20	1.238677	40	1.333647	50	1.401279		
Benzo(g,h,i)perylene	5	1.049329	10	1.057156	20	1.010339	40	1.000391	50	0.9739736		
Benzo(k)fluoranthene	5	1.059045	10	1.024066	20	0.9904429	40	0.8890253	50	0.9286138		
Chrysene	5	0.8795247	10	0.8909541	20	0.8596117	40	0.8316663	50	0.8150146		
Dibenz(a,h)anthracene	5	0.9888526	10	1.022961	20	1.016093	40	0.9938821	50	0.9609612		
Fluoranthene	5	1.038178	10	1.048238	20	1.048928	40	1.023167	50	1.019537		
Fluorene	5	0.6999751	10	0.6954053	20	0.6908239	40	0.6820143	50	0.6722215		
2-Fluorobiphenyl	5	0.7567553	10	0.7486812	20	0.737476	40	0.7167209	50	0.7015087		
2-Fluorophenol	10		20		40		80		100			
Indeno(1,2,3-cd)pyrene	5	1.022357	10	1.070198	20	1.062625	40	1.088234	50	1.066071		
1-Methylnaphthalene	5	0.6188008	10	0.6135672	20	0.6220523	40	0.5906234	50	0.5830044		
2-Methylnaphthalene	5	0.7126957	10	0.7088859	20	0.7063849	40	0.6881873	50	0.6710611		
Naphthalene	5	1.044291	10	1.042804	20	1.049677	40	1.01377	50	0.996332		
Nitrobenzene-d5	5		10		20		40		50			
Phenanthrene	5	1.027347	10	1.02139	20	1.020412	40	1.008727	50	1.008673		
Phenol-d6	10		20		40		80		100			
Pyrene	5	1.090266	10	1.089001	20	1.072026	40	1.048486	50	1.044822		
Terphenyl-d14	5	0.7579365	10	0.7756626	20	0.7708472	40	0.749405	50	0.7471892		
2,4,6-Tribromophenol	10	0.1347577	20	0.1386691	40	0.1436654	80	0.1487924	100	0.1465228		
Acenaphthene-d10	1		1		1		1		1			
Chrysene-d12	1		1		1		1		1			

INITIAL CALIBRATION DATA (Continued)

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0168002

Instrument: MS-BNA4

Matrix: Water

Calibration Date: 6/16/2010 6:56:21AM

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Acenaphthene	0.6931763	5.011307	9.199091	0.1054295			CCC (30)	
Acenaphthylene	1.023452	5.774355	8.816454	0.1343602			15	
Anthracene	1.008319	4.150503	13.08673	0.1043478			15	
Benzo(a)anthracene	0.8953563	6.235673	20.52291	8.045117E-02	0.9999		0.995	
Benzo(a)pyrene	0.999286	5.293468	24.57773	5.164396E-02		0.9999217	CCC (30)	
Benzo(b)fluoranthene	1.217093	9.81914	23.78955	9.500226E-02	0.9981383		0.995	
Benzo(g,h,i)perylene	1.058138	6.057358	26.93064	5.716836E-02			15	
Benzo(k)fluoranthene	1.00875	10.62737	23.87136	8.949222E-02			15	
Chrysene	0.8951031	9.04898	20.61927	8.279086E-02			15	
Dibenz(a,h)anthracene	0.9246614	12.40618	26.54882	6.045874E-02		0.9998728	0.99	
Fluoranthene	1.024916	3.730315	16.32782	7.529205E-02			CCC (30)	
Fluorene	0.6808066	3.81422	10.43382	0.1141718			15	
2-Fluorobiphenyl	0.6705237	15.20244	7.763182	0.1142792		0.9999878	0.99	
2-Fluorophenol							15	
Indeno(1,2,3-cd)pyrene	1.048414	12.15177	26.49373	5.445084E-02	0.9998332		0.995	
1-Methylnaphthalene	0.5985668	6.811024	7.269909	0.1128566			15	
2-Methylnaphthalene	0.6611106	7.434439	7.109091	0.1060224			15	
Naphthalene	0.9803999	6.788174	6.093273	0.1277415			15	
Nitrobenzene-d5							15	
Phenanthrene	0.9952353	5.090058	12.94136	9.897153E-02			15	
Phcnol-d6							15	
Pyrene	1.075656	4.207149	16.95136	8.442505E-02			15	
Terphenyl-d14	0.7440018	6.058961	17.62673	5.588772E-02			15	
2,4,6-Tribromophenol	0.1217265	21.55419	11.0635	0.1612304	0.9997806		0.995	
Acenaphthene-d10							15	
Chrysene-d12							15	

INITIAL CALIBRATION CHECK

SW8270C

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>CTO102_001</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>NAS Cecil Field CTO102</u>
Instrument ID: <u>MS-BNA4</u>	Calibration: <u>0168002</u>
Lab File ID: <u>SEQ-ICV1.D</u>	Calibration Date: <u>06/16/10 06:56</u>
Sequence: <u>0F16801</u>	Injection Date: <u>06/16/10</u>
Lab Sample ID: <u>0F16801-ICV1</u>	Injection Time: <u>23:49</u>

COMPOUND	TYPE	CONC. (ug/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	ICV	ICAL	ICV	MIN (#)	ICV	LIMIT (#)
Naphthalene	A	5.000	5.277	0.9803999	1.034668		5.5	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Lab File ID: SEQ-TUN1.D

Injection Date: 06/19/10

Instrument ID: MS-BNA4

Injection Time: 18:28

Sequence: 0F17218

Lab Sample ID: 0F17218-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30 - 60% of 198	36.3	PASS
68	Less than 2% of 69	1.62	PASS
69	Less than 200% of 198	38.6	PASS
70	Less than 2% of 69	0.476	PASS
127	40 - 60% of 198	49.3	PASS
197	Less than 1% of 198	0	PASS
198	Base peak, 100% relative abundance	100	PASS
199	5 - 9% of 198	6.74	PASS
275	10 - 30% of 198	28.9	PASS
365	1 - 200% of 198	4.01	PASS
441	0.001 - 100% of 443	83.5	PASS
442	40 - 200% of 198	143	PASS
443	17 - 23% of 442	19.7	PASS

ANALYSIS SEQUENCE SUMMARY

SW8270C

Laboratory: Empirical Laboratories, LLC
 Client: Tetra Tech NUS, Inc. (T010)
 Sequence: 0F17218
 Calibration: 0168002

SDG: CTO102_001
 Project: NAS Cecil Field CTO102
 Instrument: MS-BNA4

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	0F17218-TUN1	SEQ-TUN1.D	06/19/10 18:28
Calibration Check	0F17218-CCV1	SEQ-CCV1.D	06/19/10 19:22
LCS	0F03027-BS1	F03027L1.D	06/19/10 20:04
LCS Dup	0F03027-BSD1	F03027L2.D	06/19/10 20:38
Blank	0F03027-BLK1	F03027B1.D	06/19/10 21:12
CEF-043-40A-20100601	1006024-01	0602401.D	06/19/10 21:46
CEF-043-23-20100601	1006024-02	0602402.D	06/19/10 22:20
CEF-043-17-20100602	1006024-04	0602404.D	06/19/10 22:55
CEF-043-18-20100602	1006024-05	0602405.D	06/19/10 23:29
CEF-043-07N-20100602	1006024-06	0602406.D	06/20/10 00:03
CEF-043-06N-20100602	1006024-07	0602407.D	06/20/10 00:38
CEF-043-08N-20100602	1006024-08	0602408.D	06/20/10 01:12
CEF-043-09N-20100602	1006024-09	0602409.D	06/20/10 01:46

CONTINUING CALIBRATION CHECK

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Instrument ID: MS-BNA4

Calibration: 0168002

Lab File ID: SEQ-CCV1.D

Calibration Date: 06/16/10 06:56

Sequence: 0F17218

Injection Date: 06/19/10

Lab Sample ID: 0F17218-CCV1

Injection Time: 19:22

COMPOUND	TYPE	CONC. (ug/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Naphthalene	A	5.000	4.572	0.9803999	0.8964456		-8.6	20
2-Fluorobiphenyl	Q	5.000	4.385	0.6705237	0.6625058		-12.3	20
Terphenyl-d14	A	5.000	4.929	0.7440018	0.7334584		-1.4	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

ANALYSIS SEQUENCE SUMMARY
FLPRO

Laboratory: Empirical Laboratories, LLC
 Client: Tetra Tech NUS, Inc. (T010)
 Sequence: 0F17418
 Calibration: 0174001

SDG: CTO102_001
 Project: NAS Cecil Field CTO102
 Instrument: GL-GCFID2

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	0F17418-CAL1	035F4001.D	06/22/10 21:33
Cal Standard	0F17418-CAL2	036F4101.D	06/22/10 22:12
Cal Standard	0F17418-CAL3	037F4201.D	06/22/10 22:52
Cal Standard	0F17418-CAL4	038F4301.D	06/23/10 09:42
Cal Standard	0F17418-CAL5	039F4401.D	06/23/10 10:22
Cal Standard	0F17418-CAL6	040F4501.D	06/23/10 11:01
Initial Cal Check	0F17418-ICV1	041F4601.D	06/23/10 11:41

INITIAL CALIBRATION DATA
FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0174001

Instrument: GL-GCFID2

Matrix: Water

Calibration Date: 6/21/2010 12:00:00AM

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	mg/L	RF	mg/L	RF								
Petroleum Range Organics	8500	2510.032	5950	2345.219	4250	2453.245	2550	2325.624	850	2514.546	85	2549.4
2-Fluorobiphenyl	25	3831.12	25	3652.16	25	3663.6	25	3360	25	3141.48	25	2954.96
o-Terphenyl	25	4162.48	25	3969.4	25	4157.76	25	3976.64	25	4135.84	25	4031.04

INITIAL CALIBRATION DATA (Continued)

FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0174001

Instrument: GL-GCFID2

Matrix: Water

Calibration Date: 6/21/2010 12:00:00AM

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Petroleum Range Organics	2449.678	3.834143	2.047	2.351045E-02			20	
2-Fluorobiphenyl	3433.887	9.905918	10.01933	0.2754195			20	
o-Terphenyl	4072.193	2.221399	15.6985	6.371227E-02			20	

INITIAL CALIBRATION CHECK

FLPRO

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>CTO102_001</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>NAS Cecil Field CTO102</u>
Instrument ID: <u>GL-GCFID2</u>	Calibration: <u>0174001</u>
Lab File ID: <u>041F4601.D</u>	Calibration Date: <u>06/21/10 00:00</u>
Sequence: <u>0F17418</u>	Injection Date: <u>06/23/10</u>
Lab Sample ID: <u>0F17418-ICV1</u>	Injection Time: <u>11:41</u>

COMPOUND	TYPE	CONC. (mg/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	ICV	ICAL	ICV	MIN (#)	ICV	LIMIT (#)
Petroleum Range Organics	A	4000	4371	2449.678	2676.818		9.3	25

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

ANALYSIS SEQUENCE SUMMARY

FLPRO

Laboratory: Empirical Laboratories, LLC
 Client: Tetra Tech NUS, Inc. (T010)
 Sequence: 0F17507
 Calibration: 0174001

SDG: CTO102_001
 Project: NAS Cecil Field CTO102
 Instrument: GL-GCFID2

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Calibration Check	0F17507-CCV1	002F0201.D	06/23/10 18:58
Blank	0F03026-BLK1	003F0301.D	06/23/10 19:37
LCS	0F03026-BS1	004F0401.D	06/23/10 20:16
LCS Dup	0F03026-BSD1	005F0501.D	06/23/10 20:56
CEF-043-40A-20100601	1006024-01	006F0601.D	06/23/10 21:35
CEF-043-23-20100601	1006024-02	007F0701.D	06/23/10 22:14
CEF-043-17-20100602	1006024-04	008F0801.D	06/23/10 22:54
CEF-043-18-20100602	1006024-05	009F0901.D	06/23/10 23:33
CEF-043-07N-20100602	1006024-06	010F1001.D	06/24/10 00:13
CEF-043-06N-20100602	1006024-07	011F1101.D	06/24/10 00:52
CEF-043-08N-20100602	1006024-08	012F1201.D	06/24/10 01:32
CEF-043-09N-20100602	1006024-09	013F1301.D	06/24/10 02:12
Calibration Check	0F17507-CCV2	014F1401.D	06/24/10 02:51

CONTINUING CALIBRATION CHECK

FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Instrument ID: GL-GCFID2

Calibration: 0174001

Lab File ID: 002F0201.D

Calibration Date: 06/21/10 00:00

Sequence: 0F17507

Injection Date: 06/23/10

Lab Sample ID: 0F17507-CCV1

Injection Time: 18:58

COMPOUND	TYPE	CONC. (mg/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Petroleum Range Organics	A	4250	3919	2449.678	2259.131		-7.8	25
2-Fluorobiphenyl	A	25.00	22.97	3433.887	3155		-8.1	25
o-Terphenyl	A	25.00	23.71	4072.193	3861.44		-5.2	25

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

CONTINUING CALIBRATION CHECK

FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_001

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Instrument ID: GL-GCFID2

Calibration: 0174001

Lab File ID: 014F1401.D

Calibration Date: 06/21/10 00:00

Sequence: 0F17507

Injection Date: 06/24/10

Lab Sample ID: 0F17507-CCV2

Injection Time: 02:51

COMPOUND	TYPE	CONC. (mg/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Petroleum Range Organics	A	4250	4362	2449.678	2514.212		2.6	25
2-Fluorobiphenyl	A	25.00	24.00	3433.887	3297.24		-4.0	25
o-Terphenyl	A	25.00	25.09	4072.193	4086.68		0.4	25

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

To: Rob Simcik
Date: August 19, 2010
Page: 2/3

VOA:

The continuing calibration standard analyzed on instrument MS-VOA3 on 6/7/10 at 16:50 had a percent difference >25% for chloromethane. All samples in the SDG were affected. Nondetected results reported for chloromethane were qualified as estimated (UJ).

EXECUTIVE SUMMARY

Laboratory Performance Issues: The CCV for chloromethane was >25% quality control limit.

Other Factors Affecting Data Quality:

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99) and the Department of Defense (DoD) Quality Systems Manual (QSM) (January 2006). The text of this report has been formulated to address only those problem areas affecting data quality.



Tetra Tech NUS
Danielle Baughman
Project Engineer



TetraTech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

- Appendix A – Qualified Analytical Results
- Appendix B – Results as Reported by the Laboratory
- 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 $r < 0.995$ / ICP PDS Recovery Noncompliance
- 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 ($< 2 \times$ IDL for inorganics and $<$ CRQL for organics)
- Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DOT 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: 01264 SDG: CTO102_002 FRACTION: OV MEDIA: WATER	NSAMPLE	CEF-043-02N-20100603			CEF-043-04N-20100603			CEF-043-05N-20100603			CEF-043-DUP01-20100603		
	LAB_ID	1006034-01			1006034-03			1006034-04			1006034-02		
	SAMP_DATE	6/3/2010			6/3/2010			6/3/2010			6/3/2010		
	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-043-04N-20100603		
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
1,1,1-TRICHLOROETHANE	0.29	U		0.29	U		0.29	U		0.29	U		
1,1,2,2-TETRACHLOROETHANE	0.23	U		0.23	U		0.23	U		0.23	U		
1,1,2-TRICHLOROETHANE	0.26	U		0.26	U		0.26	U		0.26	U		
1,1,2-TRICHLOROTRIFLUOROETHANE	0.33	U		0.33	U		0.33	U		0.33	U		
1,1-DICHLOROETHANE	0.24	U		0.24	U		0.24	U		0.24	U		
1,1-DICHLOROETHENE	0.28	U		0.28	U		0.28	U		0.28	U		
1,2,3-TRICHLOROBENZENE	0.43	U		0.43	U		0.43	U		0.43	U		
1,2,4-TRICHLOROBENZENE	0.28	U		0.28	U		0.28	U		0.28	U		
1,2-DIBROMO-3-CHLOROPROPANE	0.55	U		0.55	U		0.55	U		0.55	U		
1,2-DIBROMOETHANE	0.24	U		0.24	U		0.24	U		0.24	U		
1,2-DICHLOROBENZENE	0.16	U		0.16	U		0.16	U		0.16	U		
1,2-DICHLOROETHANE	0.22	U		0.22	U		0.22	U		0.22	U		
1,2-DICHLOROPROPANE	0.27	U		0.27	U		0.27	U		0.27	U		
1,3-DICHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
1,4-DICHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
2-BUTANONE	1.6	U		1.6	U		1.6	U		1.6	U		
2-HEXANONE	0.5	U		0.5	U		0.5	U		0.5	U		
4-METHYL-2-PENTANONE	0.5	U		0.5	U		0.5	U		0.5	U		
ACETONE	7.78			8.49			6.85			5.96			
BENZENE	0.14	U		0.14	U		0.14	U		0.14	U		
BROMOCHLOROMETHANE	0.31	U		0.31	U		0.31	U		0.31	U		
BROMODICHLOROMETHANE	0.18	U		0.18	U		0.18	U		0.18	U		
BROMOFORM	0.5	U		0.5	U		0.5	U		0.5	U		
BROMOMETHANE	0.32	U		0.32	U		0.32	U		0.32	U		
CARBON DISULFIDE	0.26	U		0.26	U		0.26	U		0.26	U		
CARBON TETRACHLORIDE	0.24	U		0.24	U		0.24	U		0.24	U		
CHLOROBENZENE	0.21	U		0.21	U		0.21	U		0.21	U		
CHLORODIBROMOMETHANE	0.18	U		0.18	U		0.18	U		0.18	U		
CHLOROETHANE	0.27	U		0.27	U		0.27	U		0.27	U		
CHLOROFORM	0.23	U		0.23	U		0.23	U		0.23	U		
CHLOROMETHANE	0.36	UJ	C	0.36	UJ	C	0.36	UJ	C	0.36	UJ	C	
CIS-1,2-DICHLOROETHENE	0.45	U		0.45	U		0.45	U		0.45	U		
CIS-1,3-DICHLOROPROPENE	0.15	U		0.15	U		0.15	U		0.15	U		
CYCLOHEXANE	0.483			0.2	U		0.2	U		0.2	U		
DICHLORODIFLUOROMETHANE	0.26	U		0.26	U		0.26	U		0.26	U		

PROJ_NO: 01264 SDG: CTO102_002 FRACTION: OV MEDIA: WATER	NSAMPLE	Trip Blank-20100603		
	LAB_ID	1006034-05		
	SAMP_DATE	6/3/2010		
	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER	RESULT	VQL	QLCD	
1,1,1-TRICHLOROETHANE	0.29	U		
1,1,1,2-TETRACHLOROETHANE	0.23	U		
1,1,2-TRICHLOROETHANE	0.26	U		
1,1,2-TRICHLOROTRIFLUOROETHANE	0.33	U		
1,1-DICHLOROETHANE	0.24	U		
1,1-DICHLOROETHENE	0.28	U		
1,2,3-TRICHLOROBENZENE	0.43	U		
1,2,4-TRICHLOROBENZENE	0.28	U		
1,2-DIBROMO-3-CHLOROPROPANE	0.55	U		
1,2-DIBROMOETHANE	0.24	U		
1,2-DICHLOROBENZENE	0.16	U		
1,2-DICHLOROETHANE	0.22	U		
1,2-DICHLOROPROPANE	0.27	U		
1,3-DICHLOROBENZENE	0.25	U		
1,4-DICHLOROBENZENE	0.25	U		
2-BUTANONE	1.6	U		
2-HEXANONE	0.5	U		
4-METHYL-2-PENTANONE	0.5	U		
ACETONE	2.83			
BENZENE	0.14	U		
BROMOCHLOROMETHANE	0.31	U		
BROMODICHLOROMETHANE	0.18	U		
BROMOFORM	0.5	U		
BROMOMETHANE	0.32	U		
CARBON DISULFIDE	0.26	U		
CARBON TETRACHLORIDE	0.24	U		
CHLOROBENZENE	0.21	U		
CHLORODIBROMOMETHANE	0.18	U		
CHLOROETHANE	0.27	U		
CHLOROFORM	2.47			
CHLOROMETHANE	0.36	UJ	C	
CIS-1,2-DICHLOROETHENE	0.45	U		
CIS-1,3-DICHLOROPROPENE	0.15	U		
CYCLOHEXANE	0.2	U		
DICHLORODIFLUOROMETHANE	0.26	U		

PROJ_NO: 01264 SDG: CTO102_002 FRACTION: OV MEDIA: WATER	NSAMPLE	CEF-043-02N-20100603			CEF-043-04N-20100603			CEF-043-05N-20100603			CEF-043-DUP01-20100603		
	LAB_ID	1006034-01			1006034-03			1006034-04			1006034-02		
	SAMP_DATE	6/3/2010			6/3/2010			6/3/2010			6/3/2010		
	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-043-04N-20100603		
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
ETHYLBENZENE	64.8			0.15	U		0.15	U		0.15	U		
ISOPROPYLBENZENE	9.68			2.02			0.15	U		0.686			
METHYL ACETATE	0.59	U		0.59	U		0.59	U		0.59	U		
METHYL CYCLOHEXANE	1.86			0.279			0.18	U		0.18	U		
METHYL TERT-BUTYL ETHER	0.25	U		0.25	U		0.25	U		0.25	U		
METHYLENE CHLORIDE	0.27	U		0.27	U		0.27	U		0.27	U		
STYRENE	2.05			0.24	U		0.24	U		0.24	U		
TETRACHLOROETHENE	0.17	U		0.17	U		0.17	U		0.17	U		
TOLUENE	1.3			0.19	U		0.19	U		0.19	U		
TOTAL XYLENES	114			0.22	U		0.22	U		0.22	U		
TRANS-1,2-DICHLOROETHENE	0.53	U		0.53	U		0.53	U		0.53	U		
TRANS-1,3-DICHLOROPROPENE	0.17	U		0.17	U		0.17	U		0.17	U		
TRICHLOROETHENE	0.5	U		0.5	U		0.5	U		0.5	U		
TRICHLOROFLUOROMETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
VINYL CHLORIDE	0.2	U		0.2	U		0.2	U		0.2	U		

PROJ_NO: 01264 SDG: CTO102_002 FRACTION: OV MEDIA: WATER	NSAMPLE	Trip Blank-20100603		
	LAB_ID	1006034-05		
	SAMP_DATE	6/3/2010		
	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
DUP_OF				
PARAMETER	RESULT	VQL	QLCD	
ETHYLBENZENE	0.15 U			
ISOPROPYLBENZENE	0.15 U			
METHYL ACETATE	0.59 U			
METHYL CYCLOHEXANE	0.18 U			
METHYL TERT-BUTYL ETHER	0.25 U			
METHYLENE CHLORIDE	0.27 U			
STYRENE	0.24 U			
TETRACHLOROETHENE	0.17 U			
TOLUENE	0.19 U			
TOTAL XYLENES	0.22 U			
TRANS-1,2-DICHLOROETHENE	0.53 U			
TRANS-1,3-DICHLOROPROPENE	0.17 U			
TRICHLOROETHENE	0.5 U			
TRICHLOROFLUOROMETHANE	0.25 U			
VINYL CHLORIDE	0.2 U			

PROJ_NO: 01264 SDG: CTO102_002 FRACTION: PAH MEDIA: WATER	NSAMPLE	CEF-043-02N-20100603			CEF-043-04N-20100603			CEF-043-05N-20100603			CEF-043-DUP01-20100603		
	LAB_ID	1006034-01			1006034-03			1006034-04			1006034-02		
	SAMP_DATE	6/3/2010			6/3/2010			6/3/2010			6/3/2010		
	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-043-04N-20100603		
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
NAPHTHALENE	27.3			0.836			0.0185	U		0.654			

PROJ_NO: 01264 SDG: CTO102_002 FRACTION: PET MEDIA: WATER	NSAMPLE	CEF-043-02N-20100603			CEF-043-04N-20100603			CEF-043-05N-20100603			CEF-043-DUP01-20100603		
	LAB_ID	1006034-01			1006034-03			1006034-04			1006034-02		
	SAMP_DATE	6/3/2010			6/3/2010			6/3/2010			6/3/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF										CEF-043-04N-20100603		
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
TPH (C08-C40)	8.72			1.04			0.159	U		0.938			

APPENDIX B
RESULTS AS REPORTED BY THE LABORATORY

ANALYSIS DATA SHEET

CEF-043-DUP01-20100603

Laboratory: Empirical Laboratories, LLC SDG: CTO102_002
 Client: Tetra Tech NUS, Inc. (T010) Project: NAS Cecil Field CTO102
 Matrix: Ground Water Laboratory ID: 1006034-02 File ID: 0603402.D
 Sampled: 06/03/10 00:00 Prepared: 06/07/10 13:22 Analyzed: 06/07/10 20:53
 Solids: Preparation: 5030B Dilution: 1
 Batch: 0F07021 Sequence: 0F16109 Calibration: 0153002 Instrument: MS-VOA3

CAS NO.	COMPOUND	CONC. (ug/L)	MDL	MRL	Q
67-64-1	Acetone	5.96	1.80	10.0	I
71-43-2	Benzene		0.140	1.00	U
74-97-5	Bromochloromethane		0.310	2.00	U
75-27-4	Bromodichloromethane		0.180	1.00	U
75-25-2	Bromoform		0.500	2.00	U
74-83-9	Bromomethane		0.320	2.00	U
78-93-3	2-Butanone		1.60	10.0	U
75-15-0	Carbon disulfide		0.260	1.00	U
56-23-5	Carbon tetrachloride		0.240	1.00	U
108-90-7	Chlorobenzene		0.210	1.00	U
75-00-3	Chloroethane		0.270	2.00	U
67-66-3	Chloroform		0.230	1.00	U
74-87-3	Chloromethane		0.360	2.00	X, U
110-82-7	Cyclohexane		0.200	2.00	X, U
124-48-1	Dibromochloromethane		0.180	1.00	U
96-12-8	1,2-Dibromo-3-chloropropane		0.550	2.00	U
106-93-4	1,2-Dibromoethane (EDB)		0.240	1.00	U
95-50-1	1,2-Dichlorobenzene		0.160	1.00	U
541-73-1	1,3-Dichlorobenzene		0.250	1.00	U
106-46-7	1,4-Dichlorobenzene		0.250	1.00	U
75-71-8	Dichlorodifluoromethane		0.260	2.00	U
75-34-3	1,1-Dichloroethane		0.240	1.00	U
107-06-2	1,2-Dichloroethane		0.220	1.00	U
75-35-4	1,1-Dichloroethene		0.280	1.00	U
156-59-2	cis-1,2-Dichloroethene		0.450	2.00	U
156-60-5	trans-1,2-Dichloroethene		0.530	2.00	U
78-87-5	1,2-Dichloropropane		0.270	1.00	U
10061-01-5	cis-1,3-Dichloropropene		0.150	1.00	U
10061-02-6	trans-1,3-Dichloropropene		0.170	1.00	U
100-41-4	Ethylbenzene		0.150	1.00	U
591-78-6	2-Hexanone		0.500	5.00	U
98-82-8	Isopropylbenzene	0.686	0.150	1.00	Q, I
75-09-2	Methylene chloride		0.270	2.00	U
79-20-9	Methyl Acetate		0.590	2.00	U
108-87-2	Methylcyclohexane		0.180	1.00	U
108-10-1	4-Methyl-2-pentanone		0.500	5.00	U
1634-04-4	Methyl t-Butyl Ether		0.250	1.00	U
100-42-5	Styrene		0.240	1.00	U
79-34-5	1,1,2,2-Tetrachloroethane		0.230	1.00	U
127-18-4	Tetrachloroethene		0.170	1.00	U

APPENDIX C
SUPPORT DOCUMENTATION

Sample Delivery Group Case Narrative

Receipt Information

The samples were received within the preservation guidelines for the associated methods. The information associated with sample receipt and the Sample Delivery Group (SDG) are included within section 4 of this package, which also provides information on the link between the client sample ID listed on the COC and laboratory's assigned unique sample ID or WorkOrder #. The sample is tracked through the laboratory for all analysis via the assigned WorkOrder #.

All samples that were received were analyzed and none of the samples were placed on hold without analyses. There were no subcontracted analyses for this SDG.

Changes to the Revision

This is an original submittal of the final report package.

Analytical Information

All samples were prepped (where applicable) and analyzed within the standard allowed holding times, unless noted within the exceptions listed below. The laboratory analyzed all samples within the program and method guidelines. The following information is provided specific to individual methods:

Chromatographic Flags for Manual Integration:

The following letters are used to denote manual integrations on the laboratory's raw data in association with chromatographic integrations:

- A:** The peak was manually integrated as it was not integrated in the original chromatogram.
- B:** The peak was manually integrated due to resolution or coelution issues in the original chromatogram.
- C:** The peak was manually integrated to correct the baseline from the original chromatogram.
- D:** The peak was manually integrated to identify the correct peak as the wrong peak was identified in the original chromatogram.
- E:** The peak was manually integrated to include the entire peak as the original chromatogram only integrated part of the peak.

SW8260B:

The continuing calibration standard failed criteria in 0F16109-CCV1 for Chloromethane, Cyclohexane. The blank spike failed criteria in batch 0F07021 for Isopropylbenzene. No additional anomalies or deviations are noted and the data are properly qualified.

SW8270C PAHs:

No anomalies or deviations are noted.

FLPRO:

The sample 1006034-04 failed criteria for surrogate 0-Terphenyl. No additional anomalies or deviations are noted and the data are properly qualified.

Data Qualifiers

As applicable and where required, the following general qualifiers are associated with the sample results. Additional qualifiers will be specified within the reporting sections of the data package or within the body of the Case Narrative.

Analytical Report Terms and Qualifiers

- MDL:** The method detection limit (MDL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. The MDL is determined from analysis of a sample containing the analyte in a given matrix.
- EQL:** The estimated quantitation limit (EQL), also known as Reporting Limit (**RL**), is defined as the estimated concentration above which quantitative results can be obtained with a specific degree of confidence. Empirical Laboratories defines the EQL to be at or near the lowest standard of the calibration curve.
- *:** A failing quality control criteria is associated with the reported result. **For Florida DEP reports this qualifier could be listed as "J3".**
- B:** The presence of a "B" to the right of an analytical value indicates that this compound was also detected in the method blank and the data should be interpreted with caution. One should consider the possibility that the correct sample result might be less than the reported result and, perhaps, zero. **For Florida DEP reports this qualifier is "V".**
- D:** When a sample (or sample extract) is rerun diluted because one of the compound concentrations exceeded the highest concentration range for the standard curve, all of the values obtained in the dilution run will be flagged with a "D".
- E:** The concentration for any compound found which exceeds the highest concentration level on the standard curve for that compound will be flagged with an "E". Usually the sample will be rerun at a dilution to quantitate the flagged compound. **For Florida DEP reports this qualifier is "L"**
- H1:** The result was analyzed outside of the EPA recommended holding time.
- H2:** The result was extracted outside of the EPA recommended holding time.
- J:** The presence of a "J" to the right of an analytical result indicates that the reported result is estimated. The mass spectral data pass the identification criteria showing that the compound is present, but the calculated result is less than the EQL. One should feel confident that the result is greater than zero and less than the EQL. **For Florida DEP reports this qualifier is "I".**
- M:** Indicates that the sample matrix interfered with the quantitation of the analyte.

In dual column analysis the result is reported from the column with the lower concentration. In metals, the qualifier indicates that the parameters MDL/RL has been raised.

