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QUARTERLY GROUNDWATER MONITORING LETTER REPORT SECOND QUARTER FIRST YEAR FOR BUILDING 81 TANKS 81 A, B AND C NAS CECIL FIELD FL
01/11/2011
TETRA TECH NUS

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PITT-01-11-020

January 11, 2011

Project Number 112G02267

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

Reference: CLEAN V Contract Number N62470-08-D-1001
Contract Task Order JM09

Subject: Groundwater Monitoring Report, 2nd Quarter, 1st Year
Building 81, Tanks 81 A, B, and C
Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Grabka:

Tetra Tech NUS, Inc. (Tetra Tech) is pleased to submit this Quarterly Groundwater Monitoring Report for the referenced Contract Task Order for Building 81, Tanks 81 A, B, and C. This Groundwater Monitoring Report was prepared for Naval Facilities Engineering Command Southeast (NAVFAC SE) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract Number N62470-08-D-1001.

Petroleum contamination at the Tanks 81 A, B, and C site was first identified during the Environmental Baseline Study conducted at NAS Cecil Field in 1994. A Site Assessment Report (SAR) followed in September 1998, which concluded that soil at the site was impacted by petroleum contamination. A source removal was conducted in September and October 1999. A Confirmatory Sampling Event was completed in June 2000 and recommended no further action for soils in the area of Tanks 81 A, B, and C, but groundwater contamination at the site was still in question. An event was conducted in 2001 and 2002 that included a DPT investigation and installation and sampling of groundwater monitoring wells. The SAR that followed recommended five years of groundwater monitoring, The first round of groundwater monitoring was conducted in January 2003 and it was determined based on the results that it was necessary to delineate the horizontal and vertical extent of contamination prior to continuing the monitoring program. A Supplemental Site Assessment event was conducted in February 2005. A Natural Attenuation Monitoring Plan (NAMP) was prepared in November 2007 based on the results of the Supplemental Site Assessment, and monitoring was conducted under this plan for 2 years. Five constituents of concern (COCs) were originally identified in the NAMP, but the NAMP was revised in 2008 and the June 2008 NAMP Approval Order (NAMPAO) identified isopropylbenzene as the only COC at the site. Another DPT investigation was conducted in March 2009 to redefine the horizontal extent of the groundwater plume. Based on the DPT results, a Uniform Federal Policy-Sampling Analysis Plan (UFP-SAP) was completed detailing the long-term monitoring plan for Tanks 81 A, B, and C. The first groundwater monitoring event under the UFP-SAP was conducted in July 2010.

The primary objective of current activities at this site is to conduct quarterly monitoring of groundwater associated with the intermediate and deep zones of the surficial aquifer. The sampling program is being conducted in accordance with the UFP-SAP developed by Tetra Tech in March 2010 and approved by the Florida Department of Environmental Protection (FDEP) on July 7, 2010. Portions of the UFP-SAP are provided in Attachment A.

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Contamination was confirmed beyond the identified source area during a supplemental groundwater investigation conducted in March 2009 using direct-push technology (DPT) to redefine the extent of the plume. A UFP-SAP for Tanks 81 A, B, and C was developed to monitor isopropylbenzene groundwater contamination to ensure that the plume originating from the former locations of Tanks 81 A, B, and C does not migrate outside of the site boundaries. The site location is shown on Figure 1.

This 2nd Quarter, 1st Year Groundwater Monitoring Report summarizes field operations and analytical results for the subject site for the sampling event conducted on October 18 and 19, 2010. The work was performed in general accordance with Tetra Tech and FDEP Standard Operating Procedures (SOPs) under DEP-SOP-001/01.

FIELD OPERATIONS

Groundwater samples were collected from existing wells CEF-081-04I, CEF-081-22I, CEF-081-24I, CEF-081-25I, CEF-081-26I, CEF-081-27D, and CEF-081-28D, on October 18 and 19, 2010. Monitoring well locations are provided on Figure 2. The samples were placed on ice and subsequently shipped via FedEx for next-day delivery under chain of custody to Empirical Laboratories, Inc., in Nashville, Tennessee. The laboratory analyzed the samples for isopropylbenzene using United States Environmental Protection Agency Method SW-846 8260B.

Prior to obtaining groundwater samples, synoptic water levels and total well depths were measured and recorded on a site-specific groundwater measurement sheet for all sample wells. On October 18, 2010, depths to water ranged from 7.56 feet below top of casing (btoc) (CEF-081-02I) to 8.99 feet btoc (CEF-081-21I). Depth to water measurements, top of casing elevations, and groundwater elevations are presented in Table 1. General sampling protocols were in accordance with FDEP SOPs and Tetra Tech SOP SA-1.1. Field documentation is included in Attachment B.

RESULTS

The groundwater elevation data and flow directions for the intermediate zone of the surficial aquifer are shown on Figure 3. Based on the data, intermediate zone groundwater flow is to the northeast, southeast, and southwest, which differs from the groundwater flow directions during the previous sampling event in July 2010 (southwest and northwest). The gradient across the site is relatively flat and consistent between the two events.

The only constituent of concern (COC) identified in the UFP-SAP is isopropylbenzene. COC concentrations reported by the laboratory for the groundwater samples collected during this sampling event were compared to the FDEP Groundwater Cleanup Target Level (GCTL) and Natural Attenuation Default Source Concentration (NADSC). The data and standards are presented in Table 2, and the results are presented on Figure 4.

During the October 18 and 19, 2010, sampling event, isopropylbenzene was detected at concentrations greater than its GCTL of 0.8 microgram per liter (µg/L) but less than its NADC of 8 µg/L in intermediate wells CEF-081-04I (1.2 µg/L), CEF-081-22I (2.66 µg/L), CEF-081-24I (2.99 µg/L), and CEF-081-25I (3.63 µg/L) and in deep well CEF-081-28D (1.18 µg/L). In all other wells sampled during this sampling event, isopropylbenzene was either not detected or was detected at estimated concentrations less than the GCTL. Groundwater analytical data are provided as Attachment C.

CONCLUSIONS AND RECOMMENDATIONS

During the October 2010 sampling event, intermediate zone groundwater was estimated to flow to the northeast, southeast, and southwest from the area around well CEF-081-24I.

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Isopropylbenzene was detected at concentrations greater than the GCTL in five of seven wells sampled during the July 2010 sampling event. Of the five isopropylbenzene GCTL exceedances, four were in intermediate zone wells and one was in a deep zone well. Isopropyl benzene was detected in CEF-081-04I for the first time. This well was formerly an upgradient well, but groundwater flow appears to have has shifted, and it is now a downgradient well. If the concentration of isopropylbenzene remains elevated in CEF-081-04I and groundwater flow continues to be in the southeastern direction, the addition of monitoring well CEF-081-05I may be appropriate. Tetra Tech recommends that the quarterly monitoring program proposed in the UFP-SAP continue in January 2011. Additional groundwater measurements will be collected at 15 wells in future events, as described in the December 2010 Field Task Modification Request (FTMR). The FTMR was discussed in the previous July 2010 report and is included as Attachment D.