- N:** The predigested spike recovery is not within control limits for the associated parameter. **For Florida DEP reports this qualifier could be listed as "J3".**
- P:** The associated numerical value is an estimated quantity. There is greater than a 40% difference between the two GC columns for the detected concentrations. The higher of the two values is reported unless matrix interference is obvious or for HPLC analysis where the primary column is reported.
- Q:** The RPD and/or percent recovery failed in the associated Blank Spike and/or Blank Spike Duplicate.
- R:** The RPD and/or percent recovery failed in the associated Matrix Spike and/or Matrix Spike Duplicate.
- S:** The Internal Standard failed criteria.
- U:** The presence of a "U" indicates that the analyte was analyzed for but was not detected or the concentration of the analyte quantitated below the DL.
- X:** The parameter shows a potential positive bias on a reported concentration due to an ICV or CCV exceeding the upper control limit on the high side.
- Y:** The parameter shows a potential negative bias on a reported concentration due to an ICV or CCV exceeding the lower control limit on the low side.

LIMS Definitions / Naming Conventions:

The following are general naming conventions that are used throughout the laboratory; however, on a method by method basis, there are additional QAQC items that are named in a consistent format.

- BLK:** LIMS assigns a unique identifier to the Method Blank by naming it as the letters BLK appended to the Batch ID. A Method Blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The Method Blank is used to assess for possible contamination during preparation and/or analysis steps. Method Blanks within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally.
- BS:** LIMS assigns a unique identifier to the Blank Spike by naming it as the letters BS appended to the Batch ID. The Blank Spike or Lab Control Sample is a controlled analyte-free matrix, which is spiked with known and verified concentrations of target analytes. Spiking concentrations can be referenced in

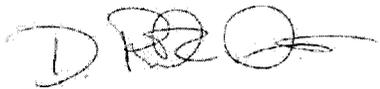
the method SOP. The BS is used to evaluate the viability of analytes taken through the entire prep (when applicable) and analytical process. Blank Spikes within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally. A duplicate Blank Spike will be designated as a BSD.

MS: The LIMS assigns each Client sample with a unique identifier. The Matrix Spike is designated with a MS at the end of the sample's unique identifier. The Matrix Spike sample is used to assess the effect of the sample matrix on the precision and accuracy of the results generated using the selected method. A duplicate Matrix Spike will be designated as a MSD.

IDs: The LIMS assigns each Client sample with a unique identifier. The letter "RE" may potentially be appended to the end of the LIMS Sample ID. And "RE" implies that the sample was either re-prepped, re-analyzed straight, or re-analyzed at a dilution. Subsequent re-analysis for the sample will be appended with a numerical value beginning with 1 that will increase incrementally. Eg: RE1, RE2, RE3, etc.

Statement of Data Authenticity:

I certify that, based upon my inquiry of those individuals immediately responsible for obtaining the information and to the best of my knowledge, 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 this Case Narrative, as verified by my signature below. During absences, Ms. Marcia K. McGinnity is authorized to sign this Statement of Data Authenticity.



Mr. Rick D. Davis
Laboratory Technical Director / VP Operations



PROJECT NO: <u>112601264</u>	FACILITY: <u>Cecil Field South Ford Farm</u>	PROJECT MANAGER <u>Rob Simcik</u>	PHONE NUMBER <u>412 921 8163</u>	LABORATORY NAME AND CONTACT: <u>Empirical Labs / Kim Kostzer</u>
SAMPLERS (SIGNATURE) 		FIELD OPERATIONS LEADER <u>Jeff Krone</u>	PHONE NUMBER <u>904 699 7473</u>	ADDRESS <u>621 Mainstream Dr Suite 270</u>
		CARRIER/WAYBILL NUMBER <u>Fedex Airbill 8660 1730 2540</u>	CITY, STATE <u>Nashville, TN 37228</u>	

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

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

PRESERVATIVE USED None

DATE YEAR	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	TYPE OF ANALYSIS	COMMENTS
<u>6/3</u>	<u>0944</u>	<u>CEF-043-02N-20100603</u>				<u>GW</u>	<u>G</u>	<u>1</u>	<u>TCL VOCs (8260) HCl</u>	<u>Cool to 4°C -01</u>
<u>6/3</u>	<u>0000</u>	<u>CEF-043-Dup 1-20100603</u>				<u>GW</u>	<u>G</u>	<u>1</u>	<u>Naphthalene (8370)</u>	<u>1006034 -02</u>
<u>6/3</u>	<u>1017</u>	<u>CEF-043-04N-20100603</u>				<u>GW</u>	<u>G</u>	<u>1</u>	<u>TRPH (FL PRO)</u>	<u>-03</u>
<u>6/3</u>	<u>1151</u>	<u>CEF-043-05N-20100603</u>				<u>GW</u>	<u>G</u>	<u>1</u>		<u>-04</u>
<u>6/3</u>		<u>Trip blank</u>				<u>QC</u>	<u>G</u>	<u>2</u>		<u>-05</u>

1. RELINQUISHED BY	DATE <u>6/3/10</u>	TIME <u>1500</u>	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE <u>6/4/10</u>	TIME <u>08:30</u>

COMMENTS: 4:29

HOLDTIME

SDG CTO102_002

<u>SORT</u>	<u>UNITS</u>	<u>NSAMPLE</u>	<u>LAB_ID</u>	<u>QC_TYPE</u>	<u>SAMP_DATE</u>	<u>EXTR_DATE</u>	<u>ANAL_DATE</u>	<u>SMP_EXTR</u>	<u>EXTR_ANL</u>	<u>SMP_ANL</u>
OV	UG/L	Trip Blank	1006034-05	NM	06/03/2010	06/07/2010	06/07/2010	4	0	4
OV	UG/L	CEF-043-DUP01-2010060	1006034-02	NM	06/03/2010	06/07/2010	06/07/2010	4	0	4
OV	UG/L	CEF-043-05N-20100603	1006034-04	NM	06/03/2010	06/07/2010	06/07/2010	4	0	4
OV	UG/L	CEF-043-04N-20100603	1006034-03	NM	06/03/2010	06/07/2010	06/07/2010	4	0	4
OV	UG/L	CEF-043-02N-20100603	1006034-01	NM	06/03/2010	06/07/2010	06/08/2010	4	1	5
SIM	UG/L	CEF-043-DUP01-2010060	1006034-02	NM	06/03/2010	06/09/2010	06/21/2010	6	12	18
SIM	UG/L	CEF-043-05N-20100603	1006034-04	NM	06/03/2010	06/09/2010	06/21/2010	6	12	18
SIM	UG/L	CEF-043-04N-20100603	1006034-03	NM	06/03/2010	06/09/2010	06/21/2010	6	12	18
SIM	UG/L	CEF-043-02N-20100603	1006034-01	NM	06/03/2010	06/09/2010	06/21/2010	6	12	18
TPH	MG/L	CEF-043-DUP01-2010060	1006034-02	NM	06/03/2010	06/09/2010	06/24/2010	6	15	21
TPH	MG/L	CEF-043-05N-20100603	1006034-04	NM	06/03/2010	06/09/2010	06/24/2010	6	15	21
TPH	MG/L	CEF-043-04N-20100603	1006034-03	NM	06/03/2010	06/09/2010	06/24/2010	6	15	21
TPH	MG/L	CEF-043-02N-20100603	1006034-01	NM	06/03/2010	06/09/2010	06/24/2010	6	15	21

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8260B

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>CTO102_002</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>NAS Cecil Field CTO102</u>
Lab File ID: <u>SEQ-TUN1.D</u>	Injection Date: <u>05/28/10</u>
Instrument ID: <u>MS-VOA3</u>	Injection Time: <u>13:21</u>
Sequence: <u>0F15305</u>	Lab Sample ID: <u>0F15305-TUN1</u>

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	23.3	PASS
75	30 - 60% of 95	52.3	PASS
95	Base peak, 100% relative abundance	100	PASS
96	5 - 9% of 95	6.7	PASS
173	Less than 2% of 174	1.28	PASS
174	50 - 200% of 95	63.6	PASS
175	5 - 9% of 174	8.16	PASS
176	95 - 101% of 174	98.5	PASS
177	5 - 9% of 176	8.35	PASS

ANALYSIS SEQUENCE SUMMARY

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Sequence: 0F15305

Instrument: MS-VOA3

Calibration: 0153002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	0F15305-TUN1	SEQ-TUN1.D	05/28/10 13:21
Cal Standard	0F15305-CAL1	SEQ-CAL1.D	05/28/10 13:51
Cal Standard	0F15305-CAL2	SEQ-CAL2.D	05/28/10 14:22
Cal Standard	0F15305-CAL3	SEQ-CAL3.D	05/28/10 14:52
Cal Standard	0F15305-CAL4	SEQ-CAL4.D	05/28/10 15:22
Cal Standard	0F15305-CAL5	SEQ-CAL5.D	05/28/10 15:52
Cal Standard	0F15305-CAL6	SEQ-CAL6.D	05/28/10 16:23
Cal Standard	0F15305-CAL7	SEQ-CAL7.D	05/28/10 16:53
Cal Standard	0F15305-CAL8	SEQ-CAL8.D	05/28/10 17:23
Cal Standard	0F15305-CAL9	SEQ-CAL9.D	05/28/10 17:53
Initial Cal Check	0F15305-ICV1	SEQ-ICV1.D	05/28/10 18:23
Cal Standard	0F15305-CALA	SEQ-CALA.D	05/28/10 18:54
Cal Standard	0F15305-CALB	SEQ-CALB.D	05/28/10 19:24
Cal Standard	0F15305-CALC	SEQ-CALC.D	05/28/10 19:54
Cal Standard	0F15305-CALD	SEQ-CALD.D	05/28/10 20:24
Cal Standard	0F15305-CALE	SEQ-CALE.D	05/28/10 20:54
Cal Standard	0F15305-CALF	SEQ-CALF.D	05/28/10 21:24
Cal Standard	0F15305-CALG	SEQ-CALG.D	05/28/10 21:54
Cal Standard	0F15305-CALH	SEQ-CALH.D	05/28/10 22:24
Cal Standard	0F15305-CALI	SEQ-CALI.D	05/28/10 22:55
Initial Cal Check	0F15305-ICV2	SEQ-ICV2.D	05/28/10 23:25

INITIAL CALIBRATION DATA

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0153002

Instrument: MS-VOA3

Matrix: Water

Calibration Date: 5/28/2010 1:06:49PM

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Acetone												
Benzene	0.5	0.8836695	1	0.849982	2	0.8864501	5	0.8727284	10	0.9172855	50	0.9013845
Bromochloromethane	0.5	0.1059575	1	0.1078582	2	0.1225772	5	0.1127702	10	0.1144224	50	0.1102821
Bromodichloromethane	0.5	0.2843632	1	0.2785369	2	0.2806353	5	0.2847791	10	0.2911439	50	0.3000171
Bromoform	0.5	0.4953263	1	0.2348929	2	0.2453074	5	0.2592778	10	0.2810705	50	0.3434286
Bromomethane	0.5	0.1229621	1	0.1090558	2	8.171213E-02	5	9.416213E-02	10	8.811274E-02	50	0.1210111
Bromofluorobenzene	30	0.809546	30	0.8349992	30	0.8410831	30	0.8570103	30	0.8468459	30	0.8407881
2-Butanone												
Carbon disulfide	0.5	0.7419165	1	0.6666013	2	0.6956569	5	0.6939883	10	0.6932789	50	0.6761892
Carbon tetrachloride	0.5	0.2241325	1	0.2141558	2	0.241547	5	0.2360083	10	0.2383592	50	0.2488865
Chlorobenzene	0.5	1.550402	1	1.475808	2	1.51338	5	1.425009	10	1.412503	50	1.419966
Chloroethane	0.5	0.312228	1	0.2921462	2	0.2750538	5	0.266171	10	0.2623139	50	0.2421322
Chloroform	0.5	0.5442198	1	0.5225243	2	0.4671393	5	0.4210583	10	0.4171117	50	0.3973071
Chloromethane	0.5	0.4804300	1	0.4153919	2	0.3992103	5	0.3908325	10	0.389024	50	0.3409115
Cyclohexane	0.5	0.2086098	1	0.1968811	2	0.2410983	5	0.2493018	10	0.267864	50	0.294112
Dibromochloromethane	0.5	0.4386703	1	0.4293696	2	0.4147852	5	0.4200971	10	0.4493284	50	0.5123479
1,2-Dibromo-3-chloropropane	0.5	0.0617106	1	7.685784E-02	2	0.1016267	5	9.470208E-02	10	0.1082186	50	0.1246468
1,2-Dibromoethane (EDB)	0.5	0.5010119	1	0.5148303	2	0.4930557	5	0.4937364	10	0.5208128	50	0.5346833
1,2-Dichlorobenzene	0.5	1.08931	1	1.04188	2	1.060993	5	1.045313	10	1.062478	50	1.121024
1,3-Dichlorobenzene	0.5	1.09459	1	1.135227	2	1.118985	5	1.112089	10	1.138396	50	1.143436
1,4-Dichlorobenzene	0.5	1.292646	1	1.271833	2	1.27149	5	1.23089	10	1.254568	50	1.243194
Dichlorodifluoromethane	0.5	0.3428077	1	0.3086225	2	0.3812635	5	0.3685505	10	0.3612703	50	0.3304912
1,1-Dichloroethane	0.5	0.4161849	1	0.4250455	2	0.4370782	5	0.4164869	10	0.4195916	50	0.4134882
1,2-Dichloroethane	0.5	0.3188012	1	0.3244818	2	0.3268126	5	0.321245	10	0.3195183	50	0.3082246
1,1-Dichloroethene	0.5	0.1516128	1	0.1613881	2	0.170621	5	0.168987	10	0.1711984	50	0.175432
cis-1,2-Dichloroethene	0.5	0.2012692	1	0.2250433	2	0.2267408	5	0.2188306	10	0.2253663	50	0.2382279
trans-1,2-Dichloroethene	0.5	0.1916237	1	0.2101638	2	0.2019203	5	0.2042821	10	0.2044751	50	0.2084953
1,2-Dichloroethene (total)	1	0.1964464	2	0.2176035	4	0.2143306	10	0.2115563	20	0.2149207	100	0.2233616
1,2-Dichloropropane	0.5	0.2529975	1	0.2483424	2	0.2524946	5	0.2470582	10	0.2518008	50	0.2517967
cis-1,3-Dichloropropene	0.5	0.2717884	1	0.289134	2	0.2860912	5	0.2875766	10	0.3108542	50	0.3620732
trans-1,3-Dichloropropene	0.5	0.4656904	1	0.4474701	2	0.4821532	5	0.5184433	10	0.5627869	50	0.6743961

INITIAL CALIBRATION DATA

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0153002

Instrument: MS-VOA3

Matrix: Water

Calibration Date: 5/28/2010 1:06:49PM

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Ethylbenzene	0.5	1.918267	1	1.890549	2	2.003466	5	2.045857	10	2.155504	50	2.312872
2-Hexanone												
Isopropylbenzene	0.5	1.256925	1	1.315383	2	1.376773	5	1.497926	10	1.568882	50	1.773389
Methylene chloride	0.5	0.4075397	1	0.3851249	2	0.3425879	5	0.277929	10	0.2689605	50	0.2502402
Methyl Acetate	0.5	0.1796204	1	0.1887155	2	0.1869167	5	0.1884645	10	0.1871468	50	0.1860297
Methylcyclohexane	0.5	0.1715468	1	0.1814935	2	0.2340991	5	0.2494771	10	0.2558124	50	0.2597566
4-Methyl-2-pentanone												
Methyl t-Butyl Ether	0.5	0.4299029	1	0.4354974	2	0.4495872	5	0.4621867	10	0.4826565	50	0.5428822
Styrene	0.5	0.8176032	1	0.9667635	2	1.047703	5	1.120697	10	1.281583	50	1.538222
1,1,2,2-Tetrachloroethane	0.5	0.7900414	1	0.7301052	2	0.7857853	5	0.7560755	10	0.7441946	50	0.7325637
Tetrachloroethene	0.5	0.4992214	1	0.4914402	2	0.5121759	5	0.4768747	10	0.4810146	50	0.4916347
Toluene	0.5	1.294525	1	1.256206	2	1.270676	5	1.218803	10	1.270665	50	1.276688
1,2,3-Trichlorobenzene	0.5	0.4909543	1	0.4978473	2	0.5046864	5	0.5068898	10	0.5229422	50	0.5637286
1,2,4-Trichlorobenzene	0.5	0.5772399	1	0.5265693	2	0.5359293	5	0.5180841	10	0.5440077	50	0.6117867
1,1,2-Trichloroethane	0.5	0.4726896	1	0.4623472	2	0.4579886	5	0.4457024	10	0.4599776	50	0.4437744
1,1,1-Trichloroethane	0.5	0.2782902	1	0.2724762	2	0.2994436	5	0.2825355	10	0.2883334	50	0.2899607
Trichloroethene	0.5	0.23042	1	0.2257328	2	0.2285535	5	0.2208007	10	0.2303158	50	0.2283966
Trichlorofluoromethane	0.5	0.3217306	1	0.333845	2	0.3655958	5	0.3510502	10	0.3455952	50	0.3243796
1,1,2-Trichloro-1,2,2-trifluoroethane	0.5	0.175405	1	0.1843243	2	0.2125449	5	0.1997387	10	0.1924404	50	0.1819648
Vinyl chloride	0.5	0.460697	1	0.4172791	2	0.4494257	5	0.4250828	10	0.4196489	50	0.3726217
m,p-Xylene	1	1.382178	2	1.414977	4	1.525056	10	1.619672	20	1.71237	100	1.791134
o-Xylene	0.5	1.375423	1	1.420598	2	1.587135	5	1.721941	10	1.816982	50	1.945945
Xylenes (total)	1.5	1.379926	3	1.416851	6	1.545749	15	1.653762	30	1.74724	150	1.842737
Dibromofluoromethane	30	0.2729435	30	0.27953	30	0.2739148	30	0.274067	30	0.2657991	30	0.2606684
1,2-Dichloroethane-d4	30	5.865409E-02	30	5.922765E-02	30	0.0606772	30	5.702079E-02	30	5.589988E-02	30	5.328272E-02
Toluene-d8	30	2.316906	30	2.380509	30	2.280315	30	2.302919	30	2.262876	30	2.166853

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0153002

Instrument: MS-VOA3

Matrix: Water

Calibration Date: 5/28/2010 1:06:49PM

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/L	RF	ug/L	RF								
Acetone							1	0.1148152	2	8.497838E-02	4	8.007977E-02
Benzene	100	0.8757935	150	0.8309889	200	0.804194						
Bromochloromethane	100	0.1108504	150	0.1087208	200	0.1097542						
Bromodichloromethane	100	0.2993063	150	0.2897243	200	0.2890356						
Bromoform	100	0.3559158	150	0.3512783	200	0.3449674						
Bromomethane	100	0.1568274	150	0.1732271	200	0.1843399						
Bromofluorobenzene	30	0.7991269	30	0.7474056	30	0.7004594						
2-Butanone							1		2		4	5.095774E-02
Carbon disulfide	100	0.678964	150	0.6568992	200	0.6443153						
Carbon tetrachloride	100	0.2621837	150	0.2631193	200	0.2619392						
Chlorobenzene	100	1.337404	150	1.243685	200	1.156182						
Chloroethane	100	0.2321846	150	0.2106471	200	0.1984544						
Chloroform	100	0.3916161	150	0.3787396	200	0.3761144						
Chloromethane	100	0.3031339	150	0.2641053	200	0.2407841						
Cyclohexane	100	0.3084477	150	0.3061926	200	0.299146						
Dibromochloromethane	100	0.5110016	150	0.4937416	200	0.4773399						
1,2-Dibromo-3-chloropropane	100	0.1287199	150	0.1269407	200	0.1237539						
1,2-Dibromoethane (EDB)	100	0.5203449	150	0.4849778	200	0.4551328						
1,2-Dichlorobenzene	100	1.081532	150	1.042498	200	1.002944						
1,3-Dichlorobenzene	100	1.116644	150	1.055936	200	1.016721						
1,4-Dichlorobenzene	100	1.230951	150	1.184238	200	1.135602						
Dichlorodifluoromethane	100	0.3241078	150	0.3035808	200	0.2806864						
1,1-Dichloroethane	100	0.4085088	150	0.3937776	200	0.3863391						
1,2-Dichloroethane	100	0.3047566	150	0.2930949	200	0.2856276						
1,1-Dichloroethene	100	0.1884297	150	0.1882188	200	0.1910657						
cis-1,2-Dichloroethene	100	0.2357412	150	0.23668	200	0.2343952						
trans-1,2-Dichloroethene	100	0.2155328	150	0.2103322	200	0.2080458						
1,2-Dichloroethene (total)	200	0.225637	300	0.2235061	400	0.2212205						
1,2-Dichloropropane	100	0.2517624	150	0.2425453	200	0.238407						
cis-1,3-Dichloropropene	100	0.3670929	150	0.3563162	200	0.3496497						
trans-1,3-Dichloropropene	100	0.6826648	150	0.6364837	200	0.6059394						

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0153002

Instrument: MS-VOA3

Matrix: Water

Calibration Date: 5/28/2010 1:06:49PM

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF	ug/L	RF
Ethylbenzene	100	2.150813	150	1.914095	200	1.685976						
2-Hexanone							1		2	0.1827121	4	0.2265088
Isopropylbenzene	100	1.720304	150	1.555654	200	1.392535						
Methylene chloride	100	0.245099	150	0.2344199	200	0.2319979						
Methyl Acetate	100	0.1842704	150	0.1761715	200	0.1692025						
Methylcyclohexane	100	0.2684947	150	0.2620894	200	0.2577718						
4-Methyl-2-pentanone							1		2	0.1020345	4	0.133399
Methyl t-Butyl Ether	100	0.5621111	150	0.5571677	200	0.5615385						
Styrene	100	1.513406	150	1.392546	200	1.280392						
1,1,2,2-Tetrachloroethane	100	0.7010542	150	0.6826604	200	0.6514267						
Tetrachloroethene	100	0.4935154	150	0.4729313	200	0.4528307						
Toluene	100	1.221756	150	1.145501	200	1.067513						
1,2,3-Trichlorobenzene	100	0.5522724	150	0.5499148	200	0.5248423						
1,2,4-Trichlorobenzene	100	0.6003625	150	0.5921497	200	0.5867084						
1,1,2-Trichloroethane	100	0.4222794	150	0.3950371	200	0.3715264						
1,1,1-Trichloroethane	100	0.3005281	150	0.2986079	200	0.2930804						
Trichloroethene	100	0.2332952	150	0.2296634	200	0.2280358						
Trichlorofluoromethane	100	0.3469164	150	0.3398797	200	0.3374462						
1,1,2-Trichloro-1,2,2-trifluoroethane	100	0.1871965	150	0.1844287	200	0.178959						
Vinyl chloride	100	0.3499803	150	0.2997384	200	0.2673541						
m,p-Xylene	200	1.660936	300	1.413578	400	1.205097						
o-Xylene	100	1.862008	150	1.670678	200	1.485215						
Xylenes (total)	300	1.72796	450	1.499279	600	1.29847						
Dibromofluoromethane	30	0.2595552	30	0.2597724	30	0.2566712						
1,2-Dichloroethane-d4	30	5.312415E-02	30	5.192585E-02	30	5.175453E-02						
Toluene-d8	30	2.029438	30	1.917248	30	1.814692						

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0153002

Instrument: MS-VOA3

Matrix: Water

Calibration Date: 5/28/2010 1:06:49PM

Compound	Level 13		Level 14		Level 15		Level 16		Level 17		Level 18	
	ug/L	RF										
Acetone	10	6.926401E-02	20	6.945935E-02	100	6.585042E-02	200	6.562578E-02	300	6.658448E-02	400	6.632646E-02
Benzene												
Bromochloromethane												
Bromodichloromethane												
Bromoform												
Bromomethane												
Bromofluorobenzene												
2-Butanone	10	8.257789E-02	20	8.967779E-02	100	9.824597E-02	200	0.1044158	300	0.1060121	400	0.1074744
Carbon disulfide												
Carbon tetrachloride												
Chlorobenzene												
Chloroethane												
Chloroform												
Chloromethane												
Cyclohexane												
Dibromochloromethane												
1,2-Dibromo-3-chloropropane												
1,2-Dibromoethane (EDB)												
1,2-Dichlorobenzene												
1,3-Dichlorobenzene												
1,4-Dichlorobenzene												
Dichlorodifluoromethane												
1,1-Dichloroethane												
1,2-Dichloroethane												
1,1-Dichloroethene												
cis-1,2-Dichloroethene												
trans-1,2-Dichloroethene												
1,2-Dichloroethene (total)												
1,2-Dichloropropane												
cis-1,3-Dichloropropene												
trans-1,3-Dichloropropene												

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0153002

Instrument: MS-VOA3

Matrix: Water

Calibration Date: 5/28/2010 1:06:49PM

Compound	Level 13		Level 14		Level 15		Level 16		Level 17		Level 18	
	ug/L	RF										
Ethylbenzene												
2-Hexanone	10	0.2382939	20	0.2717325	100	0.3406569	200	0.3487166	300	0.339507	400	0.3521897
Isopropylbenzene												
Methylene chloride												
Methyl Acetate												
Methylcyclohexane												
4-Methyl-2-pentanone	10	0.1558189	20	0.1765288	100	0.2156187	200	0.2282985	300	0.2288307	400	0.2264228
Methyl t-Butyl Ether												
Styrene												
1,1,2,2-Tetrachloroethane												
Tetrachloroethene												
Toluene												
1,2,3-Trichlorobenzene												
1,2,4-Trichlorobenzene												
1,1,2-Trichloroethane												
1,1,1-Trichloroethane												
Trichloroethene												
Trichlorofluoromethane												
1,1,2-Trichloro-1,2,2-trifluoroethane												
Vinyl chloride												
m,p-Xylene												
o-Xylene												
Xylenes (total)												
Dibromofluoromethane												
1,2-Dichloroethane-d4												
Toluene-d8												

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0153002

Instrument: MS-VOA3

Matrix: Water

Calibration Date: 5/28/2010 1:06:49PM

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Acetone	7.102108E-02	10.37367	5.6375	4.964546E-02			15	
Benzene	0.8696696	4.068798	12.35333	2.547432E-02			15	
Bromochloromethane	0.1114659	4.366422	10.07633	4.546303E-02			15	
Bromodichloromethane	0.2886157	2.59903	13.32778	1.732744E-02			15	
Bromoform	0.3020173	17.195	16.68925	1.873979E-02	0.9996593		SPCC (0.1)	
Bromomethane	0.1257123	29.91641	4.602667	4.075829E-02		0.9982742	0.99	
Bromofluorobenzene	0.808585	6.503745	17.225	2.379649E-02			15	
2-Butanone	9.133739E-02	21.91746	9.297428	0.3386742	0.9997021		0.995	
Carbon disulfide	0.68309	4.129969	6.912445	5.213256E-02			15	
Carbon tetrachloride	0.2433702	7.154531	12.31511	0.0295426			15	
Chlorobenzene	1.392704	9.143365	16.282	1.462598E-02			SPCC (0.3)	
Chloroethane	0.2616096	12.54463	4.77575	6.449603E-02	0.9961025		0.995	
Chloroform	0.4350923	14.32388	10.22567	5.317791E-02			CCC (20)	
Chloromethane	0.3429242	19.42856	3.923	8.206086E-02		0.9997416	SPCC (0.1)	
Cyclohexane	0.2703804	14.54924	12.212	2.286287E-02			15	
Dibromochloromethane	0.4607424	8.377666	15.27933	1.747892E-02			15	
1,2-Dibromo-3-chloropropane	0.1106833	16.87872	18.956	2.053257E-02	0.9995113		0.995	
1,2-Dibromoethane (EDB)	0.5020651	4.754663	15.51033	1.877192E-03			15	
1,2-Dichlorobenzene	1.060886	3.188263	18.56978	1.542489E-02			15	
1,3-Dichlorobenzene	1.103558	3.814735	18.223	2.242414E-02			15	
1,4-Dichlorobenzene	1.235046	3.940876	18.27133	8.267862E-03			15	
Dichlorodifluoromethane	0.3334867	9.92737	3.695	1.172349E-02			15	
1,1-Dichloroethane	0.4129445	3.723423	8.275333	4.671998E-02			SPCC (0.1)	
1,2-Dichloroethane	0.3113958	4.653411	11.55367	4.491358E-02			15	
1,1-Dichloroethene	0.1741059	7.620389	6.310333	3.373038E-02			CCC (20)	
cis-1,2-Dichloroethene	0.2269216	5.134897	9.684111	6.678292E-02			15	
trans-1,2-Dichloroethene	0.2060968	3.281462	7.740334	4.761152E-02			15	
1,2-Dichloroethene (total)	0.2165092	4.121235	0	0			15	
1,2-Dichloropropane	0.2485783	2.051097	13.21467	1.865879E-02			CCC (20)	
cis-1,3-Dichloropropene	0.320064	11.97274	14.14833	3.645283E-02			15	
trans-1,3-Dichloropropene	0.5640031	16.01896	14.63044	3.052116E-02		0.9996698	0.99	
Ethylbenzene	2.0086	9.16174	16.444	1.813218E-02			CCC (20)	

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0153002

Instrument: MS-VOA3

Matrix: Water

Calibration Date: 5/28/2010 1:06:49PM

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
2-Hexanone	0.2875397	23.0813	15.21675	0.1473151	0.9995357		0.995	
Isopropylbenzene	1.508154	12.25048	17.19575	1.749313E-02			15	
Methylene chloride	0.2937666	22.87977	6.533333	6.626487E-02	0.9994054		0.995	
Methyl Acetate	0.1829487	3.637319	6.583	0.1703319			15	
Methylcyclohexane	0.2461243	11.39259	13.943	2.715972E-02			15	
4-Methyl-2-pentanone	0.183369	26.79369	14.2915	6.183596E-02	0.9998143		0.995	
Methyl t-Butyl Ether	0.49817	11.45858	8.015222	0.1623958			15	
Styrene	1.267664	16.6025	16.8555	4.209826E-03		0.9993908	0.99	
1,1,2,2-Tetrachloroethane	0.7304341	6.284204	16.921	1.260648E-02			SPCC (0.3)	
Tetrachloroethene	0.4857377	3.533216	15.69533	2.723335E-02			15	
Toluene	1.224704	6.043187	14.972	1.482227E-02			CCC (20)	
1,2,3-Trichlorobenzene	0.5237865	5.002455	20.76067	1.253389E-02			15	
1,2,4-Trichlorobenzene	0.5658708	6.170826	20.237	0.0139756			15	
1,1,2-Trichloroethane	0.4368136	7.793052	14.78222	0.025063			15	
1,1,1-Trichloroethane	0.2892507	3.416456	11.74333	1.524411E-02			15	
Trichloroethene	0.2283571	1.535134	13.293	3.309073E-02			15	
Trichlorofluoromethane	0.3407154	3.983908	5.521333	4.825066E-02			15	
1,1,2-Trichloro-1,2,2-trifluoroethane	0.1885558	6.107329	6.642555	0.1069054			15	
Vinyl chloride	0.3846476	17.49269	4.126333	8.608735E-02		0.9985669	CCC (20)	
m,p-Xylene	1.525	12.28158	16.59833	6.699701E-03			15	
o-Xylene	1.653992	12.18602	16.915	1.710043E-02			15	
Xylenes (total)	1.567997	11.85934	0	0			15	
Dibromofluoromethane	0.2669913	3.094148	10.49144	0.0337586			15	
1,2-Dichloroethane-d4	5.572965E-02	6.018834	11.41233	2.874966E-02			15	
Toluene-d8	2.163528	9.155275	14.901	1.850725E-02			15	

INITIAL CALIBRATION CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Instrument ID: MS-VOA3

Calibration: 0153002

Lab File ID: SEQ-ICV1.D

Calibration Date: 05/28/10 13:06

Sequence: 0F15305

Injection Date: 05/28/10

Lab Sample ID: 0F15305-ICV1

Injection Time: 18:23

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	ICV	ICAL	ICV	MIN (#)	ICV	LIMIT (#)
Benzene	A	100.0	103.3	0.8696696	0.8980238		3.3	20
Bromochloromethane	A	100.0	106.8	0.1114659	0.1189942		6.8	20
Bromodichloromethane	A	100.0	110.0	0.2886157	0.3174763		10.0	20
Bromoform	L	100.0	106.5	0.3020173	0.370199	0.1	6.5	20
Bromomethane	Q	100.0	101.0	0.1257123	0.1568561		1.0	20
Carbon disulfide	A	100.0	106.4	0.68309	0.7266192		6.4	20
Carbon tetrachloride	A	100.0	114.5	0.2433702	0.2785772		14.5	20
Chlorobenzene	A	100.0	98.77	1.392704	1.375642	0.3	-1.2	20
Chloroethane	L	100.0	89.55	0.2616096	0.1974725		-10.5	20
Chloroform	A	100.0	91.75	0.4350923	0.3991764		-8.3	20
Chloromethane	Q	100.0	86.36	0.3429242	0.2677515	0.1	-13.6	20
Cyclohexane	A	100.0	119.4	0.2703804	0.322789		19.4	20
Dibromochloromethane	A	100.0	116.3	0.4607424	0.535842		16.3	20
1,2-Dibromo-3-chloropropane	L	100.0	103.3	0.1106833	0.1294365		3.3	20
1,2-Dibromoethane (EDB)	A	100.0	103.7	0.5020651	0.5207665		3.7	20
1,2-Dichlorobenzene	A	100.0	105.0	1.060886	1.114306		5.0	20
1,3-Dichlorobenzene	A	100.0	101.4	1.103558	1.118953		1.4	20
1,4-Dichlorobenzene	A	100.0	98.94	1.235046	1.221919		-1.1	20
Dichlorodifluoromethane	A	100.0	96.70	0.3334867	0.3224744		-3.3	20
1,1-Dichloroethane	A	100.0	101.2	0.4129445	0.4178477	0.1	1.2	20
1,2-Dichloroethane	A	100.0	98.95	0.3113958	0.3081388		-1.0	20
1,1-Dichloroethene	A	100.0	117.7	0.1741059	0.2049638		17.7	20
cis-1,2-Dichloroethene	A	100.0	108.9	0.2269216	0.2471758		8.9	20
trans-1,2-Dichloroethene	A	100.0	110.0	0.2060968	0.2267543		10.0	20
1,2-Dichloropropane	A	100.0	102.4	0.2485783	0.2544608		2.4	20
cis-1,3-Dichloropropene	A	100.0	118.7	0.320064	0.3797631		18.7	20
trans-1,3-Dichloropropene	Q	100.0	114.9	0.5640031	0.7577196		14.9	20
Ethylbenzene	A	100.0	105.7	2.0086	2.123863		5.7	20
Isopropylbenzene	A	100.0	119.6	1.508154	1.804384		19.6	20

INITIAL CALIBRATION CHECK

SW8260B

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>CTO102_002</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>NAS Cecil Field CTO102</u>
Instrument ID: <u>MS-VOA3</u>	Calibration: <u>0153002</u>
Lab File ID: <u>SEQ-ICV1.D</u>	Calibration Date: <u>05/28/10 13:06</u>
Sequence: <u>0F15305</u>	Injection Date: <u>05/28/10</u>
Lab Sample ID: <u>0F15305-ICV1</u>	Injection Time: <u>18:23</u>

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	ICV	ICAL	ICV	MIN (#)	ICV	LIMIT (#)
Methylene chloride	L	100.0	107.1	0.2937666	0.2528777		7.1	20
Methyl Acetate	A	100.0	94.13	0.1829487	0.1722148		-5.9	20
Methylcyclohexane	A	100.0	109.4	0.2461243	0.269368		9.4	20
Methyl t-Butyl Ether	A	100.0	116.2	0.49817	0.5788614		16.2	20
Styrene	Q	100.0	99.36	1.267664	1.484119		-0.6	20
1,1,2,2-Tetrachloroethane	A	100.0	94.23	0.7304341	0.6883228	0.3	-5.8	20
Tetrachloroethene	A	100.0	106.0	0.4857377	0.5148547		6.0	20
Toluene	A	100.0	100.5	1.224704	1.230678		0.5	20
1,2,3-Trichlorobenzene	A	100.0	111.3	0.5237865	0.5827422		11.3	20
1,2,4-Trichlorobenzene	A	100.0	111.3	0.5658708	0.6296033		11.3	20
1,1,2-Trichloroethane	A	100.0	96.79	0.4368136	0.4227951		-3.2	20
1,1,1-Trichloroethane	A	100.0	110.0	0.2892507	0.3182893		10.0	20
Trichloroethene	A	100.0	105.3	0.2283571	0.2403736		5.3	20
Trichlorofluoromethane	A	100.0	101.8	0.3407154	0.3469433		1.8	20
1,1,2-Trichloro-1,2,2-trifluoroethane	A	100.0	104.3	0.1885558	0.196677		4.3	20
Vinyl chloride	Q	100.0	97.47	0.3846476	0.3327136		-2.5	20
Xylenes (total)	A	300.0	323.1	1.567997	1.689729		7.8	20
Bromofluorobenzene	A	30.00	29.32	0.808585	0.7902025		-2.3	20
Dibromofluoromethane	A	30.00	29.98	0.2669913	0.2668221		-0.06	20
1,2-Dichloroethane-d4	A	30.00	30.79	5.572965E-02	0.0571896		2.6	20
Toluene-d8	A	30.00	28.90	2.163528	2.084473		-3.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

INITIAL CALIBRATION CHECK

SW8260B

Laboratory:	<u>Empirical Laboratories, LLC</u>	SDG:	<u>CTO102_002</u>
Client:	<u>Tetra Tech NUS, Inc. (T010)</u>	Project:	<u>NAS Cecil Field CTO102</u>
Instrument ID:	<u>MS-VOA3</u>	Calibration:	<u>0153002</u>
Lab File ID:	<u>SEQ-ICV2.D</u>	Calibration Date:	<u>05/28/10 13:06</u>
Sequence:	<u>0F15305</u>	Injection Date:	<u>05/28/10</u>
Lab Sample ID:	<u>0F15305-ICV2</u>	Injection Time:	<u>23:25</u>

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	ICV	ICAL	ICV	MIN (#)	ICV	LIMIT (#)
Acetone	A	200.0	197.4	7.102108E-02	0.0701055		-1.3	20
2-Butanone	L	200.0	198.1	9.133739E-02	0.1045753		-0.9	20
2-Hexanone	L	200.0	208.8	0.2875397	0.3614081		4.4	20
4-Methyl-2-pentanone	L	200.0	205.7	0.183369	0.2324622		2.8	20
Bromofluorobenzene	A	30.00	0.000	0.808585				20
Dibromofluoromethane	A	30.00	0.000	0.2669913				20
1,2-Dichloroethane-d4	A	30.00	0.000	5.572965E-02				20
Toluene-d8	A	30.00	0.000	2.163528				20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8260B

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>CTO102_002</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>NAS Cecil Field CTO102</u>
Lab File ID: <u>SEQ-TUN1.D</u>	Injection Date: <u>06/07/10</u>
Instrument ID: <u>MS-VOA3</u>	Injection Time: <u>16:20</u>
Sequence: <u>0F16109</u>	Lab Sample ID: <u>0F16109-TUN1</u>

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	21.2	PASS
75	30 - 60% of 95	50.7	PASS
95	Base peak, 100% relative abundance	100	PASS
96	5 - 9% of 95	7.39	PASS
173	Less than 2% of 174	0.751	PASS
174	50 - 200% of 95	73	PASS
175	5 - 9% of 174	7.76	PASS
176	95 - 101% of 174	97	PASS
177	5 - 9% of 176	6.37	PASS

ANALYSIS SEQUENCE SUMMARY

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Sequence: 0F16109

Instrument: MS-VOA3

Calibration: 0153002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	0F16109-TUN1	SEQ-TUN1.D	06/07/10 16:20
Calibration Check	0F16109-CCV1	SEQ-CCV1.D	06/07/10 16:50
LCS	0F07021-BS1	V3LCS01.D	06/07/10 17:20
Blank	0F07021-BLK1	V3BLK01.D	06/07/10 18:53
Trip Blank	1006034-05	0603405.D	06/07/10 19:53
CEF-043-DUP01-20100603	1006034-02	0603402.D	06/07/10 20:53
CEF-043-04N-20100603	1006034-03	0603403.D	06/07/10 21:22
CEF-043-05N-20100603	1006034-04	0603404.D	06/07/10 21:52
CEF-043-02N-20100603	1006034-01	0603401.D	06/08/10 02:20
LCS Dup	0F07021-BSD1	V3LCSD01.D	06/08/10 03:19

CONTINUING CALIBRATION CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC
 Client: Tetra Tech NUS, Inc. (T010)
 Instrument ID: MS-VOA3
 Lab File ID: SEQ-CCV1.D
 Sequence: 0F16109
 Lab Sample ID: 0F16109-CCV1

SDG: CTO102_002
 Project: NAS Cecil Field CTO102
 Calibration: 0153002
 Calibration Date: 05/28/10 13:06
 Injection Date: 06/07/10
 Injection Time: 16:50

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Acetone	A	200.0	197.6	7.102108E-02	7.016823E-02		-1.2	20
Benzene	A	100.0	105.2	0.8696696	0.9152827		5.2	20
Bromochloromethane	A	100.0	106.1	0.1114659	0.1182419		6.1	20
Bromodichloromethane	A	100.0	107.9	0.2886157	0.3113101		7.9	20
Bromoform	L	100.0	107.1	0.3020173	0.3724006	0.1	7.1	20
Bromomethane	Q	100.0	94.65	0.1257123	0.1455181		-5.4	20
2-Butanone	L	200.0	203.5	9.133739E-02	0.1074649		1.8	20
Carbon disulfide	A	100.0	101.1	0.68309	0.6904624		1.1	20
Carbon tetrachloride	A	100.0	113.3	0.2433702	0.2757045		13.3	20
Chlorobenzene	A	100.0	97.81	1.392704	1.362209	0.3	-2.2	20
Chloroethane	L	100.0	111.7	0.2616096	0.2455209		11.7	20
Chloroform	A	100.0	94.91	0.4350923	0.412949		-5.1	20
Chloromethane	Q	100.0	139.7	0.3429242	0.3778404	0.1	39.7	20 *
Cyclohexane	A	100.0	120.4	0.2703804	0.3256353		20.4	20 *
Dibromochloromethane	A	100.0	111.3	0.4607424	0.5129025		11.3	20
1,2-Dibromo-3-chloropropane	L	100.0	104.8	0.1106833	0.1313258		4.8	20
1,2-Dibromoethane (EDB)	A	100.0	103.9	0.5020651	0.521498		3.9	20
1,2-Dichlorobenzene	A	100.0	103.1	1.060886	1.093587		3.1	20
1,3-Dichlorobenzene	A	100.0	100.8	1.103558	1.112099		0.8	20
1,4-Dichlorobenzene	A	100.0	102.5	1.235046	1.266356		2.5	20
Dichlorodifluoromethane	A	100.0	91.68	0.3334867	0.3057534		-8.3	20
1,1-Dichloroethane	A	100.0	103.5	0.4129445	0.4274205	0.1	3.5	20
1,2-Dichloroethane	A	100.0	104.0	0.3113958	0.3237325		4.0	20
1,1-Dichloroethene	A	100.0	110.9	0.1741059	0.1930182		10.9	20
cis-1,2-Dichloroethene	A	100.0	109.7	0.2269216	0.2490117		9.7	20
trans-1,2-Dichloroethene	A	100.0	106.3	0.2060968	0.2190092		6.3	20
1,2-Dichloropropane	A	100.0	104.1	0.2485783	0.2586897		4.1	20
cis-1,3-Dichloropropene	A	100.0	119.2	0.320064	0.3816755		19.2	20
trans-1,3-Dichloropropene	Q	100.0	101.4	0.5640031	0.6784364		1.4	20

CONTINUING CALIBRATION CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Instrument ID: MS-VOA3

Calibration: 0153002

Lab File ID: SEQ-CCV1.D

Calibration Date: 05/28/10 13:06

Sequence: 0F16109

Injection Date: 06/07/10

Lab Sample ID: 0F16109-CCV1

Injection Time: 16:50

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Ethylbenzene	A	100.0	109.6	2.0086	2.200471		9.6	20
2-Hexanone	L	200.0	199.4	0.2875397	0.3449119		-0.3	20
Isopropylbenzene	A	100.0	120.0	1.508154	1.809859		20.0	20
Methylene chloride	L	100.0	111.5	0.2937666	0.2632304		11.5	20
Methyl Acetate	A	100.0	109.8	0.1829487	0.2008223		9.8	20
Methylcyclohexane	A	100.0	115.8	0.2461243	0.2850181		15.8	20
4-Methyl-2-pentanone	L	200.0	208.2	0.183369	0.2353966		4.1	20
Methyl t-Butyl Ether	A	100.0	115.3	0.49817	0.5744572		15.3	20
Styrene	Q	100.0	103.5	1.267664	1.534494		3.5	20
1,1,2,2-Tetrachloroethane	A	100.0	96.48	0.7304341	0.7047167	0.3	-3.5	20
Tetrachloroethene	A	100.0	103.8	0.4857377	0.5040294		3.8	20
Toluene	A	100.0	100.8	1.224704	1.234539		0.8	20
1,2,3-Trichlorobenzene	A	100.0	111.3	0.5237865	0.5828556		11.3	20
1,2,4-Trichlorobenzene	A	100.0	112.6	0.5658708	0.6374976		12.7	20
1,1,2-Trichloroethane	A	100.0	95.65	0.4368136	0.4178222		-4.3	20
1,1,1-Trichloroethane	A	100.0	109.9	0.2892507	0.3178452		9.9	20
Trichloroethene	A	100.0	105.7	0.2283571	0.2413358		5.7	20
Trichlorofluoromethane	A	100.0	105.0	0.3407154	0.3577693		5.0	20
1,1,2-Trichloro-1,2,2-trifluoroethane	A	100.0	105.0	0.1885558	0.1980526		5.0	20
Vinyl chloride	Q	100.0	105.1	0.3846476	0.3506353		5.1	20
Xylenes (total)	A	300.0	346.6	1.567997	1.81243		15.6	20
Bromofluorobenzene	A	30.00	30.30	0.808585	0.8165498		1.0	20
Dibromofluoromethane	A	30.00	30.64	0.2669913	0.2726485		2.1	20
1,2-Dichloroethane-d4	A	30.00	29.50	5.572965E-02	5.481135E-02		-1.6	20
Toluene-d8	A	30.00	27.23	2.163528	1.964		-9.2	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8270C

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>CTO102_002</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>NAS Cecil Field CTO102</u>
Lab File ID: <u>SEQ-TUN1.D</u>	Injection Date: <u>06/16/10</u>
Instrument ID: <u>MS-BNA4</u>	Injection Time: <u>17:15</u>
Sequence: <u>0F16801</u>	Lab Sample ID: <u>0F16801-TUN1</u>

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30 - 60% of 198	38.9	PASS
68	Less than 2% of 69	1.65	PASS
69	Less than 200% of 198	39	PASS
70	Less than 2% of 69	0.484	PASS
127	40 - 60% of 198	50.3	PASS
197	Less than 1% of 198	0	PASS
198	Base peak, 100% relative abundance	100	PASS
199	5 - 9% of 198	6.63	PASS
275	10 - 30% of 198	28	PASS
365	1 - 200% of 198	4.15	PASS
441	0.001 - 100% of 443	84.3	PASS
442	40 - 200% of 198	139	PASS
443	17 - 23% of 442	19.9	PASS

ANALYSIS SEQUENCE SUMMARY

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Sequence: 0F16801

Instrument: MS-BNA4

Calibration: 0168002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	0F16801-TUN1	SEQ-TUN1.D	06/16/10 17:15
Cal Standard	0F16801-CAL1	SEQ-CAL1.D	06/16/10 17:32
Cal Standard	0F16801-CAL2	SEQ-CAL2.D	06/16/10 18:07
Cal Standard	0F16801-CAL3	SEQ-CAL3.D	06/16/10 18:41
Cal Standard	0F16801-CAL4	SEQ-CAL4.D	06/16/10 19:15
Cal Standard	0F16801-CAL5	SEQ-CAL5.D	06/16/10 19:49
Cal Standard	0F16801-CAL6	SEQ-CAL6.D	06/16/10 20:24
Cal Standard	0F16801-CAL7	SEQ-CAL7.D	06/16/10 20:58
Cal Standard	0F16801-CAL8	SEQ-CAL8.D	06/16/10 21:32
Cal Standard	0F16801-CAL9	SEQ-CAL9.D	06/16/10 22:06
Cal Standard	0F16801-CALA	SEQ-CALA.D	06/16/10 22:40
Cal Standard	0F16801-CALB	SEQ-CALB.D	06/16/10 23:15
Initial Cal Check	0F16801-ICV1	SEQ-ICV1.D	06/16/10 23:49

INITIAL CALIBRATION DATA

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0168002

Instrument: MS-BNA4

Matrix: Water

Calibration Date: 6/16/2010 6:56:21AM

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	ug/mL	RF	ug/mL	RF	ug/mL	RF	ug/mL	RF	ug/mL	RF	ug/mL	RF
Accnaphthenc	0.05	0.7556015	0.1	0.6830116	0.25	0.6767092	0.5	0.6719937	1	0.7589151	2	0.7012635
Accnaphthylenc	0.05	0.9342985	0.1	0.9344103	0.25	0.997953	0.5	0.9719652	1	1.102716	2	1.070352
Anthracenc	0.05	0.9966219	0.1	1.008099	0.25	0.9716746	0.5	0.9422452	1	1.091277	2	1.031591
Benzo(a)anthracenc	0.05	0.9194071	0.1	0.891342	0.25	0.876871	0.5	0.7609904	1	0.8930523	2	0.8462305
Benzo(a)pyrene	0.05	1.068261	0.1	0.9464577	0.25	0.9223266	0.5	0.9072162	1	1.052855	2	0.9990917
Benzo(b)fluoranthenc	0.05	1.140509	0.1	1.145752	0.25	1.042005	0.5	1.061189	1	1.290525	2	1.22068
Benzo(g,h,i)perylenc	0.05	1.073771	0.1	1.186395	0.25	1.089882	0.5	0.9870898	1	1.128469	2	1.082718
Benzo(k)fluoranthenc	0.05	1.245054	0.1	0.8601019	0.25	0.994405	0.5	0.980802	1	1.118929	2	1.005763
Chrysenc	0.05	1.086936	0.1	0.8648714	0.25	0.8825566	0.5	0.836357	1	1.006096	2	0.8925457
Dibenz(a,h)anthracenc	0.05	0.8463122	0.1	0.6445962	0.25	0.8849446	0.5	0.832463	1	0.9822108	2	0.9979985
Fluoranthenc	0.05	0.9798001	0.1	1.043726	0.25	0.9630239	0.5	0.9847527	1	1.098773	2	1.025953
Fluorenc	0.05	0.6508101	0.1	0.6541087	0.25	0.6482274	0.5	0.6672918	1	0.7355272	2	0.6924678
2-Fluorobiphenyl	0.05	0.4715615	0.1	0.5198958	0.25	0.5735271	0.5	0.6608232	1	0.7512582	2	0.7375526
2-Fluorophenol	0.1		0.2		0.5		1		2		4	
Indeno(1,2,3-cd)pyrene	0.05	1.229747	0.1	1.278283	0.25	0.8593544	0.5	0.8745788	1	1.008959	2	0.9721472
1-Methylnaphthalenc	0.05	0.4883833	0.1	0.610468	0.25	0.5962419	0.5	0.5912321	1	0.6434021	2	0.6264588
2-Methylnaphthalenc	0.05	0.5963461	0.1	0.5954442	0.25	0.6068239	0.5	0.6051205	1	0.6907296	2	0.6905377
Naphthalenc	0.05	0.8915546	0.1	0.9112307	0.25	0.860141	0.5	0.9496243	1	1.01166	2	1.013314
Nitrobenzenc-d5	0.05		0.1		0.25		0.5		1		2	
Phenanthrenc	0.05	0.879283	0.1	0.9874945	0.25	0.9552982	0.5	0.9526819	1	1.070069	2	1.016213
Phenol-d6	0.1		0.2		0.5		1		2		4	
Pyrene	0.05	1.118787	0.1	1.146103	0.25	1.018192	0.5	1.003656	1	1.13084	2	1.070042
Terphenyl-d14	0.05	0.8199931	0.1	0.7041165	0.25	0.6721935	0.5	0.6714909	1	0.7679648	2	0.7472203
2,4,6-Tribromophenol	0.1		0.2	7.672881E-02	0.5	0.0833373	1	0.1014513	2	0.1220496	4	0.1212906
Accnaphthenc-d10	1		1		1		1		1		1	
Chrysenc-d12	1		1		1		1		1		1	

INITIAL CALIBRATION DATA (Continued)

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0168002

Instrument: MS-BNA4

Matrix: Water

Calibration Date: 6/16/2010 6:56:21AM

Compound	Level 07		Level 08		Level 09		Level 10		Level 11		Level 12	
	ug/mL	RF	ug/mL	RF								
Acenaphthene	5	0.6991548	10	0.6843157	20	0.6809107	40	0.6586902	50	0.6543729		
Acenaphthylene	5	1.076275	10	1.070941	20	1.067114	40	1.026007	50	1.005941		
Anthracene	5	1.038091	10	1.036316	20	1.026143	40	0.9750479	50	0.9743981		
Benzo(a)anthracene	5	0.8852177	10	0.9518021	20	0.9486512	40	0.9427277	50	0.9326279		
Benzo(a)pyrene	5	1.018936	10	1.041784	20	1.029623	40	0.9992045	50	1.00639		
Benzo(b)fluoranthene	5	1.155985	10	1.357773	20	1.238677	40	1.333647	50	1.401279		
Benzo(g,h,i)perylene	5	1.049329	10	1.057156	20	1.010339	40	1.000391	50	0.9739736		
Benzo(k)fluoranthene	5	1.059045	10	1.024066	20	0.9904429	40	0.8890253	50	0.9286138		
Chrysene	5	0.8795247	10	0.8909541	20	0.8596117	40	0.8316663	50	0.8150146		
Dibenz(a,h)anthracene	5	0.9888526	10	1.022961	20	1.016093	40	0.9938821	50	0.9609612		
Fluoranthene	5	1.038178	10	1.048238	20	1.048928	40	1.023167	50	1.019537		
Fluorene	5	0.6999751	10	0.6954053	20	0.6908239	40	0.6820143	50	0.6722215		
2-Fluorobiphenyl	5	0.7567553	10	0.7486812	20	0.737476	40	0.7167209	50	0.7015087		
2-Fluorophenol	10		20		40		80		100			
Indeno(1,2,3-cd)pyrene	5	1.022357	10	1.070198	20	1.062625	40	1.088234	50	1.066071		
1-Methylnaphthalene	5	0.6188008	10	0.6135672	20	0.6220523	40	0.5906234	50	0.5830044		
2-Methylnaphthalene	5	0.7126957	10	0.7088859	20	0.7063849	40	0.6881873	50	0.6710611		
Naphthalene	5	1.044291	10	1.042804	20	1.049677	40	1.01377	50	0.996332		
Nitrobenzenc-d5	5		10		20		40		50			
Phenanthrene	5	1.027347	10	1.02139	20	1.020412	40	1.008727	50	1.008673		
Phenol-d6	10		20		40		80		100			
Pyrene	5	1.090266	10	1.089001	20	1.072026	40	1.048486	50	1.044822		
Terphenyl-d14	5	0.7579365	10	0.7756626	20	0.7708472	40	0.749405	50	0.7471892		
2,4,6-Tribromophenol	10	0.1347577	20	0.1386691	40	0.1436654	80	0.1487924	100	0.1465228		
Acenaphthene-d10	1		1		1		1		1			
Chrysene-d12	1		1		1		1		1			

INITIAL CALIBRATION DATA (Continued)

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0168002

Instrument: MS-BNA4

Matrix: Water

Calibration Date: 6/16/2010 6:56:21AM

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Accenaphthene	0.6931763	5.011307	9.199091	0.1054295			CCC (30)	
Accenaphthylene	1.023452	5.774355	8.816454	0.1343602			15	
Anthracene	1.008319	4.150503	13.08673	0.1043478			15	
Benzo(a)anthracene	0.8953563	6.235673	20.52291	8.045117E-02	0.9999		0.995	
Benzo(a)pyrene	0.999286	5.293468	24.57773	5.164396E-02		0.9999217	CCC (30)	
Benzo(b)fluoranthene	1.217093	9.81914	23.78955	9.500226E-02	0.9981383		0.995	
Benzo(g,h,i)perylene	1.058138	6.057358	26.93064	5.716836E-02			15	
Benzo(k)fluoranthene	1.00875	10.62737	23.87136	8.949222E-02			15	
Chrysene	0.8951031	9.04898	20.61927	8.279086E-02			15	
Dibenz(a,h)anthracene	0.9246614	12.40618	26.54882	6.045874E-02		0.9998728	0.99	
Fluoranthene	1.024916	3.730315	16.32782	7.529205E-02			CCC (30)	
Fluorene	0.6808066	3.81422	10.43382	0.1141718			15	
2-Fluorobiphenyl	0.6705237	15.20244	7.763182	0.1142792		0.9999878	0.99	
2-Fluorophenol							15	
Indeno(1,2,3-cd)pyrene	1.048414	12.15177	26.49373	5.445084E-02	0.9998332		0.995	
1-Methylnaphthalene	0.5985668	6.811024	7.269909	0.1128566			15	
2-Methylnaphthalene	0.6611106	7.434439	7.109091	0.1060224			15	
Naphthalene	0.9803999	6.788174	6.093273	0.1277415			15	
Nitrobenzene-d5							15	
Phenanthrene	0.9952353	5.090058	12.94136	9.897153E-02			15	
Phenol-d6							15	
Pyrene	1.075656	4.207149	16.95136	8.442505E-02			15	
Terphenyl-d14	0.7440018	6.058961	17.62673	5.588772E-02			15	
2,4,6-Tribromophenol	0.1217265	21.55419	11.0635	0.1612304	0.9997806		0.995	
Accenaphthene-d10							15	
Chrysene-d12							15	

INITIAL CALIBRATION CHECK

SW8270C

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>CTO102_002</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>NAS Cecil Field CTO102</u>
Instrument ID: <u>MS-BNA4</u>	Calibration: <u>0168002</u>
Lab File ID: <u>SEQ-ICV1.D</u>	Calibration Date: <u>06/16/10 06:56</u>
Sequence: <u>0F16801</u>	Injection Date: <u>06/16/10</u>
Lab Sample ID: <u>0F16801-ICV1</u>	Injection Time: <u>23:49</u>

COMPOUND	TYPE	CONC. (ug/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	ICV	ICAL	ICV	MIN (#)	ICV	LIMIT (#)
Naphthalene	A	5.000	5.277	0.9803999	1.034668		5.5	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8270C

Laboratory:	<u>Empirical Laboratories, LLC</u>	SDG:	<u>CTO102_002</u>
Client:	<u>Tetra Tech NUS, Inc. (T010)</u>	Project:	<u>NAS Cecil Field CTO102</u>
Lab File ID:	<u>SEQ-TUN1.D</u>	Injection Date:	<u>06/21/10</u>
Instrument ID:	<u>MS-BNA4</u>	Injection Time:	<u>12:40</u>
Sequence:	<u>0F17305</u>	Lab Sample ID:	<u>0F17305-TUN1</u>

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30 - 60% of 198	44.2	PASS
68	Less than 2% of 69	1.64	PASS
69	Less than 200% of 198	44.1	PASS
70	Less than 2% of 69	0.556	PASS
127	40 - 60% of 198	50.9	PASS
197	Less than 1% of 198	0.437	PASS
198	Base peak, 100% relative abundance	100	PASS
199	5 - 9% of 198	6.82	PASS
275	10 - 30% of 198	28.6	PASS
365	1 - 200% of 198	4.43	PASS
441	0.001 - 100% of 443	82.3	PASS
442	40 - 200% of 198	171	PASS
443	17 - 23% of 442	19.7	PASS

ANALYSIS SEQUENCE SUMMARY

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Sequence: 0F17305

Instrument: MS-BNA4

Calibration: 0168002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	0F17305-TUN1	SEQ-TUN1.D	06/21/10 12:40
Calibration Check	0F17305-CCV1	SEQ-CCV1.D	06/21/10 12:58
Blank	0F09006-BLK1	F09006B1.D	06/21/10 15:16
LCS	0F09006-BS1	F09006L1.D	06/21/10 16:25
LCS Dup	0F09006-BSD1	F09006L2.D	06/21/10 17:00
CEF-043-02N-20100603	1006034-01	0603401.D	06/21/10 17:35
CEF-043-DUP01-20100603	1006034-02	0603402.D	06/21/10 18:09
CEF-043-04N-20100603	1006034-03	0603403.D	06/21/10 18:43
CEF-043-05N-20100603	1006034-04	0603404.D	06/21/10 19:17

CONTINUING CALIBRATION CHECK

SW8270C

Laboratory:	<u>Empirical Laboratories, LLC</u>	SDG:	<u>CTO102_002</u>
Client:	<u>Tetra Tech NUS, Inc. (T010)</u>	Project:	<u>NAS Cecil Field CTO102</u>
Instrument ID:	<u>MS-BNA4</u>	Calibration:	<u>0168002</u>
Lab File ID:	<u>SEQ-CCV1.D</u>	Calibration Date:	<u>06/16/10 06:56</u>
Sequence:	<u>0F17305</u>	Injection Date:	<u>06/21/10</u>
Lab Sample ID:	<u>0F17305-CCV1</u>	Injection Time:	<u>12:58</u>

COMPOUND	TYPE	CONC. (ug/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Naphthalene	A	5.000	4.534	0.9803999	0.8889367		-9.3	20
2-Fluorobiphenyl	Q	5.000	4.364	0.6705237	0.6592994		-12.7	20
Terphenyl-d14	A	5.000	5.169	0.7440018	0.7691854		3.4	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

ANALYSIS SEQUENCE SUMMARY

FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Sequence: 0F17507

Instrument: GL-GCFID2

Calibration: 0174001

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Calibration Check	0F17507-CCV1	002F0201.D	06/23/10 18:58
Calibration Check	0F17507-CCV2	014F1401.D	06/24/10 02:51
Blank	0F09005-BLK1	015F1501.D	06/24/10 03:31
LCS	0F09005-BS1	016F1601.D	06/24/10 04:10
LCS Dup	0F09005-BSD1	017F1701.D	06/24/10 04:49
CEF-043-02N-20100603	1006034-01	018F1801.D	06/24/10 05:28
CEF-043-DUP01-20100603	1006034-02	019F1901.D	06/24/10 06:07
CEF-043-04N-20100603	1006034-03	020F2001.D	06/24/10 06:46
CEF-043-05N-20100603	1006034-04	021F2101.D	06/24/10 07:25
Calibration Check	0F17507-CCV3	026F2601.D	06/24/10 10:43

CONTINUING CALIBRATION CHECK

FLPRO

Laboratory:	<u>Empirical Laboratories, LLC</u>	SDG:	<u>CTO102_002</u>
Client:	<u>Tetra Tech NUS, Inc. (T010)</u>	Project:	<u>NAS Cecil Field CTO102</u>
Instrument ID:	<u>GL-GCFID2</u>	Calibration:	<u>0174001</u>
Lab File ID:	<u>002F0201.D</u>	Calibration Date:	<u>06/21/10 00:00</u>
Sequence:	<u>0F17507</u>	Injection Date:	<u>06/23/10</u>
Lab Sample ID:	<u>0F17507-CCV1</u>	Injection Time:	<u>18:58</u>

COMPOUND	TYPE	CONC. (mg/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Petroleum Range Organics	A	4250	3919	2449.678	2259.131		-7.8	25
2-Fluorobiphenyl	A	25.00	22.97	3433.887	3155		-8.1	25
o-Terphenyl	A	25.00	23.71	4072.193	3861.44		-5.2	25