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

Sincerely,

Robert Simcik, P.E.
Task Order Manager
P.E. Number 61263

Kara F. Wimble
Project Scientist

Enclosures (4)

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

CERTIFICATION

The information contained herein is based on the investigation data and information obtained from previously submitted reports. If conditions are determined to exist that differ from those described, the undersigned engineer should be notified to evaluate the effects of any additional information on the information described in this report. This Quarterly Groundwater Monitoring Report, 2nd Quarter, 1st Year (October 2010) is the first quarterly report since the July 2010 approval of the final UFP-SAP for Building 81, Tanks 81 A, B, and C, Former Naval Air Station Cecil Field, Jacksonville, Florida, and should not be construed to apply to any other site.

ROBERT FRANK SIMCIK
LICENSE
No. 00061263
STATE OF FLORIDA
PROFESSIONAL ENGINEER

January 31, 2011
Robert Simcik, P.E.
P.E. License Number 61263

TABLES

Table 1
Groundwater Elevation Data

Groundwater Monitoring Report, 2nd Quarter, 1st Year - October 2010
Building 81, Tanks 81 A, B, and C
Naval Air Station Cecil Field
Jacksonville, Florida

Monitoring Well	Well Depth (feet btoc)	TOC Elevation (feet above msl)	July 19, 2010		October 18, 2010	
			Depth to Water (feet btoc)	Water Level Elevation (feet above msl)	Depth to Water (feet btoc)	Water Level Elevation (feet above msl)
CEF-081-02I	30-35	77.42	NM	NM	7.56	69.86
CEF-081-04I	30-35	77.54	7.34	70.20	7.72	69.82
CEF-081-05I	30-35	77.84	NM	NM	7.98	69.86
CEF-081-18I	30-35	78.33	NM	NM	8.38	69.95
CEF-081-19I	30-35	78.15	NM	NM	8.27	69.88
CEF-081-20I	30-35	77.63	NM	NM	7.65	69.98
CEF-081-21I	30-35	78.78	NM	NM	8.99	69.79
CEF-081-22I	30-35	78.35	8.19	70.16	8.54	69.81
CEF-081-24I	30-35	78.39	8.03	70.36	8.38	70.01
CEF-081-25I	30-35	78.19	8.06	70.13	8.38	69.81
CEF-081-26I	30-35	77.87	8.29	69.58	8.56	69.31

TOC = Top of casing.
btoc = Below top of casing.
NM = Not measured.
NI = Not installed.
msl = Mean seal level.

Table 2
Groundwater Analytical Data

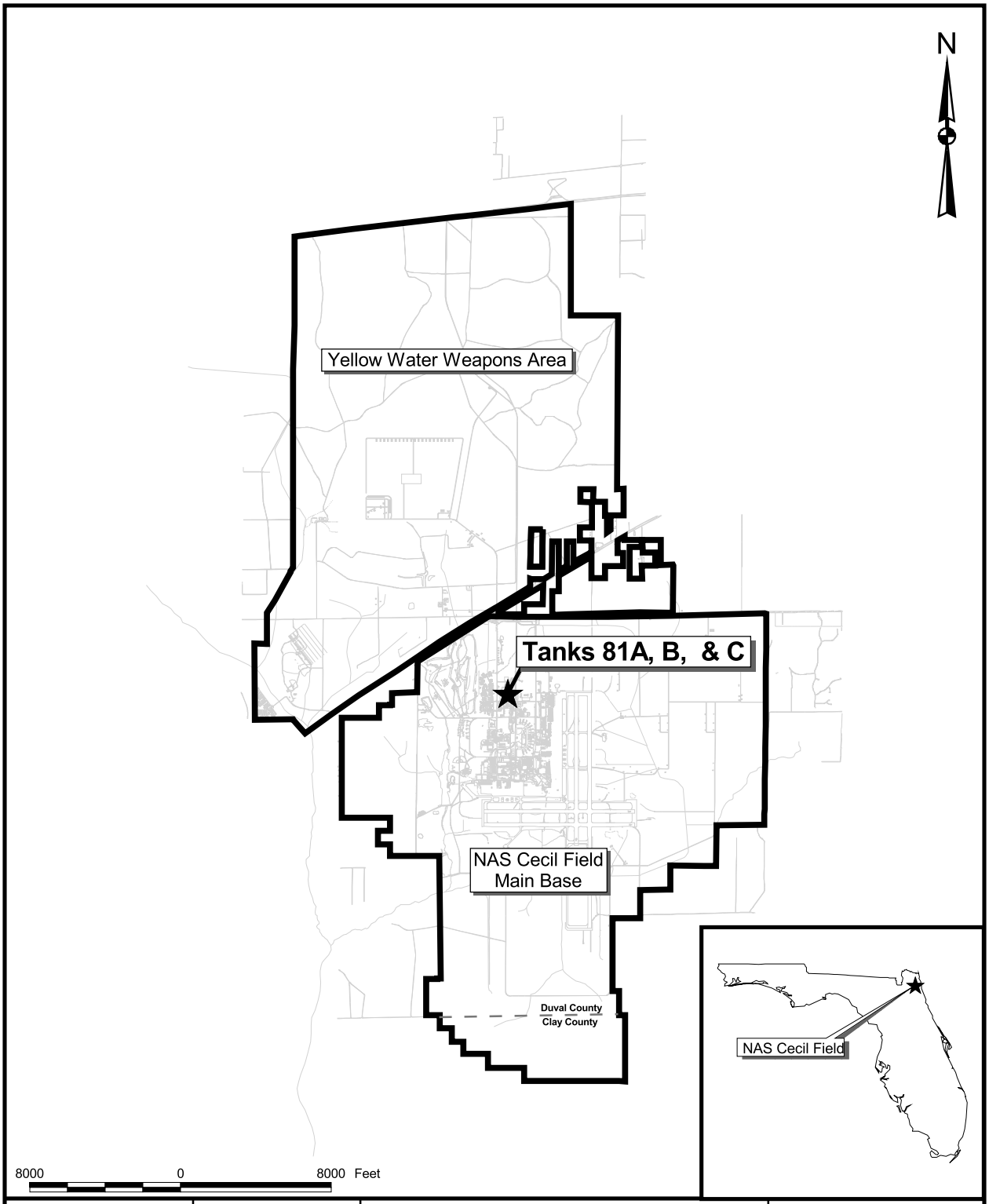
Groundwater Monitoring Report, 2nd Quarter, 1st Year - October 2010
Building 81, Tanks 81 A, B, and C
Naval Air Station Cecil Field
Jacksonville, Florida

Parameter	GCTL	NADC	CEF-081-												
			04I			09I	22I			24I			25I		
			Jun-09	Jul-11	Oct-11	Jun-09	Jun-09	Jul-10	Oct-10	Jun-09	Jul-10	Oct-10	Jun-09	Jul-10	Oct-10
Isopropylbenzene	0.8	8	0.32 J	0.397	**1.2**	0.77 J	**1.5**	**2.24**	**2.66**	**8.5**	**4.23**	**2.99**	**5.7**	**4.83**	**3.63**

Parameter	GCTL	NADC	CEF-081-									
			26I			27D			28D			29DD
			Jun-09	Jul-10	Oct-10	Jun-09	Jul-10	Oct-10	Jun-09	Jul-10	Oct-10	Jun-09
Isopropylbenzene	0.8	8	0.2 U	0.3 U	0.723 J	0.2 U	0.3 U	0.25 U	**1.6**	**1.0**	**1.2**	0.2 U

GCTL = Groundwater Cleanup Target Level.
NADC = Natural Attenuation Default Concentration.
µg/L = Micrograms per liter.
U = Not detected at detection limit shown.
J = Estimated concentration.
Shading indicates concentration greater than FDEP criterion.
FDEP GCTL and NADC from Chapter 62-777, Florida Administrative Code (F.A.C).