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

CONTINUING CALIBRATION CHECK

FLPRO

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>CTO102_002</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>NAS Cecil Field CTO102</u>
Instrument ID: <u>GL-GCFID2</u>	Calibration: <u>0174001</u>
Lab File ID: <u>014F1401.D</u>	Calibration Date: <u>06/21/10 00:00</u>
Sequence: <u>0F17507</u>	Injection Date: <u>06/24/10</u>
Lab Sample ID: <u>0F17507-CCV2</u>	Injection Time: <u>02:51</u>

COMPOUND	TYPE	CONC. (mg/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Petroleum Range Organics	A	4250	4362	2449.678	2514.212		2.6	25
2-Fluorobiphenyl	A	25.00	24.00	3433.887	3297.24		-4.0	25
o-Terphenyl	A	25.00	25.09	4072.193	4086.68		0.4	25

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

CONTINUING CALIBRATION CHECK

FLPRO

Laboratory:	<u>Empirical Laboratories, LLC</u>	SDG:	<u>CTO102_002</u>
Client:	<u>Tetra Tech NUS, Inc. (T010)</u>	Project:	<u>NAS Cecil Field CTO102</u>
Instrument ID:	<u>GL-GCFID2</u>	Calibration:	<u>0174001</u>
Lab File ID:	<u>026F2601.D</u>	Calibration Date:	<u>06/21/10 00:00</u>
Sequence:	<u>0F17507</u>	Injection Date:	<u>06/24/10</u>
Lab Sample ID:	<u>0F17507-CCV3</u>	Injection Time:	<u>10:43</u>

COMPOUND	TYPE	CONC. (mg/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Petroleum Range Organics	A	4250	4209	2449.678	2426.009		-1.0	25
2-Fluorobiphenyl	A	25.00	23.33	3433.887	3204.28		-6.7	25
o-Terphenyl	A	25.00	25.10	4072.193	4089		0.4	25

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

ANALYSIS SEQUENCE SUMMARY

FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Sequence: 0F17418

Instrument: GL-GCFID2

Calibration: 0174001

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	0F17418-CAL1	035F4001.D	06/22/10 21:33
Cal Standard	0F17418-CAL2	036F4101.D	06/22/10 22:12
Cal Standard	0F17418-CAL3	037F4201.D	06/22/10 22:52
Cal Standard	0F17418-CAL4	038F4301.D	06/23/10 09:42
Cal Standard	0F17418-CAL5	039F4401.D	06/23/10 10:22
Cal Standard	0F17418-CAL6	040F4501.D	06/23/10 11:01
Initial Cal Check	0F17418-ICV1	041F4601.D	06/23/10 11:41

INITIAL CALIBRATION DATA

FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0174001

Instrument: GL-GCFID2

Matrix: Water

Calibration Date: 6/21/2010 12:00:00AM

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
	mg/L	RF	mg/L	RF								
Petroleum Range Organics	8500	2510.032	5950	2345.219	4250	2453.245	2550	2325.624	850	2514.546	85	2549.4
2-Fluorobiphenyl	25	3831.12	25	3652.16	25	3663.6	25	3360	25	3141.48	25	2954.96
o-Terphenyl	25	4162.48	25	3969.4	25	4157.76	25	3976.64	25	4135.84	25	4031.04

INITIAL CALIBRATION DATA (Continued)

FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: CTO102_002

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTO102

Calibration: 0174001

Instrument: GL-GCFID2

Matrix: Water

Calibration Date: 6/21/2010 12:00:00AM

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Petroleum Range Organics	2449.678	3.834143	2.047	2.351045E-02			20	
2-Fluorobiphenyl	3433.887	9.905918	10.01933	0.2754195			20	
o-Terphenyl	4072.193	2.221399	15.6985	6.371227E-02			20	

INITIAL CALIBRATION CHECK

FLPRO

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>CTO102_002</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>NAS Cecil Field CTO102</u>
Instrument ID: <u>GL-GCFID2</u>	Calibration: <u>0174001</u>
Lab File ID: <u>041F4601.D</u>	Calibration Date: <u>06/21/10 00:00</u>
Sequence: <u>0F17418</u>	Injection Date: <u>06/23/10</u>
Lab Sample ID: <u>0F17418-ICV1</u>	Injection Time: <u>11:41</u>

COMPOUND	TYPE	CONC. (mg/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	ICV	ICAL	ICV	MIN (#)	ICV	LIMIT (#)
Petroleum Range Organics	A	4000	4371	2449.678	2676.818		9.3	25

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

To: R. Simcik
SDG: 1102178
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VOA:

The following compound was detected in the trip blank at the following maximum concentration:

<u>Compound</u>	<u>Maximum Concentration</u>	<u>Action Level</u>
Methylene Chloride	5.78 ug/L	57.8 ug/L

An action level of 5X the maximum contaminant concentration was established to evaluate blank contamination. Dilution factors and sample aliquots were taken into consideration during the application of all action levels. All samples in the SDG were affected.

The continuing calibration analyzed on instrument MS-VOA5 on 2/24/11 at 06:55 had a percent difference > 20% for acetone, 2-butanone, carbon tetrachloride, 1,2-dichloroethane, 2-hexanone, 4-methyl-2-pentanone, 1,1,1-trichloroethane, and trichlorofluoromethane. Positive results were qualified as estimated (J) and non-detected results were qualified as estimated (UJ).

SVOC:

All results were within quality control criteria.

FLPRO:

All results were within quality control criteria.

Additional Comments:

Positive results below the reporting limit but above the method detection limit were qualified as estimated (J).

1,2-Dichloropropane was not included on sample form 1s. Revised forms were requested.

The following compound was detected in the method blank at the following maximum concentration:

<u>Compound</u>	<u>Maximum Concentration</u>	<u>Action Level</u>
Naphthalene	0.028 ug/L	0.14 ug/L

An action level of 5X the maximum contaminant concentration was established to evaluate blank contamination. Dilution factors and sample aliquots were taken into consideration during the application of all action levels. All samples in the SDG were affected. No validation action was warranted as sample results were all greater than the blank action limit or were non-detect.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Trip blank methylene chloride contamination resulted in the qualification of sample results as non-detect (U). Continuing calibration non-compliances for acetone, 2-butanone, carbon tetrachloride, 1,2-dichloroethane, 2-hexanone, 4-methyl-2-pentanone, 1,1,1-trichloroethane, trichlorofluoromethane resulted in the qualification of sample results.

Other Factors Affecting Data Quality: None.

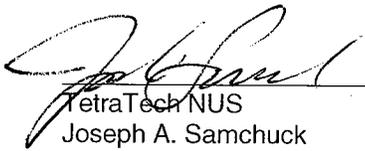
The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data

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Validation (10/99) and the Department of Defense (DoD) Quality Systems Manual (QSM) (April, 2009). The text of this report has been formulated to address only those problem areas affecting data quality.



Tetra Tech NUS
Megan Carson
Chemist/Data Validator



TetraTech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
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 ($< 2 \times$ IDL for inorganics and $<$ CRQL for organics)
Other problems (can be any number of issues; e.g. poor chromatography, interferences, etc.)
- Q = etc.)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
% Difference between columns/detectors $>25\%$ for positive results determined via
- U = 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 SDG: 1102178 FRACTION: OV MEDIA: WATER	NSAMPLE	CEF-043-DUP01-20110216			CEF-043-GW-02N-20110216			CEF-043-GW-04N-20110216			CEF-043-GW-06N-20110216		
	LAB_ID	1102178-01			1102178-04			1102178-03			1102178-05		
	SAMP_DATE	2/16/2011			2/16/2011			2/16/2011			2/16/2011		
	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-043-GW-04N-20110216			CEF-043-GW-04N-20110216								
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
1,1,1-TRICHLOROETHANE	0.25	UJ	C	0.25	UJ	C	0.25	UJ	C	0.25	UJ	C	
1,1,2,2-TETRACHLOROETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
1,1,2-TRICHLOROETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
1,1,2-TRICHLOROTRIFLUOROETHANE	0.5	U		0.5	U		0.5	U		0.5	U		
1,1-DICHLOROETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
1,1-DICHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U		
1,2,3-TRICHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
1,2,4-TRICHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
1,2-DIBROMO-3-CHLOROPROPANE	0.5	U		0.5	U		0.5	U		0.5	U		
1,2-DIBROMOETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
1,2-DICHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
1,2-DICHLOROETHANE	0.25	UJ	C	0.25	UJ	C	0.25	UJ	C	0.25	UJ	C	
1,2-DICHLOROPROPANE	0.25	U		0.25	U		0.25	U		0.25	U		
1,3-DICHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
1,4-DICHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
2-BUTANONE	2.5	UJ	C	2.5	UJ	C	2.5	UJ	C	2.5	UJ	C	
2-HEXANONE	1.25	UJ	C	1.25	UJ	C	1.25	UJ	C	1.25	UJ	C	
4-METHYL-2-PENTANONE	1.25	UJ	C	1.25	UJ	C	1.25	UJ	C	1.25	UJ	C	
ACETONE	12.9	J	C	5.83	J	CP	8.21	J	CP	5.37	J	CP	
BENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
BROMOCHLOROMETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
BROMODICHLOROMETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
BROMOFORM	0.25	U		0.25	U		0.25	U		0.25	U		
BROMOMETHANE	0.5	U		0.5	U		0.5	U		0.5	U		
CARBON DISULFIDE	0.25	U		0.25	U		0.25	U		0.25	U		
CARBON TETRACHLORIDE	0.25	UJ	C	0.25	UJ	C	0.25	UJ	C	0.25	UJ	C	
CHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
CHLORODIBROMOMETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
CHLOROETHANE	0.5	U		0.5	U		0.5	U		0.5	U		
CHLOROFORM	0.25	U		0.25	U		0.25	U		0.25	U		
CHLOROMETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
CIS-1,2-DICHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U		
CIS-1,3-DICHLOROPROPENE	0.25	U		0.25	U		0.25	U		0.25	U		
CYCLOHEXANE	0.25	U		0.25	U		0.25	U		0.25	U		
DICHLORODIFLUOROMETHANE	0.5	U		0.5	U		0.5	U		0.5	U		

PROJ_NO: 02267 SDG: 1102178 FRACTION: OV MEDIA: WATER	NSAMPLE	CEF-043-GW-07N-20110216			CEF-043-GW-09N-20110216			CEF-043-GW-40A-20110216			TB-20110216		
	LAB_ID	1102178-07			1102178-06			1102178-08			1102178-02		
	SAMP_DATE	2/16/2011			2/16/2011			2/16/2011			2/16/2011		
	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												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
1,1,1-TRICHLOROETHANE	0.25	UJ	C	0.25	UJ	C	0.25	UJ	C	0.25	UJ	C	
1,1,2,2-TETRACHLOROETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
1,1,2-TRICHLOROETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
1,1,2-TRICHLOROTRIFLUOROETHANE	0.5	U		0.5	U		0.5	U		0.5	U		
1,1-DICHLOROETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
1,1-DICHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U		
1,2,3-TRICHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
1,2,4-TRICHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
1,2-DIBROMO-3-CHLOROPROPANE	0.5	U		0.5	U		0.5	U		0.5	U		
1,2-DIBROMOETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
1,2-DICHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
1,2-DICHLOROETHANE	0.25	UJ	C	0.25	UJ	C	0.25	UJ	C	0.25	UJ	C	
1,2-DICHLOROPROPANE	0.25	U		0.25	U		0.25	U		0.25	U		
1,3-DICHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
1,4-DICHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
2-BUTANONE	2.5	UJ	C	2.5	UJ	C	2.5	UJ	C	2.5	UJ	C	
2-HEXANONE	1.25	UJ	C	1.25	UJ	C	1.25	UJ	C	1.25	UJ	C	
4-METHYL-2-PENTANONE	1.25	UJ	C	1.25	UJ	C	1.25	UJ	C	1.25	UJ	C	
ACETONE	2.5	UJ	C	5.28	J	CP	2.5	UJ	C	2.5	UJ	C	
BENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
BROMOCHLOROMETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
BROMODICHLOROMETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
BROMOFORM	0.25	U		0.25	U		0.25	U		0.25	U		
BROMOMETHANE	0.5	U		0.5	U		0.5	U		0.5	U		
CARBON DISULFIDE	0.25	U		0.25	U		0.25	U		0.25	U		
CARBON TETRACHLORIDE	0.25	UJ	C	0.25	UJ	C	0.25	UJ	C	0.25	UJ	C	
CHLOROBENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
CHLORODIBROMOMETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
CHLOROETHANE	0.5	U		0.5	U		0.5	U		0.5	U		
CHLOROFORM	0.25	U		0.25	U		0.25	U		0.25	U		
CHLOROMETHANE	0.25	U		0.25	U		0.25	U		0.25	U		
CIS-1,2-DICHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U		
CIS-1,3-DICHLOROPROPENE	0.25	U		0.25	U		0.25	U		0.25	U		
CYCLOHEXANE	0.25	U		0.25	U		0.25	U		0.25	U		
DICHLORODIFLUOROMETHANE	0.5	U		0.5	U		0.5	U		0.5	U		

PROJ_NO: 02267 SDG: 1102178 FRACTION: OV MEDIA: WATER	NSAMPLE	CEF-043-DUP01-20110216			CEF-043-GW-02N-20110216			CEF-043-GW-04N-20110216			CEF-043-GW-06N-20110216		
	LAB_ID	1102178-01			1102178-04			1102178-03			1102178-05		
	SAMP_DATE	2/16/2011			2/16/2011			2/16/2011			2/16/2011		
	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-043-GW-04N-20110216			CEF-043-GW-04N-20110216								
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
ETHYLBENZENE	0.25	U		0.32	J	P	0.25	U		0.25	U		
ISOPROPYLBENZENE	0.474	J	P	0.25	U		0.404	J	P	1.66			
METHYL ACETATE	0.5	U		0.5	U		0.5	U		0.5	U		
METHYL CYCLOHEXANE	0.25	U		0.25	U		0.25	U		0.25	U		
METHYL TERT-BUTYL ETHER	0.25	U		0.25	U		0.25	U		0.25	U		
METHYLENE CHLORIDE	0.573	U	A	1.21	U	A	0.5	U		0.5	U		
STYRENE	0.25	U		0.25	U		0.25	U		0.25	U		
TETRACHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U		
TOLUENE	0.25	U		0.25	U		0.25	U		0.25	U		
TOTAL XYLENES	0.75	U		0.75	U		0.75	U		0.75	U		
TRANS-1,2-DICHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U		
TRANS-1,3-DICHLOROPROPENE	0.25	U		0.25	U		0.25	U		0.25	U		
TRICHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U		
TRICHLOROFLUOROMETHANE	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	
VINYL CHLORIDE	0.25	U		0.25	U		0.25	U		0.25	U		

PROJ_NO: 02267 SDG: 1102178 FRACTION: OV MEDIA: WATER	NSAMPLE	CEF-043-GW-07N-20110216			CEF-043-GW-09N-20110216			CEF-043-GW-40A-20110216			TB-20110216		
	LAB_ID	1102178-07			1102178-06			1102178-08			1102178-02		
	SAMP_DATE	2/16/2011			2/16/2011			2/16/2011			2/16/2011		
	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													
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
ETHYLBENZENE	0.335	J	P	0.513	J	P	0.25	U		0.25	U		
ISOPROPYLBENZENE	0.25	U		0.449	J	P	0.25	U		0.25	U		
METHYL ACETATE	0.5	U		0.5	U		0.5	U		0.5	U		
METHYL CYCLOHEXANE	0.25	U		0.25	U		0.25	U		0.25	U		
METHYL TERT-BUTYL ETHER	0.25	U		0.25	U		0.25	U		0.25	U		
METHYLENE CHLORIDE	0.943	U	A	0.5	U		0.596	U	A	5.78			
STYRENE	0.25	U		0.25	U		0.25	U		0.25	U		
TETRACHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U		
TOLUENE	0.25	U		0.25	U		0.25	U		0.25	U		
TOTAL XYLENES	1.86	J	P	1.65	J	P	0.75	U		0.75	U		
TRANS-1,2-DICHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U		
TRANS-1,3-DICHLOROPROPENE	0.25	U		0.25	U		0.25	U		0.25	U		
TRICHLOROETHENE	0.25	U		0.25	U		0.25	U		0.25	U		
TRICHLOROFLUOROMETHANE	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	
VINYL CHLORIDE	0.25	U		0.25	U		0.25	U		0.25	U		

PROJ_NO: 02267 SDG: 1102178 FRACTION: OS MEDIA: WATER	NSAMPLE	CEF-043-DUP01-20110216			CEF-043-GW-02N-20110216			CEF-043-GW-04N-20110216			CEF-043-GW-06N-20110216		
	LAB_ID	1102178-01			1102178-04			1102178-03			1102178-05		
	SAMP_DATE	2/16/2011			2/16/2011			2/16/2011			2/16/2011		
	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-043-GW-04N-20110216											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
NAPHTHALENE	0.192			0.0185	U		0.207			0.0185	U		

PROJ_NO: 02267 SDG: 1102178 FRACTION: OS MEDIA: WATER	NSAMPLE	CEF-043-GW-07N-20110216			CEF-043-GW-09N-20110216			CEF-043-GW-40A-20110216		
	LAB_ID	1102178-07			1102178-06			1102178-08		
	SAMP_DATE	2/16/2011			2/16/2011			2/16/2011		
	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
NAPHTHALENE	0.0185	U		0.577			0.0185	U		

PROJ_NO: 02267 SDG: 1102178 FRACTION: PET MEDIA: WATER	NSAMPLE	CEF-043-DUP01-20110216			CEF-043-GW-02N-20110216			CEF-043-GW-04N-20110216			CEF-043-GW-06N-20110216		
	LAB_ID	1102178-01			1102178-04			1102178-03			1102178-05		
	SAMP_DATE	2/16/2011			2/16/2011			2/16/2011			2/16/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	CEF-043-GW-04N-20110216											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
TPH (C08-C40)	0.326	J	P	0.416	J	P	0.347	J	P	0.219	J	P	

PROJ_NO: 02267 SDG: 1102178 FRACTION: PET MEDIA: WATER	NSAMPLE	CEF-043-GW-07N-20110216			CEF-043-GW-09N-20110216			CEF-043-GW-40A-20110216		
	LAB_ID	1102178-07			1102178-06			1102178-08		
	SAMP_DATE	2/16/2011			2/16/2011			2/16/2011		
	QC_TYPE	NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
TPH (C08-C40)	0.157	U		1.04			0.157	U		

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

ANALYSIS DATA SHEET

07N
CEF-043-GW-0N-20110216

Laboratory: Empirical Laboratories, LLC SDG: 1102178
 Client: Tetra Tech NUS, Inc. (T010) Project: CTO JM09 South Fuel Field
 Matrix: Ground Water Laboratory ID: 1102178-07 File ID: 0217807.D
 Sampled: 02/16/11 13:57 Prepared: 02/24/11 00:00 Analyzed: 02/24/11 14:57
 Solids: Preparation: 5030B Dilution: 1
 Batch: 1B24002 Sequence: 1B05611 Calibration: 0349002 Instrument: MS-VOA5

4-18-11
JAJ

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
67-64-1	Acetone		2.50	5.00	10.0	X, U
71-43-2	Benzene		0.250	0.500	1.00	U
74-97-5	Bromochloromethane		0.250	0.500	1.00	U
75-27-4	Bromodichloromethane		0.250	0.500	1.00	N, U
75-25-2	Bromoform		0.250	0.500	1.00	X, U
74-83-9	Bromomethane		0.500	1.00	2.00	U
78-93-3	2-Butanone		2.50	5.00	10.0	X, U
75-15-0	Carbon disulfide		0.250	0.500	1.00	U
56-23-5	Carbon tetrachloride		0.250	0.500	1.00	X, U
108-90-7	Chlorobenzene		0.250	0.500	1.00	U
75-00-3	Chloroethane		0.500	1.00	2.00	U
67-66-3	Chloroform		0.250	0.500	1.00	U
74-87-3	Chloromethane		0.250	0.500	1.00	U
110-82-7	Cyclohexane		0.250	0.500	1.00	U
124-48-1	Dibromochloromethane		0.250	0.500	1.00	U
96-12-8	1,2-Dibromo-3-chloropropane		0.500	1.00	2.00	U
106-93-4	1,2-Dibromoethane (EDB)		0.250	0.500	1.00	U
95-50-1	1,2-Dichlorobenzene		0.250	0.500	1.00	U
541-73-1	1,3-Dichlorobenzene		0.250	0.500	1.00	U
106-46-7	1,4-Dichlorobenzene		0.250	0.500	1.00	U
75-71-8	Dichlorodifluoromethane		0.500	1.00	2.00	U
75-34-3	1,1-Dichloroethane		0.250	0.500	1.00	U
107-06-2	1,2-Dichloroethane		0.250	0.500	1.00	X, U
75-35-4	1,1-Dichloroethene		0.250	0.500	1.00	U
156-59-2	cis-1,2-Dichloroethene		0.250	0.500	1.00	U
156-60-5	trans-1,2-Dichloroethene		0.250	0.500	1.00	U
78-87-5	1,2-Dichloropropane		0.250	0.500	1.00	U
10061-01-5	cis-1,3-Dichloropropene		0.250	0.500	1.00	U
10061-02-6	trans-1,3-Dichloropropene		0.250	0.500	1.00	U
100-41-4	Ethylbenzene	0.335	0.250	0.500	1.00	I
591-78-6	2-Hexanone		1.25	2.50	5.00	X, U
98-82-8	Isopropylbenzene		0.250	0.500	1.00	U
75-09-2	Methylene chloride	0.943	0.500	1.00	2.00	I
79-20-9	Methyl Acetate		0.500	1.00	2.00	U
108-87-2	Methylcyclohexane		0.250	0.500	1.00	U
108-10-1	4-Methyl-2-pentanone		1.25	2.50	5.00	X, U
1634-04-4	Methyl t-Butyl Ether		0.250	0.500	1.00	U
100-42-5	Styrene		0.250	0.500	1.00	U
79-34-5	1,1,2,2-Tetrachloroethane		0.250	0.500	1.00	U

ANALYSIS DATA SHEET

TB-20110216

Laboratory: Empirical Laboratories, LLC SDG: 1102178
 Client: Tetra Tech NUS, Inc. (T010) Project: CTO JM09 South Fuel Field
 Matrix: Ground Water Laboratory ID: 1102178-02 File ID: 0217802.D
 Sampled: 02/16/11 10:20 Prepared: 02/24/11 00:00 Analyzed: 02/24/11 12:26
 Solids: Preparation: 5030B Dilution: 1
 Batch: 1B24002 Sequence: 1B05611 Calibration: 0349002 Instrument: MS-VOA5

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
67-64-1	Acetone		2.50	5.00	10.0	X, U
71-43-2	Benzene		0.250	0.500	1.00	U
74-97-5	Bromochloromethane		0.250	0.500	1.00	U
75-27-4	Bromodichloromethane		0.250	0.500	1.00	U
75-25-2	Bromoform		0.250	0.500	1.00	X, U
74-83-9	Bromomethane		0.500	1.00	2.00	U
78-93-3	2-Butanone		2.50	5.00	10.0	X, U
75-15-0	Carbon disulfide		0.250	0.500	1.00	U
56-23-5	Carbon tetrachloride		0.250	0.500	1.00	X, U
108-90-7	Chlorobenzene		0.250	0.500	1.00	U
75-00-3	Chloroethane		0.500	1.00	2.00	U
67-66-3	Chloroform		0.250	0.500	1.00	U
74-87-3	Chloromethane		0.250	0.500	1.00	U
110-82-7	Cyclohexane		0.250	0.500	1.00	U
124-48-1	Dibromochloromethane		0.250	0.500	1.00	U
96-12-8	1,2-Dibromo-3-chloropropane		0.500	1.00	2.00	U
106-93-4	1,2-Dibromoethane (EDB)		0.250	0.500	1.00	U
95-50-1	1,2-Dichlorobenzene		0.250	0.500	1.00	U
541-73-1	1,3-Dichlorobenzene		0.250	0.500	1.00	U
106-46-7	1,4-Dichlorobenzene		0.250	0.500	1.00	U
75-71-8	Dichlorodifluoromethane		0.500	1.00	2.00	U
75-34-3	1,1-Dichloroethane		0.250	0.500	1.00	U
107-06-2	1,2-Dichloroethane		0.250	0.500	1.00	X, U
75-35-4	1,1-Dichloroethene		0.250	0.500	1.00	U
156-59-2	cis-1,2-Dichloroethene		0.250	0.500	1.00	U
156-60-5	trans-1,2-Dichloroethene		0.250	0.500	1.00	U
78-87-5	1,2-Dichloropropane		0.250	0.500	1.00	U
10061-01-5	cis-1,3-Dichloropropene		0.250	0.500	1.00	U
10061-02-6	trans-1,3-Dichloropropene		0.250	0.500	1.00	U
100-41-4	Ethylbenzene		0.250	0.500	1.00	U
591-78-6	2-Hexanone		1.25	2.50	5.00	X, U
98-82-8	Isopropylbenzene		0.250	0.500	1.00	U
75-09-2	Methylene chloride	5.78	0.500	1.00	2.00	
79-20-9	Methyl Acctate		0.500	1.00	2.00	U
108-87-2	Methylcyclohexane		0.250	0.500	1.00	U
108-10-1	4-Methyl-2-pentanone		1.25	2.50	5.00	X, U
1634-04-4	Methyl t-Butyl Ether		0.250	0.500	1.00	U
100-42-5	Styrene		0.250	0.500	1.00	U
79-34-5	1,1,2,2-Tetrachloroethane		0.250	0.500	1.00	U

ANALYSIS DATA SHEET

CEF-043-GW-04N-20110216

Laboratory:	<u>Empirical Laboratories, LLC</u>	SDG:	<u>1102178</u>
Client:	<u>Tetra Tech NUS, Inc. (T010)</u>	Project:	<u>CTO JM09 South Fuel Field</u>
Matrix:	<u>Ground Water</u>	Laboratory ID:	<u>1102178-03</u>
		File ID:	<u>0217803.D</u>
Sampled:	<u>02/16/11 10:10</u>	Prepared:	<u>02/21/11 15:55</u>
		Analyzed:	<u>02/25/11 16:23</u>
Solids:		Preparation:	<u>EXT 3510</u>
		Dilution:	<u>1</u>
Batch:	<u>1B21017</u>	Sequence:	<u>1B05615</u>
		Calibration:	<u>1048001</u>
		Instrument:	<u>MS-BNA4</u>

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
91-20-3	Naphthalene	0.207	0.0185	0.0370	0.0926	V
SYSTEM MONITORING COMPOUND		ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
2-Fluorobiphenyl		46.30	31.71	68.5	34 - 167	
Terphenyl-d14		46.30	24.95	53.9	34 - 167	X

APPENDIX C

SUPPORT DOCUMENTATION

Sample Delivery Group Case Narrative

Receipt Information

The samples were received within the preservation guidelines for the associated methods. The information associated with sample receipt and the Sample Delivery Group (SDG) are included within section 4 of this package, which also provides information on the link between the client sample ID listed on the COC and laboratory's assigned unique sample ID or WorkOrder #. The sample is tracked through the laboratory for all analysis via the assigned WorkOrder #.

All samples that were received were analyzed and none of the samples were placed on hold without analyses. There were no subcontracted analyses for this SDG.

Changes to the Revision

This is an original submittal of the final report package.

Analytical Information

All samples were prepped (where applicable) and analyzed within the standard allowed holding times, unless noted within the exceptions listed below. The laboratory analyzed all samples within the program and method guidelines. The following information is provided specific to individual methods:

Chromatographic Flags for Manual Integration:

The following letters are used to denote manual integrations on the laboratory's raw data in association with chromatographic integrations:

- A:** The peak was manually integrated as it was not integrated in the original chromatogram.
- B:** The peak was manually integrated due to resolution or coelution issues in the original chromatogram.
- C:** The peak was manually integrated to correct the baseline from the original chromatogram.
- D:** The peak was manually integrated to identify the correct peak as the wrong peak was identified in the original chromatogram.
- E:** The peak was manually integrated to include the entire peak as the original chromatogram only integrated part of the peak.

SW8260B:

The continuing calibration verification 1B05611-CCV1 exceeded criteria with a positive bias for Acetone, Bromoform, 2-Butanone, Carbon Tetrachloride, 1,2-Dichloroethane, 2-Hexanone, 4-Methyl-2-pentanone, 1,1,1-Trichloroethane, and Trichlorofluoromethane.

The surrogate Dibromofluoromethane exceeded criteria with a positive bias in sample 1102178-02 and -05.

The matrix spikes associated to sample 1102178-07 exceeded criteria with a positive bias for Bromodichloromethane. The matrix spike duplicate 1B24002-MSD1 was

analyzed 12 hours 4 minutes after the associated tune standard.

No additional anomalies or deviations are noted and the proper data qualifiers have been applied.

SW8270C:

The method blank 1B21017-BLK1 has a positive result for Naphthalene.

The continuing calibration verification 1B05615-CCV1 exceeded criteria with a positive bias for Terphenyl-d14.

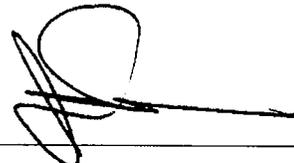
No additional anomalies or deviations are noted and the proper data qualifiers have been applied.

FLPRO:

The surrogate o-Terphenyl exceeded criteria with a negative bias in 1B21010-BS1, -MS1, -MSD1, 1102178-04, and -07.

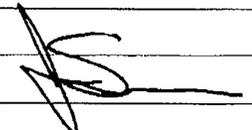
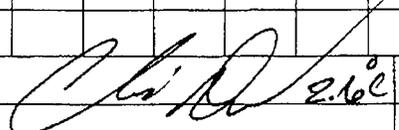
No additional anomalies or deviations are noted and the proper data qualifiers have been applied.



PROJECT NO: <u>CEC-11</u> <u>Field South Fuel Farm</u>	FACILITY: <u>112602267</u>	PROJECT MANAGER: <u>Rob Simerik</u>	PHONE NUMBER: <u>412 921 8163</u>	LABORATORY NAME AND CONTACT: <u>Empirical Labs / Kim Kostzer</u>
SAMPLERS (SIGNATURE) 		FIELD OPERATIONS LEADER: <u>Jeff Krone</u>	PHONE NUMBER: <u>904 69 7473</u>	ADDRESS: <u>621 Mainstream Drive Suite 870</u>
CARRIERWAYBILL NUMBER <u>Fedex Airbill</u> <u>8660 1730 1977</u>			CITY, STATE: <u>Nashville, TN 37228</u>	

STANDARD TAT <input checked="" type="checkbox"/> RUSH TAT <input type="checkbox"/>	CONTAINER TYPE PLASTIC (P) or GLASS (G)
<input type="checkbox"/> 24 hr. <input type="checkbox"/> 48 hr. <input type="checkbox"/> 72 hr. <input type="checkbox"/> 7 day <input type="checkbox"/> 14 day	PRESERVATIVE USED

DATE YEAR	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	TYPE OF ANALYSIS	COMMENTS
2/16	0000	CEF-043-DUP#1-20110216				GW	G	7	VOCs (2260A) HCl G TRPH FL PRO - G MS/MSD HCl G	Cool to 4° C-01
2/16	1030	TB-20110216				QC	G	2		-62
2/16	1010	CEF-043-GW-04N-20110216				GW	G	7		-63
2/16	1121	CEF-043-GW-05N-20110216				GW	G	7		-64
2/16	1212	CEF-043-GW-06N-20110216				GW	G	7		-65
2/16	1303	CEF-043-GW-09N-20110216				GW	G	7		-66
2/16	1357	CEF-043-GW-07N-20110216				GW	G	14		ms/msd * -07
2/16	1550	CEF-043-GW-40A-20110216				GW	G	7		-08

1. RELINQUISHED BY 	DATE <u>2/17/11</u>	TIME <u>12:00</u>	1. RECEIVED BY 	DATE <u>2-18-11</u>	TIME <u>08:45</u>
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: * only duplicate sample collected due to lack of bottleware provided for ms/msd.

1102178

**NAS CECIL FIELD
WATER DATA
1102178**

FRACTION	CHEMICAL	DEF-043-DUP01-20110216	UNITS	EF-043-GW-04N-201102	RPD	D
OV	ACETONE	12.9 J	UG/L	8.21 J	44.43	OK 4.69
OV	ISOPROPYLBENZENE	0.474 J	UG/L	0.404 J	15.95	0.07
OV	METHYLENE CHLORIDE	0.573 J	UG/L	ND	200.00	OK 0.57

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

NAS CECIL FIELD
WATER DATA
1102178

FRACTION	CHEMICAL	DEF-043-DUP01-20110216	UNITS	EF-043-GW-04N-201102	RPD	D
OS	NAPHTHALENE	0.192	UG/L	0.207	7.52	0.02

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

NAS CECIL FIELD
WATER DATA
1102178

FRACTION	CHEMICAL	DEF-043-DUP01-20110216	UNITS	EF-043-GW-04N-201102	RPD	D
PET	TPH (C08-C40)	0.326 J	MG/L	0.347 J	6.24	0.02

Current RPD Quality Control Limit: 30 %.

Shaded cells indicate RPDs that exceed the applicable quality control limit.

EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

LIMS Number: 1102178 Number of Coolers: 1 of 4
Client: Tetra Tech NUS INC. Project: Cecil Field South Fuel Farm
Date/Time Received: 2-18-11 08:45 Date cooler(s) opened: 2-18-11
Opened By (print): Russ Townsend (signature): [Signature]

Circle response below as appropriate

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

If applicable, enter a bill number here: 7077

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

How many: 2 Seal date: 2-17-11 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: Initial Value: 2.9 °C Correction Factor: -0.3 °C Final Value: 2.6 °C

Dates samples were logged-in: 2-19-11
9. Initial this form to acknowledge login of sample(s): (Name): [Signature] (Initial): [Signature]

- 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: _____

PhC for all EPO Samples

EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

LIMS Number: 1102178 Number of Coolers: 2 of 4
Client: Tetra Tech NUS INC. Project: Cecil Field South Fuel Farm
Date/Time Received: 2.18.11 08:45 Date cooler(s) opened: 2.18.11
Opened By (print): Russ Townsend (signature): Russ Townsend

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: 7088

2. Were custody seals on outside of cooler(s)? Yes No
How many: 2 Seal date: 2.17.11 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: Initial Value: 3.4 °C Correction Factor: -0.3 °C Final Value: 3.1 °C

Dates samples were logged-in: See 10F4

9. Initial this form to acknowledge login of sample(s): (Name): _____ (Initial): _____

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: _____

EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

LIMS Number: 1102178 Number of Coolers: 3 of 4

Client: Tetra Tech NUS INC. Project: Cecil Field South Fuel Farm

Date/Time Received: 2-18-11 08:45 Date cooler(s) opened: 2-18-11

Opened By (print): Russ Townsend (signature): [Signature]

Circle response below as appropriate

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

If applicable, enter a bill number here: 1977

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

How many: 2 Seal date: 2-17-11 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: Initial Value: 2-3 °C Correction Factor: -0.3 °C Final Value: 2-0 °C

Dates samples were logged-in: See 10F4

9. Initial this form to acknowledge login of sample(s): (Name): _____ (Initial): _____

- 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: RT

EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

LIMS Number: 1102178 Number of Coolers: 4 of 4
Client: Tetra Tech NWS INC. Project: Cecil Field South Fuel Farm
Date/Time Received: 2-18-11 08:45 Date cooler(s) opened: 2-18-11
Opened By (print): Russ Townsend (signature): Russ Townsend

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: 7066

2. Were custody seals on outside of cooler(s)? Yes No
How many: 2 Seal date: 2-17-11 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: Initial Value: 3.4 °C Correction Factor: -0.3 °C Final Value: 3.1 °C

Dates samples were logged-in: SCC 1 of 4
9. Initial this form to acknowledge login of sample(s): (Name): _____ (Initial): _____

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: _____

SDG 1102178

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OS	UG/L	CEF-043-GW-40A-201102	1102178-08	SUR	02/16/2011	02/21/2011	02/25/2011	5	4	9
OS	UG/L	CEF-043-DUP01-2011021	1102178-01	SUR	02/16/2011	02/21/2011	02/25/2011	5	4	9
OS	UG/L	CEF-043-GW-02N-201102	1102178-04	NM	02/16/2011	02/21/2011	02/25/2011	5	4	9
OS	UG/L	CEF-043-GW-02N-201102	1102178-04	SUR	02/16/2011	02/21/2011	02/25/2011	5	4	9
OS	UG/L	CEF-043-GW-04N-201102	1102178-03	NM	02/16/2011	02/21/2011	02/25/2011	5	4	9
OS	UG/L	CEF-043-GW-04N-201102	1102178-03	SUR	02/16/2011	02/21/2011	02/25/2011	5	4	9
OS	UG/L	CEF-043-GW-06N-201102	1102178-05	NM	02/16/2011	02/21/2011	02/25/2011	5	4	9
OS	UG/L	CEF-043-GW-06N-201102	1102178-05	SUR	02/16/2011	02/21/2011	02/25/2011	5	4	9
OS	UG/L	CEF-043-GW-07N-201102	1102178-07	NM	02/16/2011	02/21/2011	02/25/2011	5	4	9
OS	UG/L	CEF-043-GW-07N-201102	1102178-07	SUR	02/16/2011	02/21/2011	02/25/2011	5	4	9
OS	UG/L	CEF-043-GW-09N-201102	1102178-06	NM	02/16/2011	02/21/2011	02/25/2011	5	4	9
OS	UG/L	CEF-043-GW-09N-201102	1102178-06	SUR	02/16/2011	02/21/2011	02/25/2011	5	4	9
OS	UG/L	CEF-043-GW-40A-201102	1102178-08	NM	02/16/2011	02/21/2011	02/25/2011	5	4	9
OS	UG/L	CEF-043-DUP01-2011021	1102178-01	NM	02/16/2011	02/21/2011	02/25/2011	5	4	9
OV	UG/L	CEF-043-GW-02N-201102	1102178-04	NM	02/16/2011	02/24/2011	02/24/2011	8	0	8

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	UG/L	CEF-043-GW-04N-201102	1102178-03	NM	02/16/2011	02/24/2011	02/24/2011	8	0	8
OV	UG/L	CEF-043-GW-06N-201102	1102178-05	NM	02/16/2011	02/24/2011	02/24/2011	8	0	8
OV	UG/L	CEF-043-GW-07N-201102	1102178-07	NM	02/16/2011	02/24/2011	02/24/2011	8	0	8
OV	UG/L	CEF-043-GW-09N-201102	1102178-06	NM	02/16/2011	02/24/2011	02/24/2011	8	0	8
OV	UG/L	CEF-043-GW-40A-201102	1102178-08	NM	02/16/2011	02/24/2011	02/24/2011	8	0	8
OV	UG/L	TB-20110216	1102178-02	NM	02/16/2011	02/24/2011	02/24/2011	8	0	8
OV	UG/L	CEF-043-DUP01-2011021	1102178-01	NM	02/16/2011	02/24/2011	02/24/2011	8	0	8
TPH	MG/L	CEF-043-GW-40A-201102	1102178-08	NM	02/16/2011	02/21/2011	02/22/2011	5	1	6
TPH	MG/L	CEF-043-DUP01-2011021	1102178-01	NM	02/16/2011	02/21/2011	02/22/2011	5	1	6
TPH	MG/L	CEF-043-GW-02N-201102	1102178-04	NM	02/16/2011	02/21/2011	02/22/2011	5	1	6
TPH	MG/L	CEF-043-GW-04N-201102	1102178-03	NM	02/16/2011	02/21/2011	02/22/2011	5	1	6
TPH	MG/L	CEF-043-GW-06N-201102	1102178-05	NM	02/16/2011	02/21/2011	02/22/2011	5	1	6
TPH	MG/L	CEF-043-GW-07N-201102	1102178-07	NM	02/16/2011	02/21/2011	02/22/2011	5	1	6
TPH	MG/L	CEF-043-GW-09N-201102	1102178-06	NM	02/16/2011	02/21/2011	02/22/2011	5	1	6

HOLDING TIME SUMMARY

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1102178

Client: Tetra Tech NUS, Inc. (T010)

Project: CTO JM09 South Fuel Field

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
CEF-043-DUP01-20110216	02/16/11 00:00	02/18/11 08:45	02/24/11 00:00	N/A	14.00	02/24/11 11:56	8.50	14.00	
TB-20110216	02/16/11 10:20	02/18/11 08:45	02/24/11 00:00	N/A	14.00	02/24/11 12:26	8.09	14.00	
CEF-043-GW-04N-20110216	02/16/11 10:10	02/18/11 08:45	02/24/11 00:00	N/A	14.00	02/24/11 12:56	8.12	14.00	
CEF-043-GW-02N-20110216	02/16/11 11:21	02/18/11 08:45	02/24/11 00:00	N/A	14.00	02/24/11 13:27	8.09	14.00	
CEF-043-GW-06N-20110216	02/16/11 12:12	02/18/11 08:45	02/24/11 00:00	N/A	14.00	02/24/11 13:57	8.07	14.00	
CEF-043-GW-09N-20110216	02/16/11 13:03	02/18/11 08:45	02/24/11 00:00	N/A	14.00	02/24/11 14:27	8.06	14.00	
CEF-043-GW-0N-20110216	02/16/11 13:57	02/18/11 08:45	02/24/11 00:00	N/A	14.00	02/24/11 14:57	8.04	14.00	
CEF-043-GW-40A-20110216	02/16/11 15:50	02/18/11 08:45	02/24/11 00:00	N/A	14.00	02/24/11 15:28	7.98	14.00	

PREPARATION BENCH SHEET

1B24002

Empirical Laboratories, LLC

Printed: 3/2/2011 11:10:49AM

Matrix: Water

Prepared using: MS - 5030B

Surrogate used: 11A0564

Lab Number	Test Code	Prepared	Initial (mL)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Extraction Comments
1102176-03RE1	VOC_8260B_REG	02/23/2011 00:00	5	5				1	RR 2x>dichlodifl-ADM
1102177-02RE1	VOC_8260B_REG	02/24/2011 00:00	5	5				1	RR 1x w/good QC-ADM
1102177-03RE1	VOC_8260B_REG	02/24/2011 00:00	5	5				1	RR 1x w/good QC-ADM
1102177-04RE1	VOC_8260B_REG	02/24/2011 00:00	5	5				1	RR 1x w/good QC-ADM
1102177-12RE1	VOC_8260B_REG	02/24/2011 00:00	5	5				1	RR 2x w/good QC-ADM
1102178-01	VOC_8260B_TCL	02/24/2011 00:00	5	5				1	None version = client list
1102178-02	VOC_8260B_TCL	02/24/2011 00:00	5	5				1	None version = client list
1102178-03	VOC_8260B_TCL	02/24/2011 00:00	5	5				1	None version = client list
1102178-04	VOC_8260B_TCL	02/24/2011 00:00	5	5				1	None version = client list
1102178-05	VOC_8260B_TCL	02/24/2011 00:00	5	5				1	None version = client list
1102178-06	VOC_8260B_TCL	02/24/2011 00:00	5	5				1	None version = client list
1102178-07	VOC_8260B_REG	02/24/2011 00:00	5	5				1	Added for BatchQC in: 1B24002
1102178-07	VOC_8260B_TCL	02/24/2011 00:00	5	5				1	None version = client list
1102178-08	VOC_8260B_TCL	02/24/2011 00:00	5	5				1	None version = client list
1102179-01	VOC_8260B_REG	02/24/2011 00:00	5	5				1	
1102179-03	VOC_8260B_REG	02/24/2011 00:00	5	5				1	
1102181-01	VOC_8260B_REG	02/24/2011 00:00	5	5				1	select version
1102202-01	VOC_8260B_TCL	02/24/2011 00:00	5	5				1	
1B24002-BLK1	QC	02/24/2011 00:00	5	5				1	
1B24002-BS1	QC	02/24/2011 00:00	5	5	11B0496		2.5	1	
1B24002-MS1	QC	02/24/2011 00:00	5	5	11B0496	1102178-07	2.5	1	
1B24002-MSD1	QC	02/24/2011 00:00	5	5	11B0496	1102178-07	2.5	1	

Spiking Witnessed By _____ Date _____

Preparation Reviewed By _____ Date _____

Extracts Received By _____ Date _____

PREPARATION BENCH SHEET

1B24002

Empirical Laboratories, LLC

Printed: 3/2/2011 11:10:49AM

Matrix: Water

Prepared using: MS - 5030B

Surrogate used: 11A0564

Lab Number	Test Code	Prepared	Initial (mL)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Extraction Comments
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Spiking Witnessed By _____ Date _____

Preparation Reviewed By _____ Date _____

Extracts Received By _____ Date _____

ANALYSIS SEQUENCE SUMMARY

SW8260B

Laboratory:	<u>Empirical Laboratories, LLC</u>	SDG:	<u>1102178</u>
Client:	<u>Tetra Tech NUS, Inc. (T010)</u>	Project:	<u>CTO JM09 South Fuel Field</u>
Sequence:	<u>0L34902</u>	Instrument:	<u>MS-VOA5</u>
Calibration:	<u>0349002</u>		

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	0L34902-TUN1	1213TU1.D	12/13/10 14:13
Cal Standard	0L34902-CAL1	SEQ-CAL1.D	12/13/10 14:43
Cal Standard	0L34902-CAL2	SEQ-CAL2.D	12/13/10 15:13
Cal Standard	0L34902-CAL3	SEQ-CAL3.D	12/13/10 15:43
Cal Standard	0L34902-CAL4	SEQ-CAL4.D	12/13/10 16:14
Cal Standard	0L34902-CAL5	SEQ-CAL5.D	12/13/10 16:44
Cal Standard	0L34902-CAL6	SEQ-CAL6.D	12/13/10 17:14
Cal Standard	0L34902-CAL7	SEQ-CAL7.D	12/13/10 17:44
Cal Standard	0L34902-CAL8	SEQ-CAL8.D	12/13/10 18:14
Cal Standard	0L34902-CAL9	SEQ-CAL9.D	12/13/10 18:44
Initial Cal Check	0L34902-ICV1	SEQ-ICV1.D	12/13/10 19:14
Cal Standard	0L34902-CALA	SEQ-CALA.D	12/13/10 20:14
Cal Standard	0L34902-CALB	SEQ-CALB.D	12/13/10 20:44
Cal Standard	0L34902-CALC	SEQ-CALC.D	12/13/10 21:15
Cal Standard	0L34902-CALD	SEQ-CALD.D	12/13/10 21:45
Cal Standard	0L34902-CALE	SEQ-CALE.D	12/13/10 22:15
Cal Standard	0L34902-CALF	SEQ-CALF.D	12/13/10 22:45
Cal Standard	0L34902-CALG	SEQ-CALG.D	12/13/10 23:15
MS Tune	0L34902-TUN2	1213TU2.D	12/14/10 08:57
Cal Standard	0L34902-CALH	SEQ-CALH.D	12/14/10 09:27
Cal Standard	0L34902-CALI	SEQ-CALI.D	12/14/10 09:57
Initial Cal Check	0L34902-ICV2	SEQ-ICV3.D	12/14/10 10:27

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8260B

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>1102178</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>CTO JM09 South Fuel Field</u>
Lab File ID: <u>1213TU1.D</u>	Injection Date: <u>12/13/10</u>
Instrument ID: <u>MS-VOA5</u>	Injection Time: <u>14:13</u>
Sequence: <u>0L34902</u>	Lab Sample ID: <u>0L34902-TUN1</u>

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	24.4	PASS
75	30 - 60% of 95	54.7	PASS
95	Base peak, 100% relative abundance	100	PASS
96	5 - 9% of 95	6.36	PASS
173	Less than 2% of 174	0	PASS
174	50 - 200% of 95	64.1	PASS
175	5 - 9% of 174	7.1	PASS
176	95 - 101% of 174	96	PASS
177	5 - 9% of 176	7.18	PASS

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8260B

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>1102178</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>CTO JM09 South Fuel Field</u>
Lab File ID: <u>1213TU2.D</u>	Injection Date: <u>12/14/10</u>
Instrument ID: <u>MS-VOA5</u>	Injection Time: <u>08:57</u>
Sequence: <u>0L34902</u>	Lab Sample ID: <u>0L34902-TUN2</u>

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	23.1	PASS
75	30 - 60% of 95	51.6	PASS
95	Base peak, 100% relative abundance	100	PASS
96	5 - 9% of 95	6.89	PASS
173	Less than 2% of 174	0	PASS
174	50 - 200% of 95	69.4	PASS
175	5 - 9% of 174	7.71	PASS
176	95 - 101% of 174	100	PASS
177	5 - 9% of 176	6.09	PASS

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1102178

Client: Tetra Tech NUS, Inc. (T010)

Project: CTO JM09 South Fuel Field

Calibration: 0349002

Instrument: MS-VOA5

Matrix: Water

Calibration Date: 12/13/2010 2:13:55PM

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Acetone	9.490153E-02	35.11874	6.444778	7.760536E-02	0.9962118		0.995	
Benzene	0.8446166	3.664116	13.05667	1.589406E-02			15	
Bromochloromethane	0.1224323	11.09981	11.11556	1.970505E-02			15	
Bromodichloromethane	0.3700131	7.358442	13.972	1.995359E-02			15	
Bromoform	0.3580188	10.33213	17.27078	2.718296E-02			SPCC (0.1)	
Bromomethane	0.1720739	28.28296	5.274333	0.1246216	0.9991085		0.995	
Bromofluorobenzene	0.8788963	6.739097	17.81833	1.483661E-02			15	
2-Butanone	0.1122502	34.73114	10.50111	0.1547187	0.9977852		0.995	
Carbon disulfide	0.740979	5.080183	7.879111	5.470964E-02			15	
Carbon tetrachloride	0.3202351	5.101441	13.02378	3.460528E-02			15	
Chlorobenzene	1.220943	8.778402	16.85467	0.0230222			SPCC (0.3)	
Chloroethane	0.1624884	9.928626	5.469222	0.1098749			15	
Chloroform	0.4766249	3.471597	11.21956	4.506429E-02			CCC (20)	
Chloromethane	0.3346068	6.864147	4.501333	9.992679E-02			SPCC (0.1)	
Cyclohexane	0.3349071	8.859817	12.92533	3.469135E-02			15	
Dibromochloromethane	0.5285393	6.523615	15.86844	1.945299E-02			15	
1,2-Dibromo-3-chloropropane	0.1257405	14.50957	19.63	1.043451E-02			15	
1,2-Dibromoethane (EDB)	0.4888881	6.870215	16.09711	2.927393E-02			15	
1,2-Dichlorobenzene	1.057762	3.835274	19.22289	2.075924E-02			15	
1,3-Dichlorobenzene	1.134514	3.453945	18.85289	1.935345E-02			15	
1,4-Dichlorobenzene	1.202795	4.819416	18.90456	2.053349E-02			15	
Dichlorodifluoromethane	0.3200111	8.175819	4.247333	8.114501E-02			15	
1,1-Dichloroethane	0.4470751	4.771398	9.410889	8.676498E-02			SPCC (0.1)	
1,2-Dichloroethane	0.4169138	5.052933	12.32422	0.0374402			15	
1,1-Dichloroethene	0.1854158	5.496992	7.196	0.1042799			CCC (20)	
cis-1,2-Dichloroethene	0.2319594	9.084585	10.82756	5.739556E-02			15	
trans-1,2-Dichloroethene	0.2207055	5.009181	8.807556	6.191007E-02			15	
1,2-Dichloroethene (total)	0.2263324	6.102083	0	0			15	
1,2-Dichloropropane	0.2489638	6.382973	13.86356	5.219406E-02			CCC (20)	
cis-1,3-Dichloropropene	0.4124454	9.205903	14.75367	0.0185918			15	
trans-1,3-Dichloropropene	0.7158689	7.591687	15.22011	3.309427E-02			15	
Ethylbenzene	2.007809	8.927793	17.00811	1.805769E-02			CCC (20)	

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1102178

Client: Tetra Tech NUS, Inc. (T010)

Project: CTO JM09 South Fuel Field

Calibration: 0349002

Instrument: MS-VOA5

Matrix: Water

Calibration Date: 12/13/2010 2:13:55PM

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
2-Hexanone	0.36419	34.70086	15.77833	3.425747E-02	0.9969121		0.995	
Isopropylbenzene	1.566413	9.09391	17.77767	1.866152E-02			15	
Methylene chloride	0.2617562	7.716747	7.451111	6.731063E-02			15	
Methyl Acetate	0.1965983	5.62942	7.501333	6.414553E-02			15	
Methylcyclohexane	0.2957545	8.279769	14.56322	3.038008E-02			15	
4-Methyl-2-pentanone	0.2489881	34.48075	14.88256	3.876822E-02	0.9973122		0.995	
Methyl t-Butyl Ether	0.5979716	9.385891	9.119667	0.1432835			15	
Styrene	1.204421	10.08127	17.42844	2.425388E-02			15	
1,1,2,2-Tetrachloroethane	0.7277649	3.387486	17.50067	1.931054E-02			SPCC (0.3)	
Tetrachloroethene	0.471928	3.948895	16.27244	2.373135E-02			15	
Toluene	1.049879	6.942362	15.56067	1.745815E-02			CCC (20)	
1,2,3-Trichlorobenzene	0.5841777	7.413424	21.56625	2.862758E-02			15	
1,2,4-Trichlorobenzene	0.6562098	9.896622	21.001	2.452696E-02			15	
1,1,2-Trichloroethane	0.3903573	6.159439	15.37567	2.739238E-02			15	
1,1,1-Trichloroethane	0.3663266	7.22728	12.49844	0.0358237			15	
Trichloroethene	0.246407	3.817773	13.93467	0.0212948			15	
Trichlorofluoromethane	0.4122274	6.130862	6.301444	9.080712E-02			15	
1,1,2-Trichloro-1,2,2-trifluoroethane	0.2267979	3.552182	7.568111	9.178277E-02			15	
Vinyl chloride	0.305846	3.734151	4.731333	0.1367484			CCC (20)	
m,p-Xylenc	1.54219	12.88011	17.16233	2.624017E-02			15	
o-Xylenc	1.656056	10.36993	17.491	1.445182E-02			15	
Xylenes (total)	1.580145	11.92563	0	0			15	
Dibromofluoromethane	0.3260638	2.526002	11.42756	0.0353478			15	
1,2-Dichloroethane-d4	6.495731E-02	3.537328	12.20267	3.612929E-02			15	
Toluene-d8	1.870203	3.473583	15.48944	1.871955E-02			15	

ANALYSIS SEQUENCE SUMMARY

SW8260B

Laboratory:	<u>Empirical Laboratories, LLC</u>	SDG:	<u>1102178</u>
Client:	<u>Tetra Tech NUS, Inc. (T010)</u>	Project:	<u>CTO JM09 South Fuel Field</u>
Sequence:	<u>1B05611</u>	Instrument:	<u>MS-VOA5</u>
Calibration:	<u>0349002</u>		

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1B05611-TUN1	0224TU1.D	02/24/11 06:25
Calibration Check	1B05611-CCV1	0224CC1.D	02/24/11 06:55
LCS	1B24002-BS1	0224LS1.D	02/24/11 07:25
Blank	1B24002-BLK1	0224BL1.D	02/24/11 08:54
CEF-043-DUP01-20110216	1102178-01	0217801.D	02/24/11 11:56
TB-20110216	1102178-02	0217802.D	02/24/11 12:26
CEF-043-GW-04N-20110216	1102178-03	0217803.D	02/24/11 12:56
CEF-043-GW-02N-20110216	1102178-04	0217804.D	02/24/11 13:27
CEF-043-GW-06N-20110216	1102178-05	0217805.D	02/24/11 13:57
CEF-043-GW-09N-20110216	1102178-06	0217806.D	02/24/11 14:27
CEF-043-GW-0N-20110216	1102178-07	0217807.D	02/24/11 14:57
CEF-043-GW-40A-20110216	1102178-08	0217808.D	02/24/11 15:28
CEF-043-GW-0N-20110216	1B24002-MS1	0217807M.D	02/24/11 17:59
CEF-043-GW-0N-20110216	1B24002-MSD1	0217807S.D	02/24/11 18:29

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8260B

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>1102178</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>CTO JM09 South Fuel Field</u>
Lab File ID: <u>0224TU1.D</u>	Injection Date: <u>02/24/11</u>
Instrument ID: <u>MS-VOA5</u>	Injection Time: <u>06:25</u>
Sequence: <u>1B05611</u>	Lab Sample ID: <u>1B05611-TUNI</u>

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	28.6	PASS
75	30 - 60% of 95	58	PASS
95	Base peak, 100% relative abundance	100	PASS
96	5 - 9% of 95	7.38	PASS
173	Less than 2% of 174	0	PASS
174	50 - 200% of 95	63.4	PASS
175	5 - 9% of 174	8.38	PASS
176	95 - 101% of 174	99	PASS
177	5 - 9% of 176	6.03	PASS

CONTINUING CALIBRATION CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1102178

Client: Tetra Tech NUS, Inc. (T010)

Project: CTO JM09 South Fuel Field

Instrument ID: MS-VOA5

Calibration: 0349002

Lab File ID: 0224CC1.D

Calibration Date: 12/13/10 14:13

Sequence: 1B05611

Injection Date: 02/24/11

Lab Sample ID: 1B05611-CCV1

Injection Time: 06:55

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Acetone	L	200.0	305.2	9.490153E-02	0.1382986		52.6	20 *
Benzene	A	100.0	96.68	0.8446166	0.8165657		-3.3	20
Bromochloromethane	A	100.0	106.5	0.1224323	0.1303548		6.5	20
Bromodichloromethane	A	100.0	113.5	0.3700131	0.4200714		13.5	20
Bromoform	A	100.0	120.6	0.3580188	0.4317291	0.1	20.6	20 *
Bromomethane	L	100.0	99.16	0.1720739	0.2170569		-0.8	20
2-Butanone	L	200.0	246.4	0.1122502	0.1503625		23.2	20 *
Carbon disulfide	A	100.0	92.37	0.740979	0.6844418		-7.6	20
Carbon tetrachloride	A	100.0	126.4	0.3202351	0.404893		26.4	20 *
Chlorobenzene	A	100.0	89.62	1.220943	1.094207	0.3	-10.4	20
Chloroethane	A	100.0	101.1	0.1624884	0.1642885		1.1	20
Chloroform	A	100.0	105.9	0.4766249	0.5046801		5.9	20
Chloromethane	A	100.0	88.39	0.3346068	0.2957754	0.1	-11.6	20
Cyclohexane	A	100.0	102.8	0.3349071	0.3444426		2.8	20
Dibromochloromethane	A	100.0	106.8	0.5285393	0.5647309		6.8	20
1,2-Dibromo-3-chloropropane	A	100.0	112.2	0.1257405	0.1411		12.2	20
1,2-Dibromoethane (EDB)	A	100.0	98.30	0.4888881	0.4805904		-1.7	20
1,2-Dichlorobenzene	A	100.0	98.90	1.057762	1.04614		-1.1	20
1,3-Dichlorobenzene	A	100.0	96.36	1.134514	1.093278		-3.6	20
1,4-Dichlorobenzene	A	100.0	98.60	1.202795	1.185943		-1.4	20
Dichlorodifluoromethane	A	100.0	116.0	0.3200111	0.3711708		16.0	20
1,1-Dichloroethane	A	100.0	97.63	0.4470751	0.4364857	0.1	-2.4	20
1,2-Dichloroethane	A	100.0	122.7	0.4169138	0.5115831		22.7	20 *
1,1-Dichloroethene	A	100.0	107.6	0.1854158	0.1995326		7.6	20
cis-1,2-Dichloroethene	A	100.0	108.3	0.2319594	0.2512238		8.3	20
trans-1,2-Dichloroethene	A	100.0	101.8	0.2207055	0.2247775		1.8	20
1,2-Dichloropropane	A	100.0	97.58	0.2489638	0.242949		-2.4	20
cis-1,3-Dichloropropene	A	100.0	110.3	0.4124454	0.4548248		10.3	20
trans-1,3-Dichloropropene	A	100.0	101.6	0.7158689	0.7277325		1.7	20

CONTINUING CALIBRATION CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1102178

Client: Tetra Tech NUS, Inc. (T010)

Project: CTO JM09 South Fuel Field

Instrument ID: MS-VOA5

Calibration: 0349002

Lab File ID: 0224CC1.D

Calibration Date: 12/13/10 14:13

Sequence: 1B05611

Injection Date: 02/24/11

Lab Sample ID: 1B05611-CCV1

Injection Time: 06:55

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Ethylbenzene	A	100.0	93.66	2.007809	1.880559		-6.3	20
2-Hexanone	L	200.0	246.4	0.36419	0.4639489		23.2	20 *
Isopropylbenzene	A	100.0	100.3	1.566413	1.571159		0.3	20
Methylene chloride	A	100.0	102.1	0.2617562	0.2671951		2.1	20
Methyl Acetate	A	100.0	103.0	0.1965983	0.2025826		3.0	20
Methylcyclohexane	A	100.0	107.1	0.2957545	0.316881		7.1	20
4-Methyl-2-pentanone	L	200.0	271.0	0.2489881	0.3558818		35.5	20 *
Methyl t-Butyl Ether	A	100.0	110.1	0.5979716	0.6583859		10.1	20
Styrene	A	100.0	96.43	1.204421	1.161393		-3.6	20
1,1,2,2-Tetrachloroethane	A	100.0	90.56	0.7277649	0.6590882	0.3	-9.4	20
Tetrachloroethene	A	100.0	100.3	0.471928	0.4735292		0.3	20
Toluene	A	100.0	90.76	1.049879	0.9529136		-9.2	20
1,2,3-Trichlorobenzene	A	100.0	104.2	0.5841777	0.6090461		4.3	20
1,2,4-Trichlorobenzene	A	100.0	103.9	0.6562098	0.6816909		3.9	20
1,1,2-Trichloroethane	A	100.0	89.67	0.3903573	0.350026		-10.3	20
1,1,1-Trichloroethane	A	100.0	121.3	0.3663266	0.4445053		21.3	20 *
Trichloroethene	A	100.0	105.9	0.246407	0.2610543		5.9	20
Trichlorofluoromethane	A	100.0	127.8	0.4122274	0.5268646		27.8	20 *
1,1,2-Trichloro-1,2,2-trifluoroethane	A	100.0	111.7	0.2267979	0.2533144		11.7	20
Vinyl chloride	A	100.0	108.2	0.305846	0.331025		8.2	20
Xylenes (total)	A	300.0	282.4	1.580145	1.487846		-5.8	20
Bromofluorobenzene	A	30.00	28.65	0.8788963	0.8393015		-4.5	20
Dibromofluoromethane	A	30.00	31.77	0.3260638	0.3452746		5.9	20
1,2-Dichloroethane-d4	A	30.00	29.80	6.495731E-02	6.453668E-02		-0.6	20
Toluene-d8	A	30.00	27.04	1.870203	1.685496		-9.9	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

HOLDING TIME SUMMARY

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: 1102178

Client: Tetra Tech NUS, Inc. (T010)