FIGURES



DRAWN BY MJJ	DATE 08Jan10	GENERAL LOCATION MAP TANKS 81 A, B, & C NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 2267
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1 / REV 0

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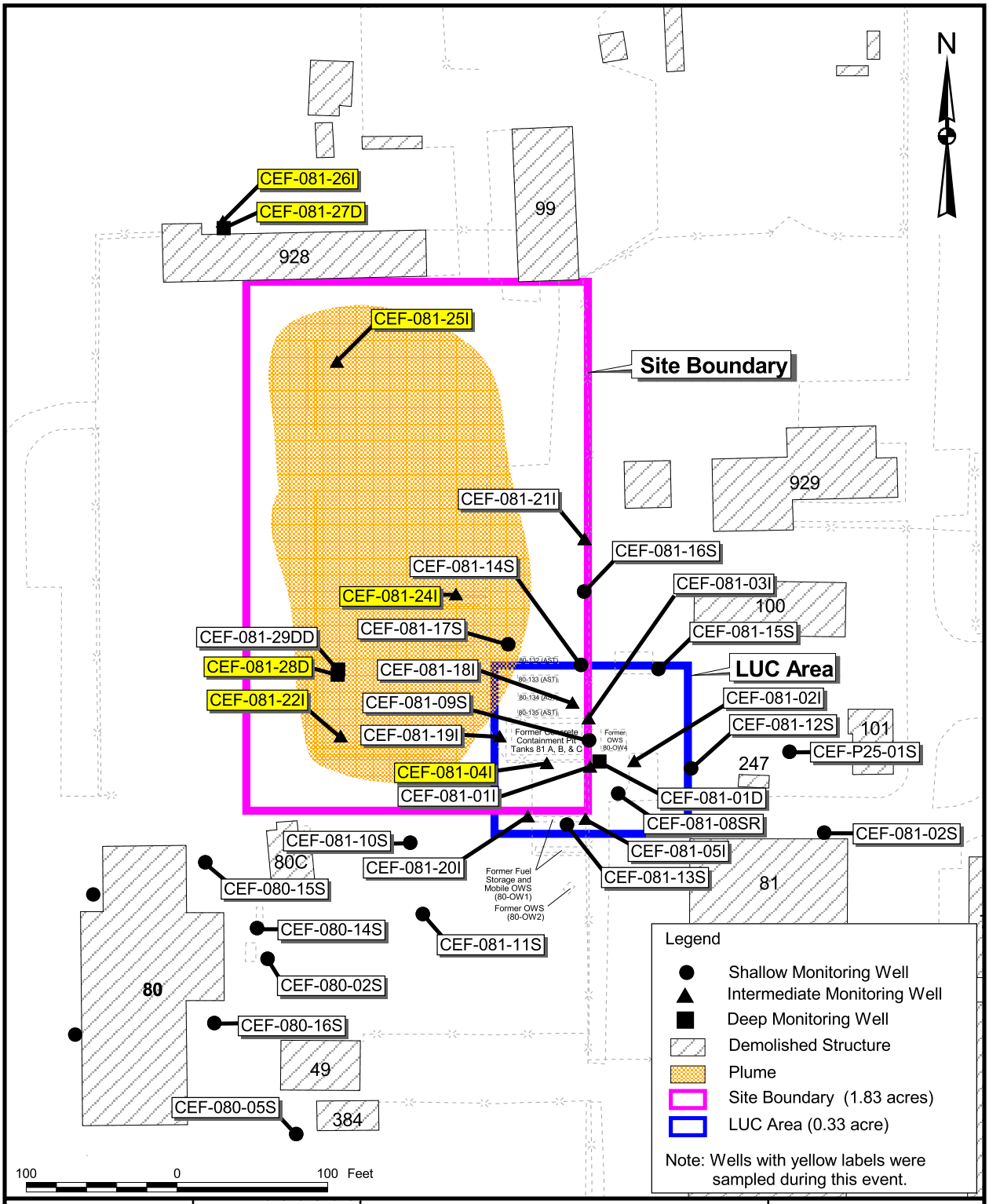

DRAWN BY MJJ	DATE 08Jan10	MONITORING WELL LOCATION MAP TANKS 81 A, B, & C NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 2267
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 2 / REV 0

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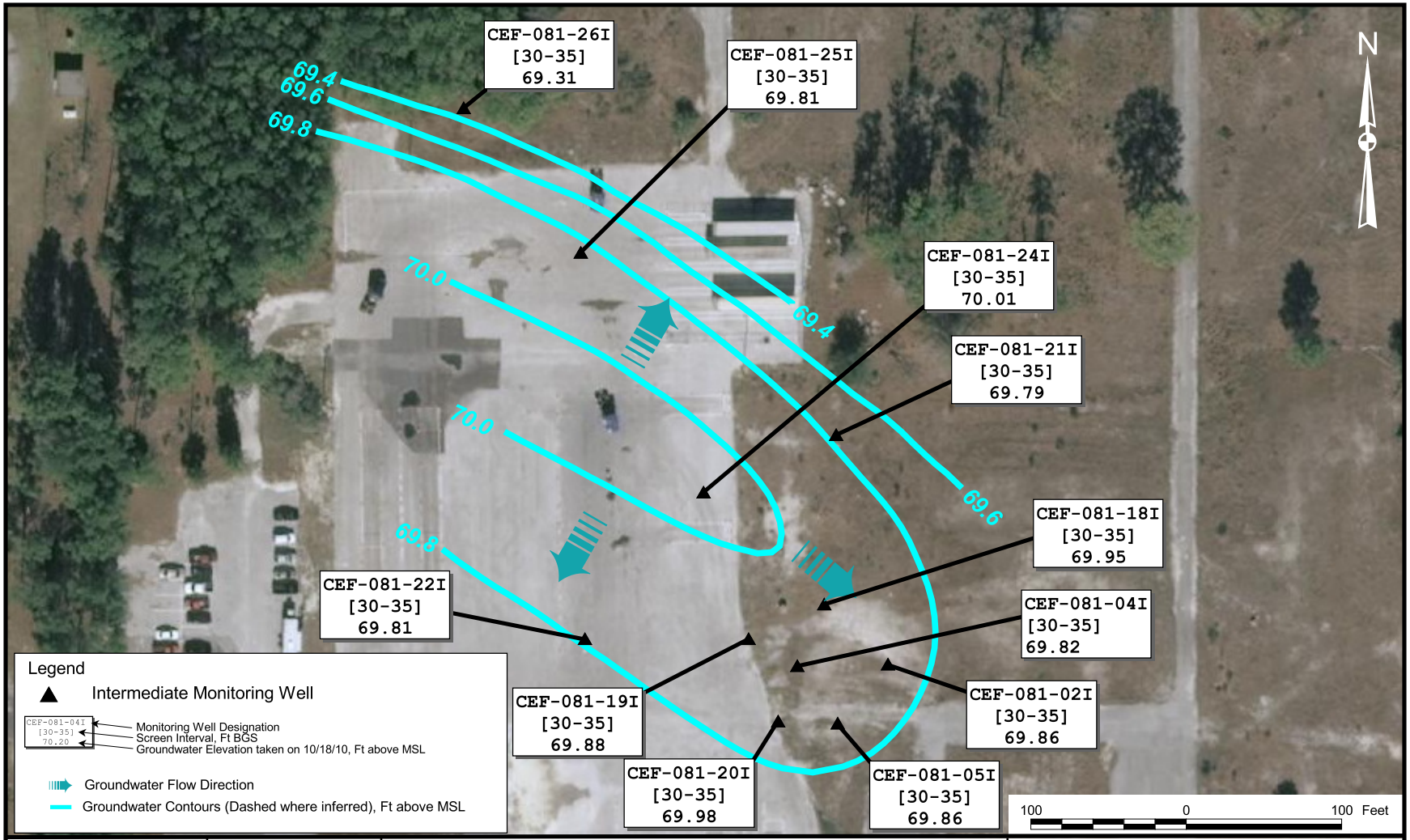

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CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE	
AS NOTED	

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GROUNDWATER FLOW MAP (10/18/10)

INTERMEDIATE ZONE

TANKS 81 A, B, & C

NAVAL AIR STATION CECIL FIELD

JACKSONVILLE, FLORIDA

CONTRACT NUMBER	
2267	
APPROVED BY	DATE
APPROVED BY	DATE
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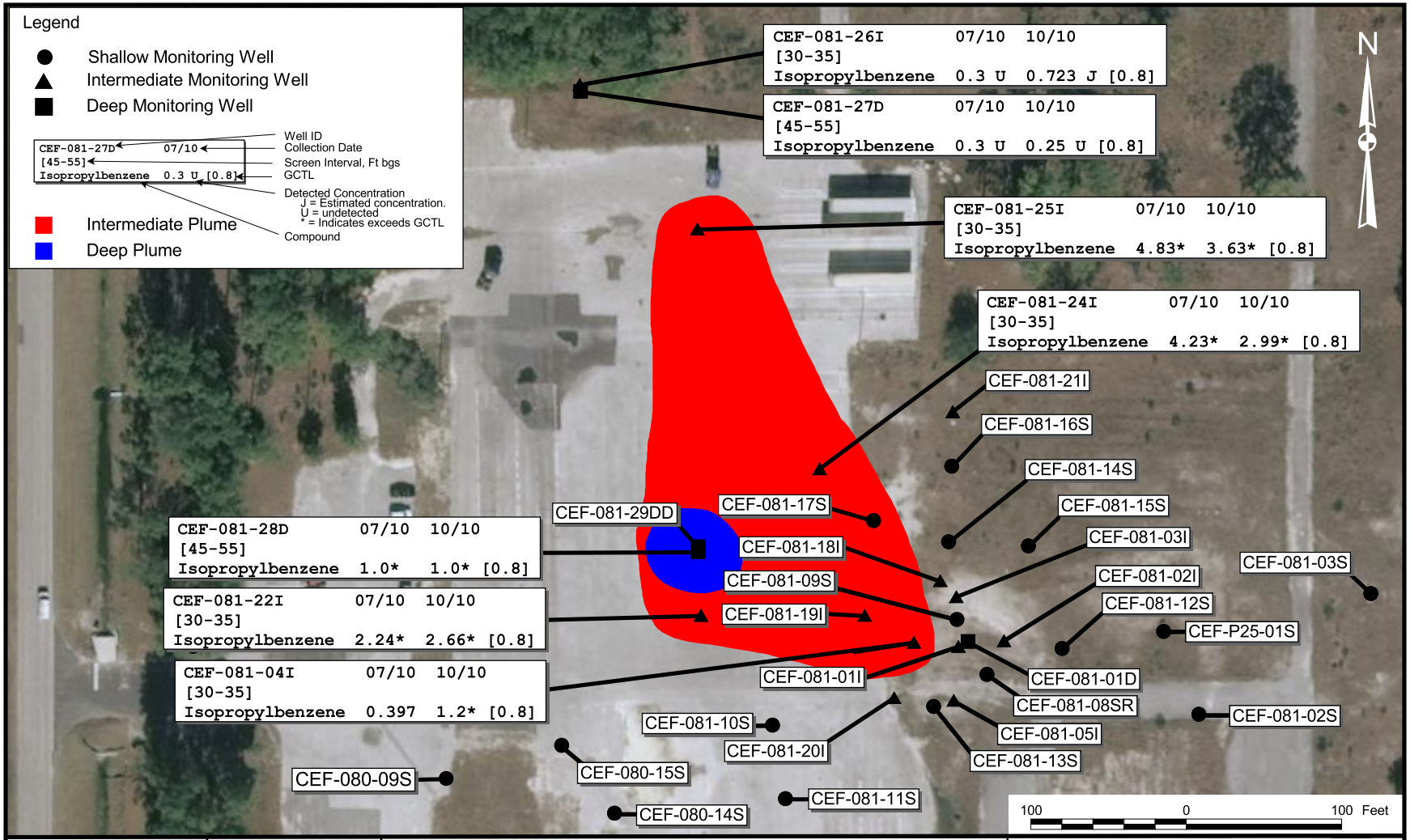

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MJJ	08Jan10
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE	AS NOTED

NAVFAC

ISOPROPYLBENZENE RESULTS
TANKS 81 A, B, & C
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

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

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ATTACHMENT A

SELECT WORKSHEETS
FROM THE UFP-SAP FOR TANKS 81 A, B, AND C
JULY 2010

Attachment A - Building 81, Tanks 81 A, B, and C Groundwater Monitoring Report, 1st Quarter, 1st Year

The following was extracted from the UFP SAP for Tanks 81 A, B, C for information purposes and is not the complete approved document.

SAP Worksheet #11 -- Project Quality Objectives/Systematic Planning Process Statements (UFP-QAPP Manual Section 2.6.1)

11.1 PROBLEM DEFINITION

Isopropylbenzene remain in groundwater of the Tanks 81 A, B, and C area at concentrations that exceed FDEP GCTLs. The project team must determine the extent of the isopropylbenzene contamination in groundwater so an appropriate response can be formulated to mitigate the potential risk associated with this contamination.

11.2 INFORMATION INPUTS

Requirements for groundwater sampling and analysis methods are described below. Additional detail (e.g., the exact methods and SOPs to be used) is provided in Worksheets #15, #19, and #21.

Tanks 81 A, B, and C

Required Analyses

Matrix	Volatile Organic Compounds (VOCs)	Purpose
Groundwater	Isopropylbenzene only	Quarterly monitoring

Analytical Methods

Analytical methods were selected to be the same as those used previously or at least comparable to previously used analytical methods with respect to precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS parameters). See Worksheets #20 and #23 for a list of the analytical methods applicable to each site.

Sampling Methods

Sampling methods were selected to be the same as those used previously or to at least be consistent with the representativeness and comparability of data for each media being sampled at each site. See Worksheet #21 for a list of sampling methods.