Project: CTO JM09 South Fuel Field

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
CEF-043-DUP01-20110216	02/16/11 00:00	02/18/11 08:45	02/21/11 15:55	5.66	7.00	02/25/11 15:57	4.00	40.00	
CEF-043-GW-04N-20110216	02/16/11 10:10	02/18/11 08:45	02/21/11 15:55	5.24	7.00	02/25/11 16:23	4.02	40.00	
CEF-043-GW-02N-20110216	02/16/11 11:21	02/18/11 08:45	02/21/11 15:55	5.19	7.00	02/25/11 16:48	4.04	40.00	
CEF-043-GW-06N-20110216	02/16/11 12:12	02/18/11 08:45	02/21/11 15:55	5.15	7.00	02/25/11 17:14	4.05	40.00	
CEF-043-GW-09N-20110216	02/16/11 13:03	02/18/11 08:45	02/21/11 15:55	5.12	7.00	02/25/11 17:39	4.07	40.00	
CEF-043-GW-0N-20110216	02/16/11 13:57	02/18/11 08:45	02/21/11 15:55	5.08	7.00	02/25/11 18:05	4.09	40.00	
CEF-043-GW-40A-20110216	02/16/11 15:50	02/18/11 08:45	02/21/11 15:55	5.00	7.00	02/25/11 18:30	4.11	40.00	

PREPARATION BENCH SHEET

1B21017

Empirical Laboratories, LLC

Printed: 3/2/2011 11:08:58AM

Matrix: Water

Prepared using: EXT - EXT_3510

Surrogate used: 11B0517

Lab Number	Test Code	Prepared	Initial (mL)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Extraction Comments
1102178-01	SMS_PAH_8270C_3510_LOW	02/21/2011 15:55	1070	1				500	
1102178-03	SMS_PAH_8270C_3510_LOW	02/21/2011 15:55	1080	1				500	
1102178-04	SMS_PAH_8270C_3510_LOW	02/21/2011 15:55	1080	1				500	
1102178-05	SMS_PAH_8270C_3510_LOW	02/21/2011 15:55	1080	1				500	
1102178-06	SMS_PAH_8270C_3510_LOW	02/21/2011 15:55	1080	1				500	
1102178-07	SMS_PAH_8270C_3510_LOW	02/21/2011 15:55	1080	1				500	MS/MSD, LOW SAMPLE VOLUME
1102178-08	SMS_PAH_8270C_3510_LOW	02/21/2011 15:55	1080	1				500	
1B21017-BLK1	QC	02/21/2011 15:55	1000	1				500	
1B21017-BS1	QC	02/21/2011 15:55	1000	1	11B0439		1000	500	
1B21017-MS1	QC	02/21/2011 15:55	1080	1	11B0439	1102178-07	1000	500	
1B21017-MSD1	QC	02/21/2011 15:55	1080	1	11B0439	1102178-07	1000	500	

Spiking Witnessed By _____ Date _____

Preparation Reviewed By _____ Date _____

Extracts Received By _____ Date _____

PREPARATION BATCH SUMMARY

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: 1102178

Client: Tetra Tech NUS, Inc. (T010)

Project: CTO JM09 South Fuel Field

Batch: 1B21017 Batch Matrix: Water

Preparation: EXT_3510

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
CEF-043-DUP01-20110216	1102178-01	02/21/11 15:55	1,070.00	1.00
CEF-043-GW-04N-20110216	1102178-03	02/21/11 15:55	1,080.00	1.00
CEF-043-GW-02N-20110216	1102178-04	02/21/11 15:55	1,080.00	1.00
CEF-043-GW-06N-20110216	1102178-05	02/21/11 15:55	1,080.00	1.00
CEF-043-GW-09N-20110216	1102178-06	02/21/11 15:55	1,080.00	1.00
CEF-043-GW-0N-20110216	1102178-07	02/21/11 15:55	1,080.00	1.00
CEF-043-GW-40A-20110216	1102178-08	02/21/11 15:55	1,080.00	1.00
Blank	1B21017-BLK1	02/21/11 15:55	1,000.00	1.00
LCS	1B21017-BS1	02/21/11 15:55	1,000.00	1.00
CEF-043-GW-0N-20110216	1B21017-MS1	02/21/11 15:55	1,080.00	1.00
CEF-043-GW-0N-20110216	1B21017-MSD1	02/21/11 15:55	1,080.00	1.00

ANALYSIS SEQUENCE SUMMARY

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: 1102178

Client: Tetra Tech NUS, Inc. (T010)

Project: CTO JM09 South Fuel Field

Sequence: 1B03911

Instrument: MS-BNA4

Calibration: 1048001

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1B03911-TUN1	SEQ-TUN1.D	02/07/11 18:14
Cal Standard	1B03911-CAL1	SEQ-CAL1.D	02/07/11 18:33
Cal Standard	1B03911-CAL2	SEQ-CAL2.D	02/07/11 19:06
Cal Standard	1B03911-CAL3	SEQ-CAL3.D	02/07/11 19:39
Cal Standard	1B03911-CAL4	SEQ-CAL4.D	02/07/11 20:12
Cal Standard	1B03911-CAL5	SEQ-CAL5.D	02/07/11 20:45
Cal Standard	1B03911-CAL6	SEQ-CAL6.D	02/07/11 21:18
Cal Standard	1B03911-CAL7	SEQ-CAL7.D	02/07/11 21:51
Cal Standard	1B03911-CAL8	SEQ-CAL8.D	02/07/11 22:24
Cal Standard	1B03911-CAL9	SEQ-CAL9.D	02/07/11 22:57
Cal Standard	1B03911-CALA	SEQ-CALA.D	02/07/11 23:30
Cal Standard	1B03911-CALB	SEQ-CALB.D	02/08/11 00:03
Initial Cal Check	1B03911-ICV3	SEQ-ICV3.D	02/08/11 01:43

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8270C

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>1102178</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>CTO JM09 South Fuel Field</u>
Lab File ID: <u>SEQ-TUN1.D</u>	Injection Date: <u>02/07/11</u>
Instrument ID: <u>MS-BNA4</u>	Injection Time: <u>18:14</u>
Sequence: <u>1B03911</u>	Lab Sample ID: <u>1B03911-TUN1</u>

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30 - 60% of 198	50.4	PASS
68	Less than 2% of 69	1.6	PASS
69	Less than 200% of 198	48.3	PASS
70	Less than 2% of 69	0.382	PASS
127	40 - 60% of 198	54.8	PASS
197	Less than 1% of 198	0	PASS
198	Base peak, 100% relative abundance	100	PASS
199	5 - 9% of 198	6.54	PASS
275	10 - 30% of 198	26.1	PASS
365	1 - 200% of 198	3.76	PASS
441	0.001 - 100% of 443	83.9	PASS
442	40 - 200% of 198	121	PASS
443	17 - 23% of 442	19.9	PASS

INITIAL CALIBRATION DATA (Continued)

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: 1102178

Client: Tetra Tech NUS, Inc. (T010)

Project: CTO JM09 South Fuel Field

Calibration: 1048001

Instrument: MS-BNA4

Matrix: Water

Calibration Date: 2/7/2011 6:33:21PM

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Acenaphthene	0.7926954	5.318234	10.39527	5.971224E-02			CCC (30)	
Acenaphthylene	1.198573	5.154891	10.18691	4.731456E-02			15	
Anthracene	1.085076	2.663468	12.29609	3.862814E-02			15	
Benzo(a)anthracene	0.6763585	8.358676	15.60309	2.142343E-02			15	
Benzo(a)pyrene	0.9878261	6.547324	18.24164	5.668756E-02			CCC (30)	
Benzo(b)fluoranthene	1.092912	10.27405	17.56236	5.894665E-02			15	
Benzo(g,h,i)perylene	0.8305083	10.43963	21.38382	7.386433E-02			15	
Benzo(k)fluoranthene	1.229142	6.280104	17.61618	6.153129E-02			15	
Chrysene	0.7213402	9.894529	15.663	4.825978E-02			15	
Dibenz(a,h)anthracene	0.7676577	16.54231	20.81327	7.143003E-02	0.9994472		0.995	
Fluoranthene	0.9866036	4.66066	13.70827	3.573892E-02			CCC (30)	
Fluorene	0.7802025	7.667299	11.03864	6.130489E-02			15	
2-Fluorobiphenyl	0.8853237	8.766314	9.524182	0.1068576			15	
Indeno(1,2,3-cd)pyrene	0.9671145	14.07617	20.77682	7.155087E-02			15	
1-Methylnaphthalene	0.8429092	6.545285	9.193818	9.234948E-02			15	
2-Methylnaphthalene	0.7808299	7.097333	9.071273	0.1155369			15	
Naphthalene	1.279867	6.104298	8.222455	7.228635E-02			15	
Phenanthrene	1.044549	2.946851	12.23027	5.301422E-02			15	
Pyrene	0.9987664	3.320125	13.98973	3.049288E-02			15	
Terphenyl-d14	0.5971292	4.255474	14.17245	0.0236856			15	
2,4,6-Tribromophenol	0.1258515	30.46799	11.34973	5.292164E-02	0.9985944		0.995	

ANALYSIS SEQUENCE SUMMARY

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: 1102178

Client: Tetra Tech NUS, Inc. (T010)

Project: CTO JM09 South Fuel Field

Sequence: 1B05615

Instrument: MS-BNA4

Calibration: 1048001

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1B05615-TUN1	SEQ-TUN1.D	02/25/11 12:10
Calibration Check	1B05615-CCV1	SEQ-CCV1.D	02/25/11 12:30
Blank	1B21017-BLK1	B21017B1.D	02/25/11 15:07
LCS	1B21017-BS1	B21017L1.D	02/25/11 15:32
CEF-043-DUP01-20110216	1102178-01	0217801.D	02/25/11 15:57
CEF-043-GW-04N-20110216	1102178-03	0217803.D	02/25/11 16:23
CEF-043-GW-02N-20110216	1102178-04	0217804.D	02/25/11 16:48
CEF-043-GW-06N-20110216	1102178-05	0217805.D	02/25/11 17:14
CEF-043-GW-09N-20110216	1102178-06	0217806.D	02/25/11 17:39
CEF-043-GW-0N-20110216	1102178-07	0217807.D	02/25/11 18:05
CEF-043-GW-40A-20110216	1102178-08	0217808.D	02/25/11 18:30
CEF-043-GW-0N-20110216	1B21017-MS1	0217807M.D	02/25/11 18:56
CEF-043-GW-0N-20110216	1B21017-MSD1	0217807S.D	02/25/11 19:21

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8270C

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>1102178</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>CTO JM09 South Fuel Field</u>
Lab File ID: <u>SEQ-TUN1.D</u>	Injection Date: <u>02/25/11</u>
Instrument ID: <u>MS-BNA4</u>	Injection Time: <u>12:10</u>
Sequence: <u>1B05615</u>	Lab Sample ID: <u>1B05615-TUN1</u>

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30 - 60% of 198	35.3	PASS
68	Less than 2% of 69	1.59	PASS
69	Less than 200% of 198	36.4	PASS
70	Less than 2% of 69	0.387	PASS
127	40 - 60% of 198	47.1	PASS
197	Less than 1% of 198	0	PASS
198	Base peak, 100% relative abundance	100	PASS
199	5 - 9% of 198	6.46	PASS
275	10 - 30% of 198	28.7	PASS
365	1 - 200% of 198	4.48	PASS
441	0.001 - 100% of 443	83.7	PASS
442	40 - 200% of 198	152	PASS
443	17 - 23% of 442	19.7	PASS

CONTINUING CALIBRATION CHECK

SW8270C

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>1102178</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>CTO JM09 South Fuel Field</u>
Instrument ID: <u>MS-BNA4</u>	Calibration: <u>1048001</u>
Lab File ID: <u>SEQ-CCV1.D</u>	Calibration Date: <u>02/07/11 18:33</u>
Sequence: <u>1B05615</u>	Injection Date: <u>02/25/11</u>
Lab Sample ID: <u>1B05615-CCV1</u>	Injection Time: <u>12:30</u>

COMPOUND	TYPE	CONC. (ug/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Naphthalene	A	5.000	4.657	1.279867	1.192009		-6.9	20
2-Fluorobiphenyl	A	5.000	4.869	0.8853237	0.8621277		-2.6	20
Terphenyl-d14	A	5.000	6.305	0.5971292	0.752956		26.1	20 *

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

HOLDING TIME SUMMARY
FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: 1102178

Client: Tetra Tech NUS, Inc. (T010)

Project: CTO JM09 South Fuel Field

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
CEF-043-DUP01-20110216	02/16/11 00:00	02/18/11 08:45	02/21/11 13:24	5.56	7.00	02/22/11 16:50	1.14	40.00	
CEF-043-GW-04N-20110216	02/16/11 10:10	02/18/11 08:45	02/21/11 13:24	5.13	7.00	02/22/11 17:32	1.17	40.00	
CEF-043-GW-02N-20110216	02/16/11 11:21	02/18/11 08:45	02/21/11 13:24	5.09	7.00	02/22/11 18:14	1.20	40.00	
CEF-043-GW-06N-20110216	02/16/11 12:12	02/18/11 08:45	02/21/11 13:24	5.05	7.00	02/22/11 18:56	1.23	40.00	
CEF-043-GW-09N-20110216	02/16/11 13:03	02/18/11 08:45	02/21/11 13:24	5.01	7.00	02/22/11 19:38	1.26	40.00	
CEF-043-GW-0N-20110216	02/16/11 13:57	02/18/11 08:45	02/21/11 13:24	4.98	7.00	02/22/11 20:20	1.29	40.00	
CEF-043-GW-40A-20110216	02/16/11 15:50	02/18/11 08:45	02/21/11 13:24	4.90	7.00	02/22/11 22:26	1.38	40.00	

METHOD DETECTION AND REPORTING LIMITS

Laboratory: Empirical Laboratories, LLC

SDG: 1102178

Client: Tetra Tech NUS, Inc. (T010)

Project: CTO JM09 South Fuel Field

Matrix: Water

Instrument: GL-GCFID2

Analyte	MDL	MRL	Units	Method
Petroleum Range Organics	0.170	0.680	mg/L	FLPRO

PREPARATION BENCH SHEET

1B21010

Empirical Laboratories, LLC

Printed: 3/2/2011 11:12:36AM

Matrix: Water

Prepared using: EXT - EXT_3510

Surrogate used: 11B0410

Lab Number	Test Code	Prepared	Initial (mL)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Extraction Comments
1102178-01	SGC_FLPRO_3510C	02/21/2011 13:24	1070	2				1000	
1102178-03	SGC_FLPRO_3510C	02/21/2011 13:24	1080	2				1000	
1102178-04	SGC_FLPRO_3510C	02/21/2011 13:24	1080	2				1000	
1102178-05	SGC_FLPRO_3510C	02/21/2011 13:24	1080	2				1000	
1102178-06	SGC_FLPRO_3510C	02/21/2011 13:24	1080	2				1000	
1102178-07	SGC_FLPRO_3510C	02/21/2011 13:24	1080	2				1000	MS/MSD, LOW SAMPLE VOLUME
1102178-08	SGC_FLPRO_3510C	02/21/2011 13:24	1080	2				1000	
1B21010-BLK1	QC	02/21/2011 13:24	1000	2				1000	
1B21010-BS1	QC	02/21/2011 13:24	1000	2	11B0477		1000	1000	
1B21010-MS1	QC	02/21/2011 13:24	1080	2	11B0477	1102178-07	1000	1000	
1B21010-MSD1	QC	02/21/2011 13:24	1080	2	11B0477	1102178-07	1000	1000	

Spiking Witnessed By _____ Date _____

Preparation Reviewed By _____ Date _____

Extracts Received By _____ Date _____

PREPARATION BATCH SUMMARY

FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: 1102178

Client: Tetra Tech NUS, Inc. (T010)

Project: CTO JM09 South Fuel Field

Batch: 1B21010 Batch Matrix: Water

Preparation: EXT_3510

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
CEF-043-DUP01-20110216	1102178-01	02/21/11 13:24	1,070.00	2.00
CEF-043-GW-04N-20110216	1102178-03	02/21/11 13:24	1,080.00	2.00
CEF-043-GW-02N-20110216	1102178-04	02/21/11 13:24	1,080.00	2.00
CEF-043-GW-06N-20110216	1102178-05	02/21/11 13:24	1,080.00	2.00
CEF-043-GW-09N-20110216	1102178-06	02/21/11 13:24	1,080.00	2.00
CEF-043-GW-0N-20110216	1102178-07	02/21/11 13:24	1,080.00	2.00
CEF-043-GW-40A-20110216	1102178-08	02/21/11 13:24	1,080.00	2.00
Blank	1B21010-BLK1	02/21/11 13:24	1,000.00	2.00
LCS	1B21010-BS1	02/21/11 13:24	1,000.00	2.00
CEF-043-GW-0N-20110216	1B21010-MS1	02/21/11 13:24	1,080.00	2.00
CEF-043-GW-0N-20110216	1B21010-MSD1	02/21/11 13:24	1,080.00	2.00

ANALYSIS SEQUENCE SUMMARY

FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: 1102178

Client: Tetra Tech NUS, Inc. (T010)

Project: CTO JM09 South Fuel Field

Sequence: 1B03607

Instrument: GL-GCFID2

Calibration: 1036001

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	1B03607-CAL6	003F0301.D	02/03/11 18:28
Cal Standard	1B03607-CAL5	004F0401.D	02/03/11 19:10
Cal Standard	1B03607-CAL4	005F0501.D	02/03/11 19:52
Cal Standard	1B03607-CAL3	006F0601.D	02/03/11 20:34
Cal Standard	1B03607-CAL2	007F0701.D	02/03/11 21:17
Cal Standard	1B03607-CAL1	008F0801.D	02/03/11 21:59
Initial Cal Check	1B03607-ICV1	009F0901.D	02/03/11 22:40

INITIAL CALIBRATION DATA (Continued)

FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: 1102178

Client: Tetra Tech NUS, Inc. (T010)

Project: CTO JM09 South Fuel Field

Calibration: 1036001

Instrument: GL-GCFID2

Matrix: Water

Calibration Date: 2/3/2011 6:28:31PM

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Petroleum Range Organics	1723.97	3.613027	2.783	1.223221E-02			20	
2-Fluorobiphenyl	2071.669	7.244769	11.0885	5.505095E-02			20	
o-Terphenyl	2435.429	4.459164	16.66467	4.479577E-02			20	

ANALYSIS SEQUENCE SUMMARY

FLPRO

Laboratory:	<u>Empirical Laboratories, LLC</u>	SDG:	<u>1102178</u>
Client:	<u>Tetra Tech NUS, Inc. (T010)</u>	Project:	<u>CTO JM09 South Fuel Field</u>
Sequence:	<u>1B05411</u>	Instrument:	<u>GL-GCFID2</u>
Calibration:	<u>1036001</u>		

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Calibration Check	1B05411-CCV1	002F0201.D	02/22/11 14:09
Blank	1B21010-BLK1	003F0301.D	02/22/11 15:26
LCS	1B21010-BS1	004F0401.D	02/22/11 16:08
CEF-043-DUP01-20110216	1102178-01	005F0501.D	02/22/11 16:50
CEF-043-GW-04N-20110216	1102178-03	006F0601.D	02/22/11 17:32
CEF-043-GW-02N-20110216	1102178-04	007F0701.D	02/22/11 18:14
CEF-043-GW-06N-20110216	1102178-05	008F0801.D	02/22/11 18:56
CEF-043-GW-09N-20110216	1102178-06	009F0901.D	02/22/11 19:38
CEF-043-GW-0N-20110216	1102178-07	010F1001.D	02/22/11 20:20
CEF-043-GW-0N-20110216	1B21010-MS1	011F1101.D	02/22/11 21:02
CEF-043-GW-0N-20110216	1B21010-MSD1	012F1201.D	02/22/11 21:44
CEF-043-GW-40A-20110216	1102178-08	013F1301.D	02/22/11 22:26
Calibration Check	1B05411-CCV2	014F1401.D	02/22/11 23:08

CONTINUING CALIBRATION CHECK

FLPRO

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>1102178</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>CTO JM09 South Fuel Field</u>
Instrument ID: <u>GL-GCFID2</u>	Calibration: <u>1036001</u>
Lab File ID: <u>002F0201.D</u>	Calibration Date: <u>02/03/11 18:28</u>
Sequence: <u>1B05411</u>	Injection Date: <u>02/22/11</u>
Lab Sample ID: <u>1B05411-CCV1</u>	Injection Time: <u>14:09</u>

COMPOUND	TYPE	CONC. (mg/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Petroleum Range Organics	A	4250	3516	1723.97	1426.381		-17.3	25
2-Fluorobiphenyl	A	25.00	20.51	2071.669	1699.96		-17.9	25
o-Terphenyl	A	25.00	19.94	2435.429	1942.72		-20.2	25

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

CONTINUING CALIBRATION CHECK

FLPRO

Laboratory:	<u>Empirical Laboratories, LLC</u>	SDG:	<u>1102178</u>
Client:	<u>Tetra Tech NUS, Inc. (T010)</u>	Project:	<u>CTO JM09 South Fuel Field</u>
Instrument ID:	<u>GL-GCFID2</u>	Calibration:	<u>1036001</u>
Lab File ID:	<u>014F1401.D</u>	Calibration Date:	<u>02/03/11 18:28</u>
Sequence:	<u>1B05411</u>	Injection Date:	<u>02/22/11</u>
Lab Sample ID:	<u>1B05411-CCV2</u>	Injection Time:	<u>23:08</u>

COMPOUND	TYPE	CONC. (mg/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Petroleum Range Organics	A	4250	3641	1723.97	1477.019		-14.3	25
2-Fluorobiphenyl	A	25.00	20.37	2071.669	1688.2		-18.5	25
o-Terphenyl	A	25.00	21.06	2435.429	2051.72		-15.8	25

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

TO: R. SIMCIK
SDG: 1108276

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VOC

The Relative Percent Difference (RPD) for isopropylbenzene was greater than the 30% quality control limit in the field duplicate sample pair, CEF-043-DUP01-20110824/CEF-043-GW-09N-20110824. The positive results for isopropylbenzene were qualified as estimated, (J), in the field duplicate pair due to field duplicate imprecision.

NAPHTHALENE

No issues were identified.

TRPH

The continuing calibration verifications performed on 09/04/11 @ 10:06 and 15:38 exceeded the 25% quality control limit. All samples were affected. The positive results reported for TRPH in the affected samples were qualified as estimated, (J).

The Relative Percent Difference (RPD) for TRPH was greater than the 30% quality control limit in the field duplicate sample pair, CEF-043-DUP01-20110824/CEF-043-GW-09N-20110824. The positive results reported for this parameter were qualified as estimated, (J), in the field duplicate pair due to field duplicate imprecision.

NOTES

Ethylbenzene was detected below the Limit of Quantitation (LOQ) but above the Method Detection Limit (MDL) in the environmental sample, CEF-043-GW-09N-20110824, and was detected above the LOQ in the field duplicate sample, CEF-043-DUP01-20110824. No action was taken for field duplicate imprecision because the difference between the positive results was less than 2X the LOQ.

Total xylenes were not detected in the environmental sample, CEF-043-GW-09N-20110824, and were detected below the LOQ in the field duplicate sample, CEF-043-DUP01-20110824. No action was taken for field duplicate imprecision because the difference between the positive and non-detected results was less than 2X the LOQ.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Continuing calibration verifications for the TRPH fraction exceed the 25% quality control limit.

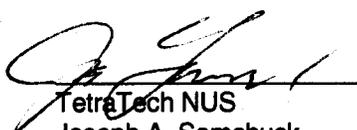
Other Factors Affecting Data Quality: Field duplicate imprecision was noted for TRPH and isopropylbenzene.

TO: R. SIMCIK
SDG: 1108276

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The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), SW-846 Methods 8260B and 8270C and Method FL-PRO analytical and reporting protocols, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (April 2009). The text of this report has been formulated to address only those problem areas affecting data quality.


Tetra Tech NUS
Michelle L. Allen
Chemist/Data Validator


TetraTech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

- A = Lab Blank Contamination
- B = Field Blank Contamination
- C = Calibration Noncompliance (i.e., % 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 = ICP PDS Recovery Noncompliance; 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 (i.e., base-time drifting)
- P = Uncertainty near detection limit ($< 2 \times$ IDL for inorganics and $<$ CRQL for organics)
- Q = Other problems (can encompass a number of issues; i.e. chromatography, interferences, etc.)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = RPD between columns/detectors $>40\%$ 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 less than sample activity
- Z1 = Tentatively Identified Compound considered presumptively present
- Z2 = Tentatively Identified Compound column bleed

PROJ_NO: 02267 SDG: 1108276 FRACTION: OV MEDIA: WATER	NSAMPLE	CEF-043-DUP01-20110824			CEF-043-GW-02N-20110824			CEF-043-GW-04N-20110824			CEF-043-GW-06N-20110824		
	LAB_ID	1108276-07			1108276-02			1108276-01			1108276-05		
	SAMP_DATE	8/24/2011			8/24/2011			8/24/2011			8/24/2011		
	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-043-GW-09N-20110824											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
BENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
ETHYLBENZENE	1.93			1.59			0.25	U		0.25	U		
ISOPROPYLBENZENE	2.2	J	G	0.25	U		0.25	U		0.25	U		
TOTAL XYLENES	1.27	J	P	1.56	J	P	0.75	U		0.75	U		

PROJ_NO: 02267 SDG: 1108276 FRACTION: OV MEDIA: WATER	NSAMPLE	CEF-043-GW-07N-20110824			CEF-043-GW-09N-20110824			CEF-043-GW-40A-20110824			Trip Blank		
	LAB_ID	1108276-04			1108276-03			1108276-06			1108276-08		
	SAMP_DATE	8/24/2011			8/24/2011			8/24/2011			8/24/2011		
	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												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
BENZENE	0.25	U		0.25	U		0.25	U		0.25	U		
ETHYLBENZENE	0.25	U		0.905	J	P	0.25	U		0.25	U		
ISOPROPYLBENZENE	0.25	U		1.1	J	G	0.25	U		0.25	U		
TOTAL XYLENES	0.75	U		0.75	U		0.75	U		0.75	U		

PROJ_NO: 02267 SDG: 1108276 FRACTION: PAH MEDIA: WATER	NSAMPLE	CEF-043-DUP01-20110824			CEF-043-GW-02N-20110824			CEF-043-GW-04N-20110824			CEF-043-GW-06N-20110824		
	LAB_ID	1108276-07			1108276-02			1108276-01			1108276-05		
	SAMP_DATE	8/24/2011			8/24/2011			8/24/2011			8/24/2011		
	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-043-GW-09N-20110824											
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
NAPHTHALENE	6.29			0.321			0.0715	J	P	0.05	U		

PROJ_NO: 02267 SDG: 1108276 FRACTION: PAH MEDIA: WATER	NSAMPLE	CEF-043-GW-07N-20110824			CEF-043-GW-09N-20110824			CEF-043-GW-40A-20110824		
	LAB_ID	1108276-04			1108276-03			1108276-06		
	SAMP_DATE	8/24/2011			8/24/2011			8/24/2011		
	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
NAPHTHALENE	0.05	U		4.9			0.05	U		

PROJ_NO: 02267 SDG: 1108276 FRACTION: PET MEDIA: WATER	NSAMPLE	CEF-043-DUP01-20110824			CEF-043-GW-02N-20110824			CEF-043-GW-04N-20110824			CEF-043-GW-06N-20110824		
	LAB_ID	1108276-07			1108276-02			1108276-01			1108276-05		
	SAMP_DATE	8/24/2011			8/24/2011			8/24/2011			8/24/2011		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
DUP_OF	CEF-043-GW-09N-20110824												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
TPH (C08-C40)	11.1	J	CG	3.99	J	C	1.87	J	C	5.65	J	C	

PROJ_NO: 02267 SDG: 1108276 FRACTION: PET MEDIA: WATER	NSAMPLE	CEF-043-GW-07N-20110824			CEF-043-GW-09N-20110824			CEF-043-GW-40A-20110824		
	LAB_ID	1108276-04			1108276-03			1108276-06		
	SAMP_DATE	8/24/2011			8/24/2011			8/24/2011		
	QC_TYPE	NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
TPH (C08-C40)	0.676	J	C	2.97	J	CG	1.44	J	C	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

APPENDIX C

SUPPORT DOCUMENTATION

**NAS CECIL FIELD
WATER DATA
1108276**

FRACTION	CHEMICAL	EF-043-GW-09N-2011082	UNITS	EF-043-DUP01-2011082	RPD	D
OV	ETHYLBENZENE	0.905 I	UG/L	1.93	72.31	1.03
OV	ISOPROPYLBENZENE	1.1	UG/L	2.2	66.67	1.10
OV	TOTAL XYLENES	ND	UG/L	1.27 I	200.00	1.27
PAH	NAPHTHALENE	4.9	UG/L	6.29	24.84	1.39
PET	TPH (C08-C40)	2.97 J	MG/L	11.1 J	115.57	8.13

Current RPD Quality Control Limit: 30 %.

Shaded cells indicate RPDs that exceed the applicable quality control limit.

HOLDTIM

02267

SDG	SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
1108276	OV	UG/L	CEF-043-GW-04N-2011082	1108276-01	NM	08/24/2011	08/29/2011	08/29/2011	5	0	5
1108276	OV	UG/L	CEF-043-DUP01-20110824	1108276-07	NM	08/24/2011	08/30/2011	08/30/2011	6	0	6
1108276	OV	UG/L	CEF-043-GW-40A-2011082	1108276-06	NM	08/24/2011	08/30/2011	08/30/2011	6	0	6
1108276	OV	UG/L	CEF-043-GW-02N-2011082	1108276-02	NM	08/24/2011	08/29/2011	08/29/2011	5	0	5
1108276	OV	UG/L	CEF-043-GW-09N-2011082	1108276-03	NM	08/24/2011	08/29/2011	08/29/2011	5	0	5
1108276	OV	UG/L	CEF-043-GW-07N-2011082	1108276-04	NM	08/24/2011	08/30/2011	08/30/2011	6	0	6
1108276	OV	UG/L	Trip Blank	1108276-08	NM	08/24/2011	08/30/2011	08/30/2011	6	0	6
1108276	OV	UG/L	CEF-043-GW-06N-2011082	1108276-05	NM	08/24/2011	08/30/2011	08/30/2011	6	0	6
1108276	SIM	UG/L	CEF-043-DUP01-20110824	1108276-07	NM	08/24/2011	08/30/2011	09/06/2011	6	7	13
1108276	SIM	UG/L	CEF-043-DUP01-20110824	1108276-07	SUR	08/24/2011	08/30/2011	09/06/2011	6	7	13
1108276	SIM	UG/L	CEF-043-GW-02N-2011082	1108276-02	NM	08/24/2011	08/31/2011	09/03/2011	7	3	10
1108276	SIM	UG/L	CEF-043-GW-02N-2011082	1108276-02	SUR	08/24/2011	08/31/2011	09/03/2011	7	3	10
1108276	SIM	UG/L	CEF-043-GW-04N-2011082	1108276-01	SUR	08/24/2011	08/31/2011	09/03/2011	7	3	10
1108276	SIM	UG/L	CEF-043-GW-40A-2011082	1108276-06	NM	08/24/2011	08/31/2011	09/03/2011	7	3	10
1108276	SIM	UG/L	CEF-043-GW-04N-2011082	1108276-01	NM	08/24/2011	08/31/2011	09/03/2011	7	3	10
1108276	SIM	UG/L	CEF-043-GW-40A-2011082	1108276-06	SUR	08/24/2011	08/31/2011	09/03/2011	7	3	10

SDG	SORT	UNITS	NSAMPLE	LAB ID	QC TYPE	SAMP DATE	EXTR DATE	ANAL DATE	SMP EXTR	EXTR ANL	SMP ANL
1108276	SIM	UG/L	CEF-043-GW-06N-2011082	1108276-05	NM	08/24/2011	08/31/2011	09/03/2011	7	3	10
1108276	SIM	UG/L	CEF-043-GW-09N-2011082	1108276-03	SUR	08/24/2011	08/31/2011	09/03/2011	7	3	10
1108276	SIM	UG/L	CEF-043-GW-09N-2011082	1108276-03	NM	08/24/2011	08/31/2011	09/03/2011	7	3	10
1108276	SIM	UG/L	CEF-043-GW-07N-2011082	1108276-04	SUR	08/24/2011	08/31/2011	09/03/2011	7	3	10
1108276	SIM	UG/L	CEF-043-GW-07N-2011082	1108276-04	NM	08/24/2011	08/31/2011	09/03/2011	7	3	10
1108276	SIM	UG/L	CEF-043-GW-06N-2011082	1108276-05	SUR	08/24/2011	08/31/2011	09/03/2011	7	3	10
1108276	TPH	MG/L	CEF-043-DUP01-20110824	1108276-07	NM	08/24/2011	08/30/2011	09/04/2011	6	5	11
1108276	TPH	MG/L	CEF-043-GW-09N-2011082	1108276-03	NM	08/24/2011	08/30/2011	09/04/2011	6	5	11
1108276	TPH	MG/L	CEF-043-GW-07N-2011082	1108276-04	NM	08/24/2011	08/30/2011	09/04/2011	6	5	11
1108276	TPH	MG/L	CEF-043-GW-06N-2011082	1108276-05	NM	08/24/2011	08/30/2011	09/04/2011	6	5	11
1108276	TPH	MG/L	CEF-043-GW-04N-2011082	1108276-01	NM	08/24/2011	08/30/2011	09/04/2011	6	5	11
1108276	TPH	MG/L	CEF-043-GW-02N-2011082	1108276-02	NM	08/24/2011	08/30/2011	09/04/2011	6	5	11
1108276	TPH	MG/L	CEF-043-GW-40A-2011082	1108276-06	NM	08/24/2011	08/30/2011	09/04/2011	6	5	11



TETRA TECH NUS, INC.