Project Action Levels (PALs)

The PAL for isopropylbenzene in groundwater is included within Worksheet #15. The Project Quantitation Limit Goal (PQLG) is set as one-third of the PAL and project team strives to select analytical

methods which are capable of detecting concentrations equal to or less than the PQLG. The BCT has ensured that the selected laboratory (Empirical) Method Detection Limit (MDL) for isopropylbenzene is low enough to measure concentrations in groundwater that are less than the PAL in order to conduct comparisons of site data to the PAL, as the MDL is equal to the PQLG. Values less than the MDL will be reported as the limit of detection (LOD) value with a "U" flag. Detectable results of a magnitude between the limit of quantitation (LOQ) and MDL will be "J" flagged to indicate that the reported results are less precise than results that are greater than the LOQ. The BCT will accept these analytical results as usable (without additional qualification) without qualification unless quality evaluations indicate that the data quality has been compromised. Laboratory MDLs change over time. If the PAL is less than the reported laboratory MDL in any sample, the BCT accepts the LOQ as the PAL for decision making purposes, as is suggested in "Guidance for the Selection of Analytical Methods for the Evaluation of Practical Quantitation Limits" (FDEP, 2004).

11.3 STUDY BOUNDARIES

The Tanks 81 A, B, and C area covers approximately 0.33 acres. The area is show in Figure 8. The vertical boundary extends from the shallow groundwater plume to 52 ft bgs. The groundwater isopropylbenzene contaminant plume is the population of interest and constitutes the spatial decision unit. Three areas were identified that represent the plume or define the boundaries of the plume:

- Upgradient – represents conditions in groundwater entering the site and is thus unaffected by the site.
- Plume – represents conditions in the known isopropylbenzene plume.
- Downgradient – represents uncontaminated groundwater that could become contaminated through migration of contamination.

The temporal decision unit is each round of monitoring when determining whether an exceedance of GCTL has occurred and it is two consecutive monitoring rounds when determining whether parameters or wells may be eliminated from monitoring. Based on knowledge of groundwater flow directions and past data establishing the extent of isopropylbenzene contamination in excess of GCTLs (see Figure 8), existing wells cover enough of the contaminated and potentially contaminated areas for delineating the extent of isopropylbenzene contamination and monitoring temporal concentration trends. The groundwater sampling frequency must be quarterly to satisfy project objectives.

Attachment A - Building 81, Tanks 81 A, B, and C Groundwater Monitoring Report, 1st Quarter, 1st Year

The following was extracted from the UFP SAP for Tanks 81 A, B, C for information purposes and is not the complete approved document.

11.4 ANALYTIC APPROACH

The following decision rules govern data use for the monitoring programs at Tanks 81 A, B, and C. Each decision rule must be applied to each well in each round of sampling. If the decision rules lead to a change in the list of wells that are to be sampled, the PM will review the change in the list of wells with the BCT and gain the approval of the team prior to using the new list in a sampling event. Concentration trends will be represented by the best fit line through the data points.

Decision Rule #1: If the measured isopropylbenzene concentrations in groundwater samples from any monitoring well within the plume are less than the GCTL for the two most recent sampling events, then recommend the well for removal from the monitoring program; but if the last two rounds of measured isopropylbenzene concentrations in groundwater samples from a well are not less than the GCTL, then continue long-term monitoring in that well until levels of isopropylbenzene are below the GCTL for two consecutive sampling rounds. At this point, the BCT will recommend removal of the well from the sampling program.

Decision Rule #2: If the measured isopropylbenzene concentrations in a groundwater sample from all upgradient and downgradient wells are less than the GCTL, then continue with the scheduled monitoring program; otherwise resample any well in which concentrations exceed GCTL for verification prior to the next scheduled sampling event. If the exceedance is not confirmed, then continue with the scheduled monitoring program. If the exceedance is confirmed, the BCT will convene to determine appropriate actions to address the exceedance such as 1) verify groundwater flow direction, 2) further delineation of the plume, 3) modification of the sampling plan.

Decision Rule #3: If all measured isopropylbenzene concentrations in all groundwater samples collected from the targeted monitoring wells are less than the GCTL for two consecutive sampling events, then recommend the site for NFA.

11.5 PERFORMANCE CRITERIA

Measured isopropylbenzene concentrations in individual samples and temporal isopropylbenzene concentration trends within individual wells will be compared to the project action level. If all data have been collected as planned and no data points are missing or rejected for quality reasons, the monitoring event completeness and quality will be considered satisfactory. Quality evaluations will be performed in

Attachment A - Building 81, Tanks 81 A, B, and C Groundwater Monitoring Report, 1st Quarter, 1st Year

The following was extracted from the UFP SAP for Tanks 81 A, B, C for information purposes and is not the complete approved document.

accordance with Worksheets #35 through #37. If any data gaps are identified, including missing or rejected data, the BCT will assess whether a claim of having obtained project objectives is reasonable. This assessment will depend on the number and type of identified data gaps; therefore, a more detailed strategy cannot be presented. All stakeholders will be involved in rendering the final conclusion regarding adequacy of the data

11.6 PLAN FOR OBTAINING DATA

The plan for obtaining data at the Tanks 81 A, B, and C site is described in detail on Worksheet #17 along with the sampling designs and rationales.

Attachment A - Building 81, Tanks 81 A, B, and C Groundwater Monitoring Report, 1st Quarter, 1st Year

The following was extracted from the UFP SAP for Tanks 81 A, B, C for information purposes and is not the complete approved document.

SAP Worksheet #14 -- Summary of Project Tasks

(UFP-QAPP Manual Section 2.8.1)

Summary of Project Tasks

Long-term monitoring at the petroleum sites includes the following tasks:

- Mobilization/demobilization
- Site-specific health and safety training
- Monitoring equipment calibration
- Groundwater level measurements
- Groundwater sampling
- Investigation-derived waste (IDW) management
- Field decontamination procedures
- Field documentation procedures
- Analytical Tasks
- Data Management

Mobilization/Demobilization

Mobilization shall consist of the delivery of all equipment, materials, and supplies to the site, the complete assembly in satisfactory working order of all such equipment at the site, and the satisfactory storage at the site of all such materials and supplies. Tetra Tech will store the equipment and supplies at either the Tetra Tech office or at the IDW Storage Building. Site-specific Health and Safety Training will be provided to all Tetra Tech subcontractors as part of the site mobilization.

Demobilization shall consist of the prompt and timely removal of all equipment, materials, and supplies from the site following completion of the work. Demobilization includes the cleanup and removal of IDW generated during the conduct of the investigation.

Site-Specific Health and Safety Training

Site-specific health and safety training will be provided to all Tetra Tech field staff and subcontractors as part of the site mobilization and is also addressed in Worksheet # 8.

Monitoring Equipment Calibration

These procedures are described in Worksheet # 22.

Water Level Measurements

One synoptic round of water-level measurements will be conducted at the site as part of each groundwater sampling event to provide information regarding groundwater flow patterns and gradients. Water level measurements will be completed within the shortest time possible on the same day, and no sooner than 24 hours after a significant precipitation event to minimize the precipitation effects on the data sets. Water level measurements will be recorded to the nearest 0.01 foot and referenced to a top of casing notch or north side of the well casing, if there is no notch. The measurement instrument will be decontaminated prior to conducting the measurement event and between each monitoring well.

Groundwater Sampling

Groundwater samples will be collected using low-flow purging techniques (discharge rate of less than 1 liter per minute) with a peristaltic pump using Teflon™ tubing dedicated to each well. All groundwater samples will be collected using the procedures specified in FDEP FS 2200, Groundwater Sampling. Worksheets #17 and #18 specify the groundwater sample locations and analytes for this investigation. Worksheet # 23 specifies the analytical methods to be used.

Prior to groundwater sample collection, the monitoring wells will be purged. Both purging and sampling operations will be conducted at a flow rate that results in a groundwater turbidity measurement of 20 Nephelometric turbidity units (NTUs) or less (inherent turbidity will be minimized to the greatest extent possible using low flow techniques; individual well conditions and local geology may preclude meeting the 20 NTU criteria).

The sample aliquot for isopropylbenzene analysis will be collected last by slowly pulling the Teflon™ tubing out of the well to minimize agitation of the water in the monitoring well and then transferring the contents of the tubing to a VOC vial. After collection, the samples will be placed in a cooler, chilled with ice, and shipped under chain-of-custody protocol to the off-site laboratory for analysis.

Investigation Derived Waste (IDW) Management

IDW generated during the activities will be managed in accordance with the former NAS Cecil Field IDW Plan and will be conducted in an environmentally responsible manner consistent with former NAS Cecil Field requirements (e.g., designation of staging areas). The objectives of the IDW management are:

- Management of IDW in a manner that prevents contamination of uncontaminated areas (by IDW) and that is protective of human health and the environment.

- Minimization of IDW, thereby reducing costs and the potential for human or ecological exposure to contaminated materials.

- Compliance with federal and state requirements that are Applicable or Relevant and Appropriate Requirements (including 62-770.400, 62-770.650, 62-770.680, 62-770.690, 62-770.700, 62-770.750, 62-770.800, 62-770.890, 62-770.900 FAC).

Used personal protective equipment, such as gloves, will be bagged and disposed of as regular trash in an appropriate facility waste container.

Field Decontamination Procedure

Decontamination of major equipment and sampling equipment will be in general accordance with FDEP FC 1000, Cleaning / Decontamination Procedures.

Field Documentation Procedures

Pre-preserved, certified-clean bottleware will be supplied by the subcontracted laboratory. Matrix-specific sample logsheets will be maintained for each sample collected. In addition, sample collection information will be recorded in bound field notebooks or specific field forms. Samples will be packaged and shipped according to FDEP FS 1000, General Sampling Procedures.

Field documentation will be performed in accordance with Tetra Tech SOP SA-6.3 (Appendix C). A summary of all field activities will be properly recorded in a bound logbook with consecutively number pages that cannot be removed. Logbooks will be assigned to field personnel and will be stored in a secured area when not in use.

At a minimum, the following information will be recorded in the site logbook:

- Name of the person to whom the logbook is assigned.
- Project name.
- Project start date.
- Names and responsibilities of on-site project personnel including subcontractor personnel.
- Arrival/departure of site visitors.
- Arrival/departure of equipment.
- Sampling activities and sample log sheet references.
- Description of subcontractor activities.
- Sample pick-up information, including chain-of-custody numbers, air bill numbers, carrier, time, and date.
- Description of borehole or monitoring well installation activities and operations.
  - Health and safety issues.
  - Description of photographs including date, time, photographer, roll and picture number, location, and compass direction of photograph.

All entries will be written in ink and no erasures will be made. If an incorrect entry is made, striking a single line through the incorrect information will make the correction; the person making the correction will initial and date the change.

Analytical Tasks

Chemical analysis will be performed by Empirical. Empirical is a current Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP) certified laboratory. A copy of the laboratory certification can be found in Appendix E. Analyses will be performed in accordance with the analytical methods identified in Worksheet #19. Empirical will meet the PAL as shown in Worksheet #15. Empirical will perform chemical analysis following laboratory-specific SOPs (Worksheets #19 and #23) developed based on the analytical methods listed in Worksheets #19 and #30. Copies of the laboratories SOPs are included in Appendix C.

The following was extracted from the UFP SAP for Tanks 81 A, B, C for information purposes and is not the complete approved document.

Data Management

Data Handling and Management - After the field investigation is completed, the field sampling log sheets will be organized by date and media and filed in the project files. The field logbooks for this project will be used only for these sites, and will also be categorized and maintained in the project files after the completion of the field program. Project personnel completing concurrent field sampling activities may maintain multiple field logbooks. When possible, logbooks will be segregated by sampling activity. The field logbooks will be titled based on date and activity. The data handling procedures to be followed by the laboratories will meet the requirements of the technical specification. The electronic data results will be automatically downloaded into the Tetra Tech database in accordance with proprietary Tetra Tech processes.

Data Tracking and Control.-The Tetra Tech PM (or designee) is responsible for the overall tracking and control of data generated for the project.

- Data Tracking: Data is tracked from its generation to its archiving in the Tetra Tech project-specific files. The Tetra Tech Project Chemist (or designee) is responsible for tracking the samples collected and shipped to the subcontracted laboratory. Upon receipt of the data packages from the analytical laboratory, the Project Chemist will oversee the data validation effort, which includes verifying that the data packages are complete and results for all samples have been delivered by the analytical laboratory.

- Data Storage, Archiving, and Retrieval: The data packages received from the subcontracted laboratory are tracked in the data validation logbook. After the data are validated, the data packages are entered into the Tetra Tech CLEAN file system and archived in secure files. The field records including field logbooks, sample logs, chain-of-custody records, and field calibration logs will be submitted by the FOL to be entered into the CLEAN file system prior to archiving in secure project files. The project files are audited for accuracy and completeness. At the completion of the Navy contract the records will be stored by Tetra Tech and eventually handed over to BRAC PMO.

- Data Security: The Tetra Tech project files are restricted to designated personnel only. Records can only be borrowed temporarily from the project file using a sign-out system. The Tetra Tech Data Manager maintains the electronic data files. Access to the data files is restricted to qualified personnel only. File and data backup procedures are routinely performed.

Assessment and Oversight – Refer to Worksheet #32 for assessment findings and CAs and Worksheet #33 for QA management reports.

Data Review

- Data verification is described in Worksheet #34.
- Data validation is described in Worksheets #35 and #36.
- Usability assessment is described in Worksheet #37.

Monitoring Reports

Monitoring reports will be prepared after each groundwater monitoring event. The reports will include appropriate sections concerning site background, investigation activities, physical characteristics, nature and extent of contamination, and conclusions and recommendations.

Each report will be issued in draft to BRAC PMO SE as the presentation of the data at the quarterly BCT meetings. Comments received from the BCT during the BCT meetings will be addressed and the final report will be issued for regulatory review.

Attachment A - Building 81, Tanks 81 A, B, and C Groundwater Monitoring Report, 1st Quarter, 1st Year

The following was extracted from the UFP SAP for Tanks 81 A, B, C for information purposes and is not the complete approved document.