1108276

SFF

CHAIN OF CUSTODY

NUMBER **No. 2281**

PAGE **1** OF **1**

PROJECT NO: 112602267	FACILITY: CECIL FIELD	PROJECT MANAGER ROB SIMCIK	PHONE NUMBER 412-921-8163	LABORATORY NAME AND CONTACT: EMPIRICAL LABS - BRAN RICHARD
SAMPLERS (SIGNATURE) [Signature]		FIELD OPERATIONS LEADER KEVIN WEICHERT	PHONE NUMBER 904-636-6125	ADDRESS 621 MAINSTREAM DR. ST. 270
		CARRIER/WAYBILL NUMBER	CITY, STATE NASHVILLE, TN 37228	

STANDARD TAT <input checked="" type="checkbox"/>	CONTAINER TYPE PLASTIC (P) or GLASS (G)
RUSH TAT <input type="checkbox"/>	PRESERVATIVE USED
<input type="checkbox"/> 24 hr. <input type="checkbox"/> 48 hr. <input type="checkbox"/> 72 hr. <input type="checkbox"/> 7 day <input type="checkbox"/> 14 day	G G G

DATE YEAR	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	TYPE OF ANALYSIS	COMMENTS
8/24	0900	CEF-043-GW-04N-20110824				GW	G	7	3 2 2	- 01 - COOL TO 4°C
8/24	1005	CEF-043-GW-02N-20110824				GW	G	7	3 2 2	- 02
8/24	1055	CEF-043-GW-09N-20110824				GW	G	7	3 2 2	- 03
8/24	1230	CEF-043-GW-07N-20110824				GW	G	7	3 2 2	- 04
8/24	1310	CEF-043-GW-06N-20110824				GW	G	7	3 2 2	- 05
8/24	1420	CEF-043-GW-40A-20110824				GW	G	21	9 6 6	- 06 - ME/MSD COLLECTED
8/24	0000	CEF-043-DUP01-20110824				GW	G	7	3 2 2	- 07 - DUPLICATE
8/24	0000	TRIP BLANK				QC	G	2	2	- 08 - TRIP BLANK
		TEMP BLANK - 1 PER COOLER				QC				

1. RELINQUISHED BY Kara J. Wurdell	DATE 8/25/11	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 [Signature]	DATE 8/26/11	TIME 830

COMMENTS *** SELECT VOCs = BENZENE, ETHYLBENZENE, XYLENES, ISOPROPYL BENZENE**

10

1108276

Sample Delivery Group Case Narrative

Receipt Information

The samples were received within the preservation guidelines for the associated methods. The information associated with sample receipt and the Sample Delivery Group (SDG) are included within section 4 of this package, which also provides information on the link between the client sample ID listed on the COC and laboratory's assigned unique sample ID or WorkOrder #. The sample is tracked through the laboratory for all analysis via the assigned WorkOrder #.

All samples that were received were analyzed and none of the samples were placed on hold without analyses. There were no subcontracted analyses for this SDG.

Changes to the Revision

This is an original submittal of the final report package.

Analytical Information

All samples were prepped (where applicable) and analyzed within the standard allowed holding times, unless noted within the exceptions listed below. The laboratory analyzed all samples within the program and method guidelines. The following information is provided specific to individual methods:

Chromatographic Flags for Manual Integration:

The following letters are used to denote manual integrations on the laboratory's raw data in association with chromatographic integrations:

- A:** The peak was manually integrated as it was not integrated in the original chromatogram.
- B:** The peak was manually integrated due to resolution or coelution issues in the original chromatogram.
- C:** The peak was manually integrated to correct the baseline from the original chromatogram.
- D:** The peak was manually integrated to identify the correct peak as the wrong peak was identified in the original chromatogram.
- E:** The peak was manually integrated to include the entire peak as the original chromatogram only integrated part of the peak.

SW8260B:

No anomalies or deviations are noted.

SW8270C PAH:

The surrogate 2-Fluorobiphenyl exceeded criteria with a negative bias in sample 1108276-05.

No additional anomalies or deviations are noted and the proper data qualifiers have been applied.

FLPRO:

The surrogate o-Terphenyl exceeded criteria with a positive bias in sample 1108276-01 and with a negative bias in 1108276-05. The surrogate o-Terphenyl exceeded the retention time window in 1H29003-BLK1, -BS1, -MSD2, 1108276-04, -05, and 1125102-CCV2. The result bias due to the retention time shift was determined to be negligible for all affected samples and QC.

The batch spike associated to batch 1H29003 exceeded criteria with a positive bias for Petroleum Range Organics.

The continuing calibration verifications exceeded criteria in 1125102-CCV1 with a negative bias for 2-Fluorobiphenyl and in 1125102-CCV3 and -CCV4 with a positive bias for Petroleum Range Organics.

No additional anomalies or deviations are noted and the proper data qualifiers have been applied.

Data Qualifiers

As applicable and where required, the following general qualifiers are associated with the sample results. Additional qualifiers will be specified within the reporting sections of the data package or within the body of the Case Narrative.

Analytical Report Terms and Qualifiers

- MDL:** The method detection limit (MDL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. The MDL is determined from analysis of a sample containing the analyte in a given matrix. For DoD QSM 4.1 reporting purposes, this definition is also applied to the reported Detection Limit (DL).
- LOD:** The Limit of Detection is an estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte- and matrix-specific and may be laboratory-dependent. This definition is further clarified in the DoD QSM 4.1 revisions as the smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate (Type II error) is 1%.
- LOQ:** The Limit of Quantitation is the minimum level, concentration, or quantity of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. This term is further clarified within the DoD QSM 4.1 as the lowest concentration that produces a quantitative result within specified limits of precision and bias.
- *:** An exceeding quality control criteria is associated with the reported result.
- B:** The presence of a "B" to the right of an analytical value indicates that this compound was also detected in the method blank and the data should be interpreted with caution. One should consider the possibility that the correct sample result might be less than the reported result and, perhaps, zero. **For Florida DEP reports this qualifier is "V".**
- D:** When a sample (or sample extract) is rerun diluted because one of the compound concentrations exceeded the highest concentration range for the standard curve, all of the values obtained in the dilution run will be flagged with a "D".
- E:** The concentration for any compound found which exceeds the highest concentration level on the standard curve for that compound will be flagged with an "E". Usually the sample will be rerun at a dilution to quantitate the flagged compound. **For Florida DEP reports this qualifier is "L".**
- H1:** The result was analyzed outside of the EPA recommended holding time.

- H2:** The result was extracted outside of the EPA recommended holding time.
- H3:** The sample for this analyte was received outside of the EPA recommended holding time.
- J:** The presence of a "J" to the right of an analytical result indicates that the reported result is estimated. The mass spectral data pass the identification criteria showing that the compound is present, but the calculated result is less than the EQL. One should feel confident that the result is greater than zero and less than the EQL. **For Florida DEP reports this qualifier is "I".**
- M:** Indicates that the sample matrix interfered with the quantitation of the analyte. In dual column analysis the result is reported from the column with the lower concentration. In inorganics, it indicates that the parameters MDL/RL has been raised.
- N:** The MS/MSD accuracy and/or precision are outside criteria. The predigested spike recovery is not within control limits for the associated parameter.
- P:** The associated numerical value is an estimated quantity. There is greater than a 40% difference between the two GC columns for the detected concentrations. The higher of the two values is reported unless matrix interference is obvious or for HPLC analysis where the primary column is reported.
- Q:** The RPD and/or percent recovery exceeded limits in the associated Blank Spike and/or Blank Spike Duplicate.
- S:** The associated internal standard failed criteria.
- U:** The presence of a "U" indicates that the analyte was analyzed for but was not detected or the concentration of the analyte quantitated below the DL.
- X:** The parameter shows a potential positive bias on a reported concentration due to an ICV or CCV exceeding the upper control limit on the high side.
- Y:** The parameter shows a potential negative bias on a reported concentration due to an ICV or CCV exceeding the lower control limit on the low side.
- Z:** The parameter shows lack of confirmation/detection, which may be due to a negative bias in the ICV or CCV which exceeds the lower control limit.

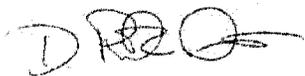
LIMS Definitions / Naming Conventions:

The following are general naming conventions that are used throughout the laboratory; however, on a method by method basis, there are additional QAQC items that are named in a consistent format.

- BLK:** LIMS assigns a unique identifier to the Method Blank by naming it as the letters BLK appended to the Batch ID. A Method Blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The Method Blank is used to assess for possible contamination during preparation and/or analysis steps. Method Blanks within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally.
- BS:** LIMS assigns a unique identifier to the Blank Spike by naming it as the letters BS appended to the Batch ID. The Blank Spike or Lab Control Sample is a controlled analyte-free matrix, which is spiked with known and verified concentrations of target analytes. Spiking concentrations can be referenced in the method SOP. The BS is used to evaluate the viability of analytes taken through the entire prep (when applicable) and analytical process. Blank Spikes within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally. A duplicate Blank Spike will be designated as a BSD.
- MS:** The LIMS assigns each Client sample with a unique identifier. The Matrix Spike is designated with a MS at the end of the sample's unique identifier. The Matrix Spike sample is used to assess the effect of the sample matrix on the precision and accuracy of the results generated using the selected method. A duplicate Matrix Spike will be designated as a MSD.
- IDs:** The LIMS assigns each Client sample with a unique identifier. The letter "RE" may potentially be appended to the end of the LIMS Sample ID. And "RE" implies that the sample was either re-prepped, re-analyzed straight, or re-analyzed at a dilution. Subsequent re-analysis for the sample will be appended with a numerical value beginning with 1 that will increase incrementally. Eg: RE1, RE2, RE3, etc.

Statement of Data Authenticity:

I certify that, based upon my inquiry of those individuals immediately responsible for obtaining the information and to the best of my knowledge, 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 this Case Narrative, as verified by my signature below. During absences, Ms. Marcia K. McGinnity is authorized to sign this Statement of Data Authenticity.



Mr. Rick D. Davis
Laboratory Technical Director / VP Operations

HOLDING TIME SUMMARY

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
CEF-043-GW-04N-20110824	08/24/11 09:00	08/26/11 08:30	08/29/11 00:00	N/A	14.00	08/29/11 16:19	5.35	14.00	
CEF-043-GW-02N-20110824	08/24/11 10:05	08/26/11 08:30	08/29/11 00:00	N/A	14.00	08/29/11 16:46	5.32	14.00	
CEF-043-GW-09N-20110824	08/24/11 10:55	08/26/11 08:30	08/29/11 00:00	N/A	14.00	08/29/11 17:13	5.30	14.00	
CEF-043-GW-07N-20110824	08/24/11 12:30	08/26/11 08:30	08/30/11 00:00	N/A	14.00	08/30/11 12:59	6.06	14.00	
CEF-043-GW-06N-20110824	08/24/11 13:10	08/26/11 08:30	08/30/11 00:00	N/A	14.00	08/30/11 13:26	6.05	14.00	
CEF-043-GW-40A-20110824	08/24/11 14:20	08/26/11 08:30	08/30/11 00:00	N/A	14.00	08/30/11 13:53	6.02	14.00	
CEF-043-DUP01-20110824	08/24/11 00:00	08/26/11 08:30	08/30/11 00:00	N/A	14.00	08/30/11 14:20	6.64	14.00	
Trip Blank	08/24/11 00:00	08/26/11 08:30	08/30/11 00:00	N/A	14.00	08/30/11 10:46	6.49	14.00	

ANALYSIS SEQUENCE SUMMARY

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Sequence: 1H23702

Instrument: MS-VOA6

Calibration: 1238001

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1H23702-TUN1	0822TUN1.D	08/22/11 09:03
Cal Standard	1H23702-CAL1	0822CAL1.D	08/22/11 10:02
Cal Standard	1H23702-CAL2	0822CAL2.D	08/22/11 10:29
Cal Standard	1H23702-CAL3	0822CAL3.D	08/22/11 10:55
Cal Standard	1H23702-CAL4	0822CAL4.D	08/22/11 11:22
Cal Standard	1H23702-CAL5	0822CAL5.D	08/22/11 11:49
Cal Standard	1H23702-CAL6	0822CAL6.D	08/22/11 12:16
Cal Standard	1H23702-CAL7	0822CAL7.D	08/22/11 12:42
Cal Standard	1H23702-CAL8	0822CAL8.D	08/22/11 13:09
Cal Standard	1H23702-CAL9	0822CAL9.D	08/22/11 13:36
Initial Cal Check	1H23702-ICV2	0822ICV2.D	08/22/11 14:56
MS Tune	1H23702-TUN2	0822TUN2.D	08/23/11 07:38

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Lab File ID: 0822TUN1.D

Injection Date: 08/22/11

Instrument ID: MS-VOA6

Injection Time: 09:03

Sequence: 1H23702

Lab Sample ID: 1H23702-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	16.4	PASS
75	30 - 60% of 95	35.7	PASS
95	Base peak, 100% relative abundance	100	PASS
96	5 - 9% of 95	6.5	PASS
173	Less than 2% of 174	0	PASS
174	50 - 200% of 95	62.2	PASS
175	5 - 9% of 174	7.39	PASS
176	95 - 101% of 174	96	PASS
177	5 - 9% of 176	6.98	PASS

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Calibration: 1238001

Instrument: MS-VOA6

Matrix: Water

Calibration Dates: 8/22/11 10:02

8/22/11 13:36

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Acetone	5.111117E-02	9.005946	3.848375	0.1806562			15	
Acrolein	2.506114E-02	11.05076	3.728222	0.1828195			15	
Acrylonitrile	4.496591E-02	5.447928	4.683222	0.1243932			15	
Benzene	0.7331969	6.149973	7.708111	5.151822E-02			15	
Bromobenzene	0.6710011	10.11858	12.43156	0.0417535			15	
Bromochloromethane	0.1076096	9.435181	6.812222	5.936876E-02			15	
Tert-Amyl Methyl Ether	0.5033096	7.303284	7.899667	3.090256E-02			15	
Bromodichloromethane	0.2917901	11.0826	8.688	2.967734E-02			15	
Bromoform	0.4099048	27.48982	11.841	3.714887E-02	0.9980602		SPCC (0.1)	
Bromomethane	0.1675078	19.73873	2.882444	0.2090612	0.9986041		0.995	
Bromofluorobenzene	1.049439	5.963476	12.26644	0.03342			15	
n-Butylbenzene	1.86155	7.752576	13.85478	0.0267356			15	
2-Butanone	0.108901	6.004713	6.280444	6.694352E-02			15	
sec-Butylbenzene	2.591308	8.016837	13.31467	2.352811E-02			15	
tert-Butylbenzene	1.629797	8.405523	13.08344	0.0294907			15	
Carbon disulfide	0.438857	11.66707	4.843111	8.412341E-02			15	
Carbon tetrachloride	0.2279527	10.4442	7.678444	5.650751E-02			15	
Chlorobenzene	1.888786	10.23805	11.11444	3.705116E-02			SPCC (0.3)	
Chloroethane	8.109292E-02	7.520513	3.019222	0.193568			15	
Chloroform	0.3902255	6.194295	6.783556	0.0623734			CCC (20)	
2-Chloroethyl vinyl ether	9.800502E-02	8.930753	9.041667	3.192985E-02			15	
Chloromethane	0.1750325	9.167421	2.286556	0.1662768			SPCC (0.1)	
1-Chlorohexane	0.9250646	8.457465	11.07967	2.289317E-02			15	
2-Chlorotoluene	1.822054	6.755221	12.65044	3.280562E-02			15	
4-Chlorotoluene	2.122562	6.789119	12.70944	3.151755E-02			15	
Cyclohexane	0.2632359	5.614582	7.609444	5.362395E-02			15	
Dibromochloromethane	0.4791446	19.6605	10.35089	2.130149E-02	0.998407		0.995	
1,2-Dibromo-3-chloropropane	0.1137803	16.30239	14.45778	1.552359E-02	0.9982328		0.995	
1,2-Dibromoethane (EDB)	0.7204161	12.62217	10.56322	4.017521E-02			15	
Dibromomethane	0.1696471	8.215305	8.625667	4.312179E-02			15	
1,2-Dichlorobenzene	1.034082	9.258215	13.81667	0.0161059			15	
1,3-Dichlorobenzene	1.080591	8.579432	13.40733	3.633776E-02			15	

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Calibration: 1238001

Instrument: MS-VOA6

Matrix: Water

Calibration Dates: 8/22/11 10:02

8/22/11 13:36

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
1,4-Dichlorobenzene	1.104568	7.583112	13.49722	2.996147E-02			15	
Dichlorodifluoromethane	0.2380903	9.541696	2.066444	0.2009216			15	
1,1-Dichloroethane	0.3024845	7.40497	5.827444	7.201117E-02			SPCC (0.1)	
1,2-Dichloroethane	0.2482211	6.553083	7.540444	5.573272E-02			15	
1,1-Dichloroethene	0.216037	7.041018	4.316778	0.118194			CCC (20)	
cis-1,2-Dichloroethene	0.2732348	9.721449	6.536444	6.437989E-02			15	
trans-1,2-Dichloroethene	0.2545044	9.608939	5.456778	6.884109E-02			15	
1,2-Dichloroethene (total)	0.263872	9.61121	0	0			15	
1,2-Dichloropropane	0.1616082	8.144253	8.513111	4.268367E-02			CCC (20)	
1,3-Dichloropropane	0.8245567	7.54921	10.09044	0.0377578			15	
2,2-Dichloropropane	0.2710979	6.785914	6.638	5.423862E-02			15	
1,1-Dichloropropene	0.2525233	5.748694	7.557111	0.0689609			15	
cis-1,3-Dichloropropene	0.2906269	9.687094	9.257889	2.905493E-02			15	
trans-1,3-Dichloropropene	0.7937008	9.937741	9.726333	4.276917E-02			15	
Diisopropyl Ether	0.73795	7.623524	6.201444	6.783954E-02			15	
Ethylbenzene	2.983254	9.839452	11.26233	3.703935E-02			CCC (20)	
Ethyl tert-Butyl Ether	0.5329926	7.932552	6.664444	6.332302E-02			15	
Ethyl Methacrylate	0.5988703	10.3466	9.913445	0.0397134			15	
Hexachlorobutadiene	0.1707208	7.880797	15.81178	0.0275083			15	
2-Hexanone	0.4013248	7.335301	10.03033	4.197496E-02			15	
Iodomethane	0.2582777	25.13322	4.511556	8.534116E-02	0.9991485		0.995	
Isopropylbenzene	2.65496	12.25497	12.15822	3.532385E-02			15	
p-Isopropyltoluene	1.80556	7.24305	13.45211	2.370487E-02			15	
Methylene chloride	0.1991691	5.402147	4.797889	8.933102E-02			15	
Methyl Acetate	0.1156055	3.994751	4.669125	8.197407E-02			15	
Methylcyclohexane	0.2753372	6.11104	8.839222	4.784648E-02			15	
Naphthalene	1.277895	8.504374	15.686	2.095546E-02			15	
Methyl Methacrylate	0.1896219	6.850882	8.643333	4.803431E-02			15	
4-Methyl-2-pentanone	0.1999476	6.137204	9.184667	4.644131E-02			15	
Methyl t-Butyl Ether	0.4718434	6.849094	5.463333	7.642315E-02			15	
n-Propylbenzene	2.999906	7.023661	12.56167	0.0339365			15	
Styrene	2.116004	12.94458	11.73344	4.388211E-02			15	

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Calibration: 1238001

Instrument: MS-VOA6

Matrix: Water

Calibration Dates: 8/22/11 10:02

8/22/11 13:36

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
1,1,2,2-Tetrachloroethane	0.6657007	7.645018	12.08167	3.276458E-02			SPCC (0.3)	
1,1,1,2-Tetrachloroethane	0.4278656	13.63773	11.156	3.099319E-02			15	
tert-Butyl alcohol	1.113029E-02	11.89559	4.479556	0.1060993			15	
Tetrachloroethene	0.6403302	13.92194	10.46122	2.038726E-02			15	
Toluene	1.587554	8.024408	9.730778	0.0256066			CCC (20)	
1,2,3-Trichlorobenzene	0.5424282	10.01374	15.97067	2.365398E-02			15	
1,2,4-Trichlorobenzene	0.6425213	8.365613	15.53311	2.007416E-02			15	
1,1,2-Trichloroethane	0.4611678	8.449985	9.883778	4.161204E-02			15	
1,1,1-Trichloroethane	0.3280608	9.798603	7.340222	3.077438E-02			15	
Tetrahydrofuran	6.057527E-02	12.65435	7.001143	5.929177E-02			15	
Trichloroethene	0.248225	8.648801	8.464	3.920795E-02			15	
Trichlorofluoromethane	0.3344195	8.661389	3.524556	0.1552297			15	
1,2,3-Trichloropropane	0.2098808	12.32992	12.20744	2.987133E-02			15	
1,3,5-Trimethylbenzene	2.099163	8.197306	12.74144	3.722497E-02			15	
1,2,4-Trimethylbenzene	2.153212	8.146647	13.11322	0.0285936			15	
1,1,2-Trichloro-1,2,2-trifluoroethane	0.2329591	9.419735	4.393555	8.718909E-02			15	
Vinyl chloride	0.1028831	10.16844	2.436	0.1073167			CCC (20)	
m,p-Xylene	2.244628	8.78088	11.37044	3.872787E-02			15	
o-Xylene	2.340115	9.57527	11.76433	3.883949E-02			15	
Vinyl acetate	0.4611096	12.09585	5.906333	6.998012E-02			15	
Xylenes (total)	2.276457	8.972983	0	0			15	
Dibromofluoromethane	0.2820221	1.847922	6.956222	3.389931E-02			15	
1,2-Dichloroethane-d4	6.703659E-02	2.429424	7.448778	2.703272E-02			15	
Toluene-d8	2.688317	4.132592	9.654111	1.880207E-02			15	
tert-Amyl alcohol	1.067327E-02	6.641145	7.163875	4.796969E-02			15	
tert-Amyl ethyl ether	0.4217922	7.506609	8.778	2.381017E-02			15	

INITIAL CALIBRATION CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Instrument ID: MS-VOA6

Calibration: 1238001

Lab File ID: 0822ICV2.D

Calibration Date: 08/22/11 10:02

Sequence: 1H23702

Injection Date: 08/22/11

Lab Sample ID: 1H23702-ICV2

Injection Time: 14:56

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	ICV	ICAL	ICV	MIN (#)	ICV	LIMIT (#)
Benzene	A	100.0	106.1	0.7331969	0.7776931		6.1	20
Ethylbenzene	A	100.0	104.3	2.983254	3.11254		4.3	20
Isopropylbenzene	A	100.0	98.82	2.65496	2.623675		-1.2	20
Xylenes (total)	A	300.0	311.5	2.276457	2.363857		3.8	20
Bromofluorobenzene	A	30.00	30.05	1.049439	1.051306		0.2	20
Dibromofluoromethane	A	30.00	30.07	0.2820221	0.2827036		0.2	20
1,2-Dichloroethane-d4	A	30.00	30.45	6.703659E-02	6.804654E-02		1.5	20
Toluene-d8	A	30.00	29.28	2.688317	2.623795		-2.4	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Lab File ID: 0822TUN2.D

Injection Date: 08/23/11

Instrument ID: MS-VOA6

Injection Time: 07:38

Sequence: 1H23702

Lab Sample ID: 1H23702-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	16.1	PASS
75	30 - 60% of 95	36.3	PASS
95	Base peak, 100% relative abundance	100	PASS
96	5 - 9% of 95	6.83	PASS
173	Less than 2% of 174	0.107	PASS
174	50 - 200% of 95	73.3	PASS
175	5 - 9% of 174	7.01	PASS
176	95 - 101% of 174	96.4	PASS
177	5 - 9% of 176	6.53	PASS

ANALYSIS SEQUENCE SUMMARY

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Sequence: 1H24203

Instrument: MS-VOA6

Calibration: 1238001

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1H24203-TUN1	0829TUN1.D	08/29/11 08:08
Calibration Check	1H24203-CCV1	0829CCV1.D	08/29/11 08:46
LCS	1H29010-BS1	0829LCS1.D	08/29/11 09:13
Blank	1H29010-BLK1	0829BLK1.D	08/29/11 10:31
CEF-043-GW-04N-20110824	1108276-01	0827601.D	08/29/11 16:19
CEF-043-GW-02N-20110824	1108276-02	0827602.D	08/29/11 16:46
CEF-043-GW-09N-20110824	1108276-03	0827603.D	08/29/11 17:13
LCS Dup	1H29010-BSD1	0829LCD1.D	08/29/11 19:53

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Lab File ID: 0829TUN1.D

Injection Date: 08/29/11

Instrument ID: MS-VOA6

Injection Time: 08:08

Sequence: 1H24203

Lab Sample ID: 1H24203-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	17.8	PASS
75	30 - 60% of 95	38.6	PASS
95	Base peak, 100% relative abundance	100	PASS
96	5 - 9% of 95	7.28	PASS
173	Less than 2% of 174	0	PASS
174	50 - 200% of 95	53.3	PASS
175	5 - 9% of 174	8.14	PASS
176	95 - 101% of 174	96.8	PASS
177	5 - 9% of 176	7.2	PASS

CONTINUING CALIBRATION CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Instrument ID: MS-VOA6

Calibration: 1238001

Lab File ID: 0829CCV1.D

Calibration Date: 08/22/11 10:02

Sequence: 1H24203

Injection Date: 08/29/11

Lab Sample ID: 1H24203-CCV1

Injection Time: 08:46

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Benzene	A	100.0	94.77	0.7331969	0.6948241		-5.2	20
Ethylbenzene	A	100.0	102.5	2.983254	3.058381		2.5	20
Isopropylbenzene	A	100.0	109.2	2.65496	2.90039		9.2	20
Xylenes (total)	A	300.0	310.5	2.276457	2.356053		3.5	20
Bromofluorobenzene	A	30.00	32.37	1.049439	1.132287		7.9	20
Dibromofluoromethane	A	30.00	32.87	0.2820221	0.3089672		9.6	20
1,2-Dichloroethane-d4	A	30.00	31.57	6.703659E-02	7.054257E-02		5.2	20
Toluene-d8	A	30.00	31.07	2.688317	2.784421		3.6	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

PREPARATION BATCH SUMMARY

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Batch: 1H29010

Batch Matrix: Water

Preparation: 5030B

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
CEF-043-GW-04N-20110824	1108276-01	08/29/11 00:00	5.00	5.00
CEF-043-GW-02N-20110824	1108276-02	08/29/11 00:00	5.00	5.00
CEF-043-GW-09N-20110824	1108276-03	08/29/11 00:00	5.00	5.00
Blank	1H29010-BLK1	08/29/11 00:00	5.00	5.00
LCS	1H29010-BS1	08/29/11 00:00	5.00	5.00
LCS Dup	1H29010-BSD1	08/29/11 00:00	5.00	5.00

ANALYSIS SEQUENCE SUMMARY

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Sequence: 1H24303

Instrument: MS-VOA6

Calibration: 1238001

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1H24303-TUN1	0830TUN1.D	08/30/11 07:57
Calibration Check	1H24303-CCV1	0830CCV1.D	08/30/11 08:34
LCS	1H30006-BS1	0830LCS1.D	08/30/11 09:01
Blank	1H30006-BLK1	0830BLK1.D	08/30/11 10:19
Trip Blank	1108276-08	0827608.D	08/30/11 10:46
CEF-043-GW-07N-20110824	1108276-04	0827604.D	08/30/11 12:59
CEF-043-GW-06N-20110824	1108276-05	0827605.D	08/30/11 13:26
CEF-043-GW-40A-20110824	1108276-06	0827606.D	08/30/11 13:53
CEF-043-DUP01-20110824	1108276-07	0827607.D	08/30/11 14:20
CEF-043-GW-40A-20110824	1H30006-MS1	0827606M.D	08/30/11 19:15
CEF-043-GW-40A-20110824	1H30006-MSD1	0827606S.D	08/30/11 19:41

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Lab File ID: 0830TUN1.D

Injection Date: 08/30/11

Instrument ID: MS-VOA6

Injection Time: 07:57

Sequence: 1H24303

Lab Sample ID: 1H24303-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	16	PASS
75	30 - 60% of 95	36.7	PASS
95	Base peak, 100% relative abundance	100	PASS
96	5 - 9% of 95	6.68	PASS
173	Less than 2% of 174	0	PASS
174	50 - 200% of 95	73.5	PASS
175	5 - 9% of 174	7.12	PASS
176	95 - 101% of 174	96.5	PASS
177	5 - 9% of 176	6.65	PASS

CONTINUING CALIBRATION CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Instrument ID: MS-VOA6

Calibration: 1238001

Lab File ID: 0830CCV1.D

Calibration Date: 08/22/11 10:02

Sequence: 1H24303

Injection Date: 08/30/11

Lab Sample ID: 1H24303-CCV1

Injection Time: 08:34

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Benzene	A	100.0	97.24	0.7331969	0.7129512		-2.8	20
Ethylbenzene	A	100.0	100.3	2.983254	2.993323		0.3	20
Isopropylbenzene	A	100.0	105.2	2.65496	2.792536		5.2	20
Xylenes (total)	A	300.0	304.0	2.276457	2.30687		1.3	20
Bromofluorobenzene	A	30.00	31.62	1.049439	1.106034		5.4	20
Dibromofluoromethane	A	30.00	32.30	0.2820221	0.3036726		7.7	20
1,2-Dichloroethane-d4	A	30.00	30.53	6.703659E-02	6.821502E-02		1.8	20
Toluene-d8	A	30.00	30.47	2.688317	2.730601		1.6	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