SAP Worksheet #15 -- Reference Limits for Groundwater

(UFP-QAPP Manual Section 2.8.1)

Matrix: Groundwater
Analytical Group: VOCs

Analyte	Chemical Abstract Service Number	Project Action Limit (1) (µg/L)	Project Action Limit Reference	Project Quantitation Limit Goal (2) (µg/L)	Empirical		
					LOQ (µg/L)	LOD (µg/L)	MDL (µg/L)
Isopropylbenzene	98-82-8	0.8	FDEP GCTL	0.3	1.0	0.50	0.3

1 FDEP GCTLs, April 2005.
2 The laboratory QL does not meet the PAL; however, the MDL is sufficiently low to detect isopropylbenzene below the FDEP GCTL. Results reported between the MDL and LOQ will be flagged by the laboratory and will be considered usable for decision-making.
µg/L = Micrograms per liter.

Attachment A - Building 81, Tanks 81 A, B, and C Groundwater Monitoring Report, 1st Quarter, 1st Year

The following was extracted from the UFP SAP for Tanks 81 A, B, C for information purposes and is not the complete approved document.

SAP Worksheet #18 -- Sampling Locations and Methods/SOP Requirements Table

(UFP-QAPP Manual Section 3.1.1)

Sampling Location / Identification Number	**Matrix**	**Screen Interval**	**Analytical Group**	**Number of Samples** (identify field duplicates)(1)	**Sampling SOP Reference**(2)
Upgradient well CEF-81-04I; Plume well CEF-81-22I; Plume well CEF-81-24I; Plume well CEF-81-25I; Downgradient well CEF-81-26I;	Groundwater	30-35 feet below ground surface (bgs)	VOCs (isopropyl-benzene only)	7 plus 1 duplicate, plus 1 trip blank	FDEP FS 2200, 2008; Tetra Tech, SA-1.1, April 2008
Downgradient well CEF-81-27D; and Plume well CEF-81-28D		45 to 55 feet bgs			

1 Field duplicates may be consolidated across events at the FOL's discretion so as to yield one field duplicate per 10 environmental samples

2 SOP that describes the sample collection procedures.

SAP Worksheet #20 -- Field Quality Control Sample Summary Table

(UFP-QAPP Manual Section 3.1.1)

Matrix	Analytical Group	Number of Sampling Locations	Number of Field Duplicates	Number of Matrix Spike/ Matrix Spike Duplicate (MS/MSD)	Number of Rinsate Blanks	Number of Equipment Blanks	Number of (Volatile Organic Aromatic) Trip Blanks	Number of Proficiency Testing Samples	Total Number of Samples to Lab
Groundwater	VOC (isopropyl-benzene only)	7	1	1/1	0	0	1	0	11

ATTACHMENT B

FIELD DOCUMENTATION
OCTOBER 2010

FIGURE 8-1

SITE-SPECIFIC TRAINING DOCUMENTATION

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

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

I have been given the opportunity to ask questions and these questions have been answered to my satisfaction. The training dates listed (introductory, refresher, and supervisory, as applicable) and my medical surveillance requirements are accurate and correct.

Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	Medical Exam
Jeff Krone	10/18/10	7/90	7/10	7/10	7/10

SAFE WORK PERMIT
MOBILIZATION AND DEMOBILIZATION ACTIVITIES
CECIL FIELD PETRO SITES

Permit No. 1 Date: 10/18 - 10/25 Time: From 0800 to 1600

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 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	Hazard Monitoring	Action Level(s)	Response Measures
None anticipated	None	None	None

Primary Route(s) of Exposure/Hazard: NA

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

VII. **Additional Safety Equipment/Procedures**

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

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

VIII. **Site Preparation**

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

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

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

Permit Issued by: Permit Accepted by:

SAFE WORK PERMIT
GROUNDWATER SAMPLING ACTIVITIES
CECIL FIELD PETRO SITES

Permit No. 2 Date: 10/18 - 10/25 Time: From 0800 to 1800

I. **Work limited to the following (description, area, equipment used):** Groundwater 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 K 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	Hazard Monitoring / Action Level(s)	Response Measures
VOCs	FID with 1.25 ppm for 4 exposures for 5 minutes in one work day	Suspend site activities and report to an unaffected area

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

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

VIII. **Site Preparation**

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

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

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

Permit Issued by: Permit Accepted by:

SAFE WORK PERMIT
IDW MANAGEMENT
CECIL FIELD PETRO SITES

Permit No. 3 Date: 10/19-10/25 Time: From 0800 to 1800

SECTION I: General Job Scope

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

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

III. **Field Crew:** _____

IV. **On-site Inspection conducted** ☒ Yes ☐ No Initials of Inspector K 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**
Level D ☒ Level B ☐
Level C ☐ Level A ☐

Respiratory equipment required
Yes ☐ See Reverse
No ☒

Modifications/Exceptions: None anticipated

VI.

Chemicals of Concern	**Hazard Monitoring / Action Level(s)**	**Response Measures**
VOCs	FID with 1.25 ppm for 4 exposures for 5 minutes in one work day	Suspend site activities and report to an unaffected area

Primary Route(s) of Exposure/Hazard: inhalation

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

VII. **Additional Safety Equipment/Procedures**

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

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

VIII. **Site Preparation**

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

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

X. **Special instructions, precautions:** Suspend site activities in the event of inclement weather. 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 on-site personnel and kept in the command post during the conduct of site operations. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project 81 ABC GW Sampling

Name Jeff Krone Home Telephone 260-6062

Address 3667 Torre Grande Dr, Jax, Fl. 32257

Age 52 Height 5'11 Weight 210

Person to notify in the event of an emergency: Name: Bonnie Krone

Phone: 699-8849

Drug or other Allergies: none

Particular Sensitivities : none

Do You Wear Contacts? no

What medications are you presently using? Topol

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

10899 Baymeadows Road Suite 100, Jacksonville, Fl 32256

519 5338

Note: Health Insurance Portability and Accountability Act (HIPAA) Requirements

HIPAA took effect in 1996 and was amended April 14, 2003. Loosely interpreted, HIPAA regulates the disclosure of Protected Health Information (PHI) by the entity collecting that information. PHI is any information about health status (such as that you may report on this Medical Data Sheet), provision of health care, or other information. HIPAA also requires Tetra Tech to ensure the confidentiality of PHI. This Act can affect the ability of the Medical Data Sheet to contain and convey information you would want a Doctor to know if you were incapacitated. So before you complete the Medical Data Sheet understand that this form will not be maintained in a secure location. It will be maintained in a file box or binder accessible to other members of the field crew so that the can accompany an injured party to the hospital.

DO NOT include information that you do not wish others to know, only information that may be pertinent in an emergency situation or treatment.

Jeff Krone — Name (Print clearly)

Signature

10/18/10 — Date

NAS Cecil Field CTO JM09 $1ABC 112602267 groundwater Sampling 18 Oct 10

Personnel: Jeff Krone
Truck: 2006 F-250
PPE: Level D
Weather Sunny 80°
Objective: Groundwater sampling at 81ABC.

0840 Departed Office for Cecil Field
0930 Arrived on site and began uncapping wells for gw level measurements
1100 Uncapped wells. Noted that well CEF-081-20I partially destroyed. The well casing has been moved 6-8" off the well.
1205 Completed groundwater levels, commenced calibration and purge of well 27D and 26I
1300 completed calibration, commenced sampling event. See table below for details.