PREPARATION BATCH SUMMARY

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Batch: 1H30006

Batch Matrix: Water

Preparation: 5030B

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
CEF-043-GW-07N-20110824	1108276-04	08/30/11 00:00	5.00	5.00
CEF-043-GW-06N-20110824	1108276-05	08/30/11 00:00	5.00	5.00
CEF-043-GW-40A-20110824	1108276-06	08/30/11 00:00	5.00	5.00
CEF-043-DUP01-20110824	1108276-07	08/30/11 00:00	5.00	5.00
Trip Blank	1108276-08	08/30/11 00:00	5.00	5.00
Blank	1H30006-BLK1	08/30/11 00:00	5.00	5.00
LCS	1H30006-BS1	08/30/11 00:00	5.00	5.00
CEF-043-GW-40A-20110824	1H30006-MS1	08/30/11 00:00	5.00	5.00
CEF-043-GW-40A-20110824	1H30006-MSD1	08/30/11 00:00	5.00	5.00

HOLDING TIME SUMMARY
SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
CEF-043-GW-04N-20110824	08/24/11 09:00	08/26/11 08:30	08/31/11 14:23	7.27	7.00	09/03/11 20:31	3.26	40.00	
CEF-043-GW-02N-20110824	08/24/11 10:05	08/26/11 08:30	08/31/11 14:23	7.22	7.00	09/03/11 20:59	3.27	40.00	
CEF-043-GW-09N-20110824	08/24/11 10:55	08/26/11 08:30	08/31/11 14:23	7.19	7.00	09/03/11 21:27	3.29	40.00	
CEF-043-GW-07N-20110824	08/24/11 12:30	08/26/11 08:30	08/31/11 14:23	7.12	7.00	09/03/11 21:55	3.31	40.00	
CEF-043-GW-06N-20110824	08/24/11 13:10	08/26/11 08:30	08/31/11 14:23	7.09	7.00	09/03/11 22:23	3.33	40.00	
CEF-043-GW-40A-20110824	08/24/11 14:20	08/26/11 08:30	08/31/11 14:23	7.04	7.00	09/03/11 22:52	3.35	40.00	
CEF-043-DUP01-20110824	08/24/11 00:00	08/26/11 08:30	08/30/11 10:05	6.46	7.00	09/06/11 15:50	7.24	40.00	

PREPARATION BATCH SUMMARY

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Batch: 1H25002 Batch Matrix: Water

Preparation: EXT 3510

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
CEF-043-DUP01-20110824	1108276-07	08/30/11 10:05	1,020.00	1.00
Blank	1H25002-BLK2	08/30/11 10:05	1,000.00	1.00
LCS	1H25002-BS2	08/30/11 10:05	1,000.00	1.00
LCS Dup	1H25002-BSD2	08/30/11 10:05	1,000.00	1.00

PREPARATION BATCH SUMMARY

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Batch: 1H29006 Batch Matrix: Water

Preparation: EXT_3510

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
CEF-043-GW-04N-20110824	1108276-01	08/31/11 14:23	1,000.00	1.00
CEF-043-GW-02N-20110824	1108276-02	08/31/11 14:23	1,000.00	1.00
CEF-043-GW-09N-20110824	1108276-03	08/31/11 14:23	1,000.00	1.00
CEF-043-GW-07N-20110824	1108276-04	08/31/11 14:23	1,000.00	1.00
CEF-043-GW-06N-20110824	1108276-05	08/31/11 14:23	1,000.00	1.00
CEF-043-GW-40A-20110824	1108276-06	08/31/11 14:23	1,000.00	1.00
Blank	1H29006-BLK2	08/31/11 14:23	1,000.00	1.00
LCS	1H29006-BS2	08/31/11 14:23	1,000.00	1.00
LCS Dup	1H29006-BSD2	08/31/11 14:23	1,000.00	1.00
CEF-043-GW-40A-20110824	1H29006-MS2	08/31/11 14:23	1,000.00	1.00
CEF-043-GW-40A-20110824	1H29006-MSD2	08/31/11 14:23	1,000.00	1.00

ANALYSIS SEQUENCE SUMMARY

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Sequence: 1H23712

Instrument: MS-BNA4

Calibration: 1238006

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1H23712-TUN1	SEQ-TUN1.D	08/24/11 14:16
Cal Standard	1H23712-CAL1	SEQ-CAL1.D	08/24/11 14:35
Cal Standard	1H23712-CAL2	SEQ-CAL2.D	08/24/11 15:05
Cal Standard	1H23712-CAL3	SEQ-CAL3.D	08/24/11 15:35
Cal Standard	1H23712-CAL4	SEQ-CAL4.D	08/24/11 16:05
Cal Standard	1H23712-CAL5	SEQ-CAL5.D	08/24/11 16:35
Cal Standard	1H23712-CAL6	SEQ-CAL6.D	08/24/11 17:05
Cal Standard	1H23712-CAL7	SEQ-CAL7.D	08/24/11 17:34
Cal Standard	1H23712-CAL9	SEQ-CAL9.D	08/24/11 18:33
Initial Cal Check	1H23712-ICV1	SEQ-ICV1.D	08/24/11 19:02

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Lab File ID: SEQ-TUN1.D

Injection Date: 08/24/11

Instrument ID: MS-BNA4

Injection Time: 14:16

Sequence: 1H23712

Lab Sample ID: 1H23712-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30 - 60% of 198	46.6	PASS
68	Less than 2% of 69	1.46	PASS
69	Less than 200% of 198	49.8	PASS
70	Less than 2% of 69	0.379	PASS
127	40 - 60% of 198	57.3	PASS
197	Less than 1% of 198	0	PASS
198	Base peak, 100% relative abundance	100	PASS
199	5 - 9% of 198	6.71	PASS
275	10 - 30% of 198	25	PASS
365	1 - 200% of 198	3.37	PASS
441	0.001 - 100% of 443	79.7	PASS
442	40 - 200% of 198	97.7	PASS
443	17 - 23% of 442	19.5	PASS

INITIAL CALIBRATION DATA (Continued)

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Calibration: 1238006

Instrument: MS-BNA4

Matrix: Water

Calibration Dates: 8/24/11 14:35

8/24/11 18:33

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Acenaphthene	0.8881147	4.765862	8.240375	8.005672E-02			CCC (30)	
Acenaphthylene	1.295328	4.367363	8.027625	8.607367E-02			15	
Anthracene	1.140544	4.254591	10.10862	0.0700752			15	
Benzo(a)anthracene	0.6970627	14.59061	13.80988	0.0529908			15	
Benzo(a)pyrene	1.125376	11.34597	16.38237	4.577814E-02			CCC (30)	
Benzo(b)fluoranthene	1.335075	13.04297	15.80187	8.137397E-02			15	
Benzo(g,h,i)perylene	0.8163407	8.478144	18.8055	4.843521E-02			15	
Benzo(k)fluoranthene	1.351132	6.606248	15.85263	0.0761119			15	
Chrysene	0.7018849	11.75411	13.87237	4.522786E-02			15	
Dibenz(a,h)anthracene	0.792152	14.22527	18.3905	4.438511E-02			15	
Fluoranthene	1.095824	8.181104	11.52912	1.610412E-02			CCC (30)	
Fluorene	0.8469727	7.646974	8.87125	4.967807E-02			15	
2-Fluorobiphenyl	0.9449172	5.432361	7.39325	5.511184E-02			15	
Indeno(1,2,3-cd)pyrene	0.807297	8.877407	18.33625	0.0475878			15	
1-Methylnaphthalene	0.8645271	7.716576	7.057125	4.664672E-02			15	
2-Methylnaphthalene	0.8917256	7.590679	6.94225	9.738335E-02			15	
Naphthalene	1.488499	9.765898	6.111375	7.795345E-02			15	
Phenanthrene	1.163651	3.638206	10.04475	7.061639E-02			15	
Pyrene	1.112402	6.963902	11.839	6.221472E-02			15	
Terphenyl-d14	0.6342447	8.591082	12.10513	2.846396E-02			15	
2,4,6-Tribromophenol	0.173125	9.199082	9.170834	8.799438E-02			15	

INITIAL CALIBRATION CHECK

SW8270C

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>1108276</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>NAS Cecil Field CTOJM09 Sampling Event 66</u>
Instrument ID: <u>MS-BNA4</u>	Calibration: <u>1238006</u>
Lab File ID: <u>SEQ-ICV1.D</u>	Calibration Date: <u>08/24/11 14:16</u>
Sequence: <u>1H23712</u>	Injection Date: <u>08/24/11</u>
Lab Sample ID: <u>1H23712-ICV1</u>	Injection Time: <u>19:02</u>

COMPOUND	TYPE	CONC. (ug/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	ICV	ICAL	ICV	MIN (#)	ICV	LIMIT (#)
Naphthalene	A	5.000	5.687	1.488499	1.69304		13.7	20
2-Fluorobiphenyl	A	5.000	5.058	0.9449172	0.9558622		1.2	20
Terphenyl-d14	A	5.000	5.406	0.6342447	0.6857866		8.1	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

ANALYSIS SEQUENCE SUMMARY

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Sequence: 1124901

Instrument: MS-BNA4

Calibration: 1238006

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1124901-TUN1	SEQ-TUN1.D	09/03/11 16:01
Calibration Check	1124901-CCV1	SEQ-CCV1.D	09/03/11 16:19
LCS	1H29006-BS2	H29006L1.D	09/03/11 16:47
LCS Dup	1H29006-BSD2	H29006L2.D	09/03/11 17:16
Blank	1H29006-BLK2	H29006B1.D	09/03/11 17:44
CEF-043-GW-04N-20110824	1108276-01	0827601.D	09/03/11 20:31
CEF-043-GW-02N-20110824	1108276-02	0827602.D	09/03/11 20:59
CEF-043-GW-09N-20110824	1108276-03	0827603.D	09/03/11 21:27
CEF-043-GW-07N-20110824	1108276-04	0827604.D	09/03/11 21:55
CEF-043-GW-06N-20110824	1108276-05	0827605.D	09/03/11 22:23
CEF-043-GW-40A-20110824	1108276-06	0827606.D	09/03/11 22:52
CEF-043-GW-40A-20110824	1H29006-MS2	0827606M.D	09/04/11 00:18
CEF-043-GW-40A-20110824	1H29006-MSD2	0827606S.D	09/04/11 00:46

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Lab File ID: SEQ-TUN1.D

Injection Date: 09/03/11

Instrument ID: MS-BNA4

Injection Time: 16:01

Sequence: 1124901

Lab Sample ID: 1124901-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30 - 60% of 198	41.6	PASS
68	Less than 2% of 69	1.49	PASS
69	Less than 200% of 198	45	PASS
70	Less than 2% of 69	0.404	PASS
127	40 - 60% of 198	50.5	PASS
197	Less than 1% of 198	0.919	PASS
198	Base peak, 100% relative abundance	100	PASS
199	5 - 9% of 198	6.73	PASS
275	10 - 30% of 198	26.6	PASS
365	1 - 200% of 198	4.25	PASS
441	0.001 - 100% of 443	81	PASS
442	40 - 200% of 198	160	PASS
443	17 - 23% of 442	19.6	PASS

CONTINUING CALIBRATION CHECK

SW8270C

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>1108276</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>NAS Cecil Field CTOJM09 Sampling Event 66</u>
Instrument ID: <u>MS-BNA4</u>	Calibration: <u>1238006</u>
Lab File ID: <u>SEQ-CCV1.D</u>	Calibration Date: <u>08/24/11 14:16</u>
Sequence: <u>1124901</u>	Injection Date: <u>09/03/11</u>
Lab Sample ID: <u>1124901-CCV1</u>	Injection Time: <u>16:19</u>

COMPOUND	TYPE	CONC. (ug/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Naphthalene	A	5.000	4.934	1.488499	1.468714		-1.3	20
2-Fluorobiphenyl	A	5.000	5.494	0.9449172	1.038182		9.9	20
Terphenyl-d14	A	5.000	5.445	0.6342447	0.6907184		8.9	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

ANALYSIS SEQUENCE SUMMARY

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Sequence: 1125008

Instrument: MS-BNA4

Calibration: 1238006

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	1125008-TUN1	SEQ-TUN1.D	09/06/11 13:40
Calibration Check	1125008-CCV1	SEQ-CCV1.D	09/06/11 13:57
LCS	1H25002-BS2	H25002L1.D	09/06/11 14:26
LCS Dup	1H25002-BSD2	H25002L2.D	09/06/11 14:54
Blank	1H25002-BLK2	H25002B1.D	09/06/11 15:22
CEF-043-DUP01-20110824	1108276-07	0827607.D	09/06/11 15:50

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8270C

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Lab File ID: SEQ-TUN1.D

Injection Date: 09/06/11

Instrument ID: MS-BNA4

Injection Time: 13:40

Sequence: 1125008

Lab Sample ID: 1125008-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30 - 60% of 198	42	PASS
68	Less than 2% of 69	1.51	PASS
69	Less than 200% of 198	46.3	PASS
70	Less than 2% of 69	0.393	PASS
127	40 - 60% of 198	50.5	PASS
197	Less than 1% of 198	0.357	PASS
198	Base peak, 100% relative abundance	100	PASS
199	5 - 9% of 198	6.65	PASS
275	10 - 30% of 198	27.1	PASS
365	1 - 200% of 198	4.31	PASS
441	0.001 - 100% of 443	83.7	PASS
442	40 - 200% of 198	154	PASS
443	17 - 23% of 442	19.3	PASS

CONTINUING CALIBRATION CHECK

SW8270C

Laboratory: Empirical Laboratories, LLC
 Client: Tetra Tech NUS, Inc. (T010)
 Instrument ID: MS-BNA4
 Lab File ID: SEQ-CCV1.D
 Sequence: 1125008
 Lab Sample ID: 1125008-CCV1

SDG: 1108276
 Project: NAS Cecil Field CTOJM09 Sampling Event 66
 Calibration: 1238006
 Calibration Date: 08/24/11 14:16
 Injection Date: 09/06/11
 Injection Time: 13:57

COMPOUND	TYPE	CONC. (ug/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Naphthalene	A	5.000	4.565	1.488499	1.358984		-8.7	20
2-Fluorobiphenyl	A	5.000	5.045	0.9449172	0.9534448		0.9	20
Terphenyl-d14	A	5.000	5.590	0.6342447	0.709065		11.8	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

METHOD DETECTION AND REPORTING LIMITS

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Even

Matrix: Water

Instrument: GL-GCFID2

Analyte	MDL	MRL	Units	Method
Petroleum Range Organics	0.170	0.680	mg/L	FLPRO

HOLDING TIME SUMMARY
FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
CEF-043-GW-04N-20110824	08/24/11 09:00	08/26/11 08:30	08/30/11 16:18	6.35	7.00	09/04/11 10:39	4.76	40.00	
CEF-043-GW-02N-20110824	08/24/11 10:05	08/26/11 08:30	08/30/11 16:18	6.30	7.00	09/04/11 11:12	4.79	40.00	
CEF-043-GW-09N-20110824	08/24/11 10:55	08/26/11 08:30	08/30/11 16:18	6.27	7.00	09/04/11 11:45	4.81	40.00	
CEF-043-GW-07N-20110824	08/24/11 12:30	08/26/11 08:30	08/30/11 16:18	6.20	7.00	09/04/11 12:18	4.83	40.00	
CEF-043-GW-06N-20110824	08/24/11 13:10	08/26/11 08:30	08/30/11 16:18	6.17	7.00	09/04/11 12:52	4.86	40.00	
CEF-043-GW-40A-20110824	08/24/11 14:20	08/26/11 08:30	08/30/11 16:18	6.12	7.00	09/04/11 13:25	4.88	40.00	
CEF-043-DUP01-20110824	08/24/11 00:00	08/26/11 08:30	08/30/11 16:18	6.72	7.00	09/04/11 15:05	4.95	40.00	

PREPARATION BATCH SUMMARY

FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Batch: 1H29003

Batch Matrix: Water

Preparation: EXT_3510

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
CEF-043-GW-04N-20110824	1108276-01	08/30/11 16:18	1,070.00	2.00
CEF-043-GW-02N-20110824	1108276-02	08/30/11 16:18	1,070.00	2.00
CEF-043-GW-09N-20110824	1108276-03	08/30/11 16:18	1,070.00	2.00
CEF-043-GW-07N-20110824	1108276-04	08/30/11 16:18	1,070.00	2.00
CEF-043-GW-06N-20110824	1108276-05	08/30/11 16:18	1,070.00	2.00
CEF-043-GW-40A-20110824	1108276-06	08/30/11 16:18	1,070.00	2.00
CEF-043-DUP01-20110824	1108276-07	08/30/11 16:18	1,070.00	2.00
Blank	1H29003-BLK1	08/30/11 16:18	1,000.00	2.00
LCS	1H29003-BS1	08/30/11 16:18	1,000.00	2.00
CEF-043-GW-40A-20110824	1H29003-MS2	08/30/11 16:18	1,000.00	2.00
CEF-043-GW-40A-20110824	1H29003-MSD2	08/30/11 16:18	1,000.00	2.00

ANALYSIS SEQUENCE SUMMARY

FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Sequence: 1H24311

Instrument: GL-GCFID2

Calibration: 1243002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	1H24311-CAL1	029F3001.D	08/30/11 21:41
Cal Standard	1H24311-CAL2	030F3101.D	08/30/11 22:14
Cal Standard	1H24311-CAL3	031F3201.D	08/30/11 22:47
Cal Standard	1H24311-CAL4	032F3301.D	08/30/11 23:20
Cal Standard	1H24311-CAL5	033F3401.D	08/30/11 23:54
Cal Standard	1H24311-CAL6	034F3501.D	08/31/11 00:27
Initial Cal Check	1H24311-ICV1	035F3601.D	08/31/11 01:00

INITIAL CALIBRATION DATA (Continued)

FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Calibration: 1243002

Instrument: GL-GCFID2

Matrix: Water

Calibration Dates: 8/30/11 21:41

8/31/11 0:27

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Petroleum Range Organics	1420.087	7.56897	4.493	1.875118E-02			20	
2-Fluorobiphenyl	1964.36	4.484919	9.2185	3.150788E-02			20	
o-Terphenyl	2162.555	5.0746	11.388	0.1219855			20	

INITIAL CALIBRATION CHECK

FLPRO

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>1108276</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>NAS Cecil Field CTOJM09 Sampling Event 66</u>
Instrument ID: <u>GL-GCFID2</u>	Calibration: <u>1243002</u>
Lab File ID: <u>035F3601.D</u>	Calibration Date: <u>08/30/11 21:41</u>
Sequence: <u>1H24311</u>	Injection Date: <u>08/31/11</u>
Lab Sample ID: <u>1H24311-ICV1</u>	Injection Time: <u>01:00</u>

COMPOUND	TYPE	CONC. (mg/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	ICV	ICAL	ICV	MIN (#)	ICV	LIMIT (#)
Petroleum Range Organics	A	4000	4004	1420.087	1421.456		0.1	25

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

ANALYSIS SEQUENCE SUMMARY

FLPRO

Laboratory: <u>Empirical Laboratories, LLC</u>	SDG: <u>1108276</u>
Client: <u>Tetra Tech NUS, Inc. (T010)</u>	Project: <u>NAS Cecil Field CTOJM09 Sampling Event 66</u>
Sequence: <u>1125102</u>	Instrument: <u>GL-GCFID2</u>
Calibration: <u>1243002</u>	

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Calibration Check	1125102-CCV1	002F0201.D	09/03/11 14:06
Calibration Check	1125102-CCV2	023F2301.D	09/04/11 01:47
Blank	1H29003-BLK1	028F2801.D	09/04/11 04:33
LCS	1H29003-BS1	029F2901.D	09/04/11 05:07
Calibration Check	1125102-CCV3	038F3801.D	09/04/11 10:06
CEF-043-GW-04N-20110824	1108276-01	039F3901.D	09/04/11 10:39
CEF-043-GW-02N-20110824	1108276-02	040F4001.D	09/04/11 11:12
CEF-043-GW-09N-20110824	1108276-03	041F4101.D	09/04/11 11:45
CEF-043-GW-07N-20110824	1108276-04	042F4201.D	09/04/11 12:18
CEF-043-GW-06N-20110824	1108276-05	043F4301.D	09/04/11 12:52
CEF-043-GW-40A-20110824	1108276-06	044F4401.D	09/04/11 13:25
CEF-043-GW-40A-20110824	1H29003-MS2	045F4501.D	09/04/11 13:58
CEF-043-GW-40A-20110824	1H29003-MSD2	046F4601.D	09/04/11 14:31
CEF-043-DUP01-20110824	1108276-07	047F4701.D	09/04/11 15:05
Calibration Check	1125102-CCV4	048F4801.D	09/04/11 15:38

CONTINUING CALIBRATION CHECK

FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Instrument ID: GL-GCFID2

Calibration: 1243002

Lab File ID: 002F0201.D

Calibration Date: 08/30/11 21:41

Sequence: 1125102

Injection Date: 09/03/11

Lab Sample ID: 1125102-CCV1

Injection Time: 14:06

COMPOUND	TYPE	CONC. (mg/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Petroleum Range Organics	A	4250	4461	1420.087	1490.713		5.0	25
2-Fluorobiphenyl	A	25.00	11.58	1964.36	909.84		-53.7	25 *
o-Terphenyl	A	25.00	25.42	2162.555	2198.92		1.7	25

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

CONTINUING CALIBRATION CHECK

FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Instrument ID: GL-GCFID2

Calibration: 1243002

Lab File ID: 023F2301.D

Calibration Date: 08/30/11 21:41

Sequence: 1125102

Injection Date: 09/04/11

Lab Sample ID: 1125102-CCV2

Injection Time: 01:47

COMPOUND	TYPE	CONC. (mg/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Petroleum Range Organics	A	4250	5136	1420.087	1716.157		20.8	25
2-Fluorobiphenyl	A	25.00	28.02	1964.36	2201.72		12.1	25
o-Terphenyl	A	25.00	31.04	2162.555	2685.24		24.2	25

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

**CONTINUING CALIBRATION CHECK
FLPRO**

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Instrument ID: GL-GCFID2

Calibration: 1243002

Lab File ID: 038F3801.D

Calibration Date: 08/30/11 21:41

Sequence: 1125102

Injection Date: 09/04/11

Lab Sample ID: 1125102-CCV3

Injection Time: 10:06

COMPOUND	TYPE	CONC. (mg/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Petroleum Range Organics	A	4250	5562	1420.087	1858.617		30.9	25 *
2-Fluorobiphenyl	A	25.00	28.05	1964.36	2204.12		12.2	25
o-Terphenyl	A	25.00	30.09	2162.555	2603.2		20.4	25

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

CONTINUING CALIBRATION CHECK

FLPRO

Laboratory: Empirical Laboratories, LLC

SDG: 1108276

Client: Tetra Tech NUS, Inc. (T010)

Project: NAS Cecil Field CTOJM09 Sampling Event 66

Instrument ID: GL-GCFID2

Calibration: 1243002

Lab File ID: 048F4801.D

Calibration Date: 08/30/11 21:41

Sequence: 1125102

Injection Date: 09/04/11

Lab Sample ID: 1125102-CCV4

Injection Time: 15:38

COMPOUND	TYPE	CONC. (mg/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Petroleum Range Organics	A	4250	5330	1420.087	1780.983		25.4	25 *
2-Fluorobiphenyl	A	25.00	26.72	1964.36	2099.68		6.9	25
o-Terphenyl	A	25.00	29.94	2162.555	2590.04		19.8	25

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

APPENDIX C

LAND USE CONTROL OBJECTIVES AND BOUNDARY FIGURES

**SOUTH FUEL FARM
LAND USE CONTROLS
REVISION 0, (01/17/05)**

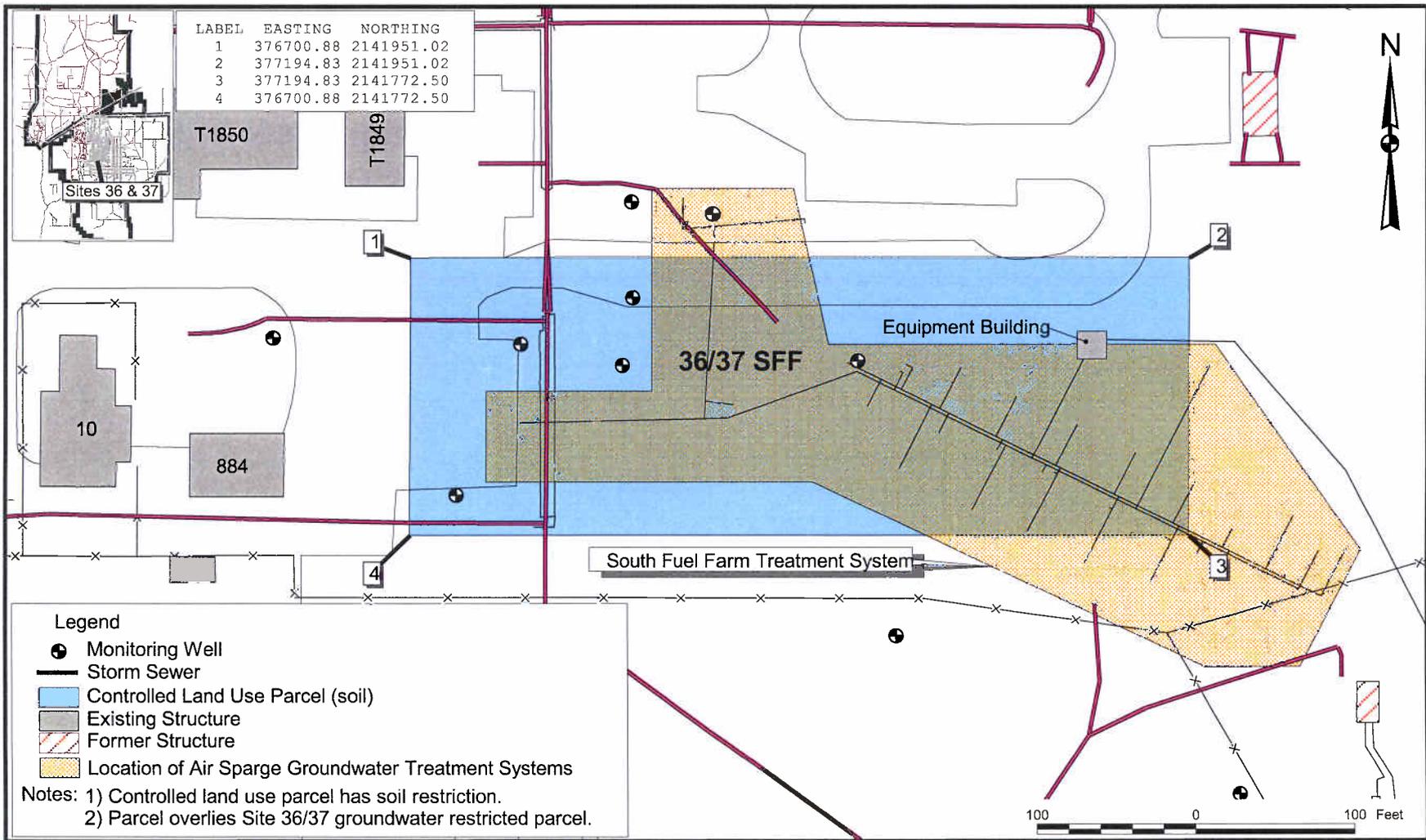
Site has naphthalenes exceeding human health criteria in soil and aromatics and naphthalenes exceeding human health criteria in groundwater.

- 1) Land may not be used for residential use.
- 2) Surface soils may not be disturbed.
- 3) Subsurface soils may not be disturbed.

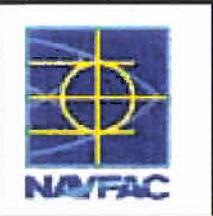
The following LUCs are controlled by both South Fuel Farm and Site 36/37:

- 4) Groundwater may not be used for human consumption.
- 5) Groundwater may not be used for industrial purposes.
- 6) Tampering or damaging any Navy wells or remediation systems is prohibited.

Note most of the South Fuel Farm system is actually located in Site 36/37 Parcel.

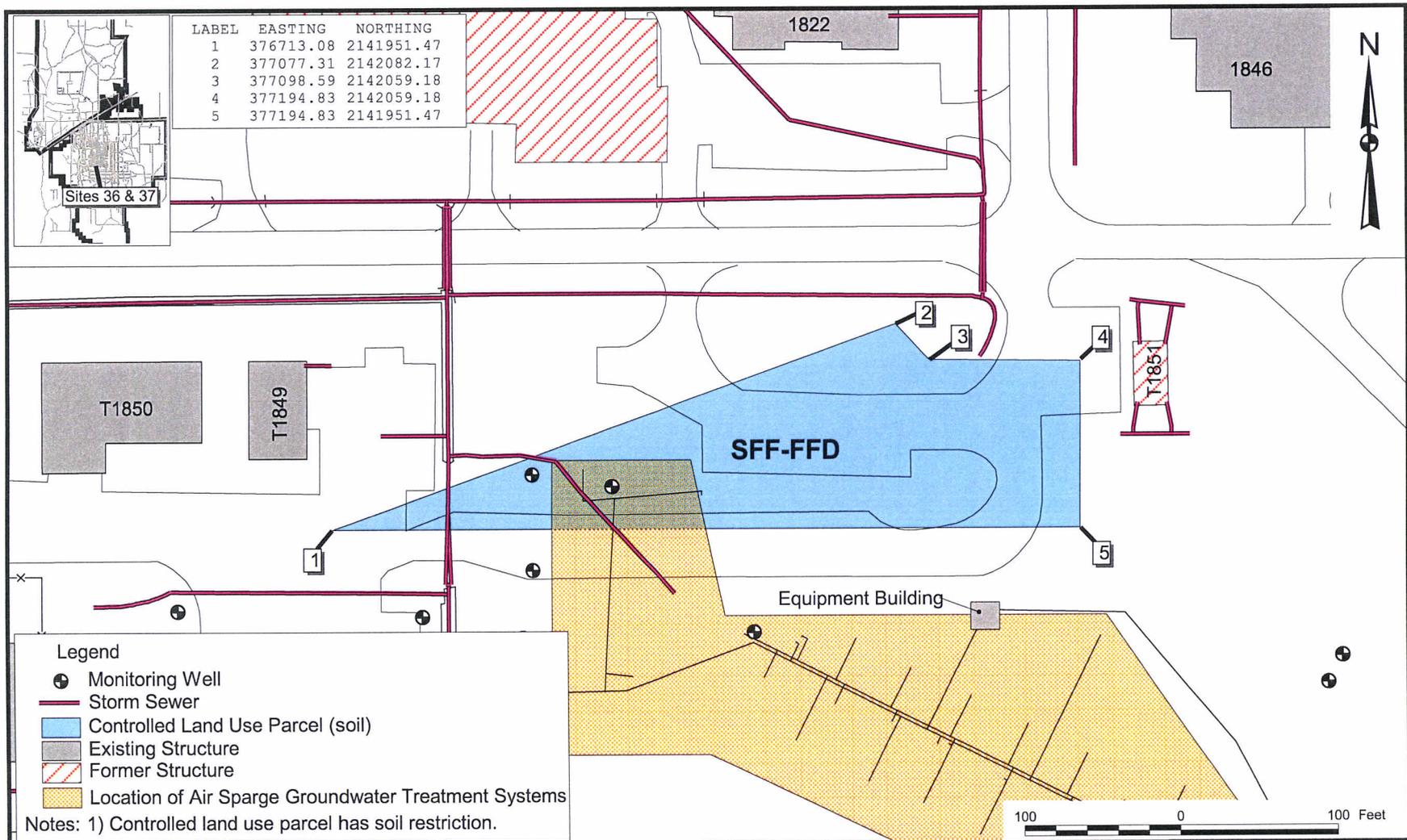


DRAWN BY	DATE
MJJ	03May04
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE	
AS NOTED	



LAND USE CONTROL PARCEL
 SOUTH FUEL FARM
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

CONTRACT NUMBER 7792	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 4	REV 0



DRAWN BY	DATE
MJJ	03May04
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE	
AS NOTED	



LAND USE CONTROL PARCEL
 SOUTH FUEL FARM / FORMER FUEL DEPOT
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

CONTRACT NUMBER 7792	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 5	REV 0