Well ID	Sample ID	Start	Stop	Sample time	Analysis
081-26I	CEF-081-26I-20101018	1215	1311	1318	VOCs
081-27D	CEF-081-27D-20101018	1220	1326	1333	VOCs
081-25I	CEF-081-25I-20101018	1355	1421	1428	VOCs
081-22I	CEF-081-22I-20101018	1405	1451	1505	VOCs

All samples cooled to 4° C VOC analysis for ISO-Benzene only.

1540 Completed sampling for the day. Packed samples on ice for transport to the office, Secured equipment, placed IDW in drum on site.
1600 Departed Cecil Field.

NAS Cecil Field Site 81 ABC CTO JM09 11260 2267 GW monitoring 19 Oct 10

Personnel: Jeff Krone
Truck: 2006 F-250
PPE: Level D
Weather: Sunny 80°
objective: GW Sampling

0900 Departed office for Cecil Field
0945 On site, commenced equipment Calibration
1045 Completed calibration, resumed groundwater sampling. See table below for details.

Well ID	Sample ID	Start	Stop	Sample time	Analysis
081-04I	CEF-081-04I-20101019	1045	1106	1111	VOCs
081-24I	CEF-081-24I-20101019	1115	1151	1159	VOCs
081-28D	CEF-081-28D-20101019	1220	1241	1248	VOCs

Samples cooled to 4° C Voc analysis for ISO-Benzene only

1320 Completed Sampling, packed up equipment and departed site
1500 Transferred IDW to newly created tote 3, pH 3.75 ~15gal.
1515 Departed Cecil Field
1615 Relinquished Samples to Empirical Labs via FEDEX Airbill 8660 1730 2377
1700 Arrived at office

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: **Tanks 81 A,B,C**	SITE LOCATION: **NAS Cecil Field**	
WELL NO: CEF-081-28D	SAMPLE ID: CEF-081-28D-20110 9	DATE: 10 / 19 / 2010

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH (ft): 55	STATIC DEPTH TO WATER (ft): 8.41	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable) _____ Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) 3x = 3.95 1.317 Liters .0014 x 60 = .084 x 3.785 = .317 + 1 = 1.317

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 52	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 52	PURGE INITIATED AT: 1220	PURGE ENDED AT: 1241	TOTAL VOLUME PURGED (Liters): 4.2

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1220	—	—	200	8.41	—						
1235	3.0	3.0	200	8.46	4.46	26.78	0.151	0.20	5.46	128.1	clear
1238	.6	3.6	200	8.46	4.45	26.76	0.151	0.20	2.55	128.9	clear
1241	.6	4.2	200	8.47	4.45	26.76	0.151	0.21	1.67	129.4	clear
1248	sample time										

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

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Jeff Krone	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1248	SAMPLING ENDED AT: 1300
PUMP OR TUBING DEPTH IN WELL (feet): 52	SAMPLE PUMP FLOW RATE (mL per minute): 200	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: _____	FILTER SIZE: ____ µm	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
VOCs Isobenzene	3	CG	40 ml	HCl			8260B	

REMARKS: Iso-benzene only

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: **Tanks 81 ABC**	SITE LOCATION: **NAS Cecil Field**	
WELL NO: CEF-081-04I	SAMPLE ID: CEF-081-04I-201010 19	DATE: 10 / 19 / 2010

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH (ft): 25-30	STATIC DEPTH TO WATER (ft): 7.81	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable) _____ Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) 3x = 3.55 1.185 Liters .0014x35 = .049x3.785 = .1854 = 1.185

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 27	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 27	PURGE INITIATED AT: 1045	PURGE ENDED AT: 1106	TOTAL VOLUME PURGED (Liters): 4.2

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1045	—	—	200	7.81	—						
1100	3.0	3.0	200	7.85	5.76	25.44	0.084	0.35	4.03	8.1	clear
1103	0.6	3.6	200	7.85	5.76	25.42	0.083	0.35	5.17	6.3	clear
1106	0.6	4.2	200	7.85	5.75	25.40	0.084	0.35	4.48	6.8	clear
1111	Sample time										

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

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Jeff Krone	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1111	SAMPLING ENDED AT: 1120
PUMP OR TUBING DEPTH IN WELL (feet): 27	SAMPLE PUMP FLOW RATE (mL per minute): 200	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: _____	FILTER SIZE: ____ µm	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
VOCs Iso benzene	3	CG	40 ml	HCl			8260B	

REMARKS:
Isobenzene only

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: **Tanks 81 A,B,C**	SITE LOCATION: **NAS Cecil Field**	
WELL NO: CEF-081-22I	SAMPLE ID: CEF-081-22I-201010 18	DATE: 10 / 18 / 2010

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH (ft): 30.5-35.5	STATIC DEPTH TO WATER (ft): 8.55	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable) _____ Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) 3x = 3.63 1.21 Liters .0014x 40 = 0.056 x 3.785 = .21 + 1 = 1.21

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 31	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 31	PURGE INITIATED AT: 1405	PURGE ENDED AT: 1451	TOTAL VOLUME PURGED (Liters): 4.6

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1405	—	—	100	8.55	—						
1445	4.0	4.0	100	8.57	4.59	26.83	0.120	0.24	9.27	90.6	clear
1448	.3	4.3	100	8.58	4.58	26.82	0.120	0.24	8.01	89.7	clear
1451	.3	4.6	100	8.58	4.59	26.89	0.120	0.23	7.76	89.2	clear
1505	Sample time										

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

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Jeff Krone	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1505	SAMPLING ENDED AT: 1515
PUMP OR TUBING DEPTH IN WELL (feet): 31	SAMPLE PUMP FLOW RATE (mL per minute): 100	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: _____ FILTER SIZE: ____ µm		DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
VOCs Iso-benzene	3	CG	40 ml	HCl			8260B	

REMARKS:
Iso-benzene only

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: **Tanks 81 A,B,C**	SITE LOCATION: **NAS Cecil Field**	
WELL NO: CEF-081-24I	SAMPLE ID: CEF-081-24I-201010 19	DATE: 10 / 19 / 2010

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH (ft): 35	STATIC DEPTH TO WATER (ft): 8.41	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable) _____ Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) 3x = 3.63 1.21 Liters .0014 x 40 = .056 x 3.785 = .211 + 1 = 1.211

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 32	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 32	PURGE INITIATED AT: 1115	PURGE ENDED AT: 1151	TOTAL VOLUME PURGED (Liters): 7.2

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1115	—	—	200	8.41	—	—	—	—	—	—	—
1145	6.0	6.0	200	8.51	5.42	26.15	0.146	0.23	3.47	95.5	clear
1148	.6	6.6	200	8.51	5.42	26.12	0.146	0.22	1.77	94.2	clear
1151	.6	7.2	200	8.51	5.41	25.96	0.146	0.21	1.23	93.1	clear
1159	Sample time										

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

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Jeff Krone	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1159	SAMPLING ENDED AT: 1210
PUMP OR TUBING DEPTH IN WELL (feet): 32	SAMPLE PUMP FLOW RATE (mL per minute): 200	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: _____	FILTER SIZE: ____ µm	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
VOCs Iso-benzene	3	CG	40 ml	HCl			8260B	

REMARKS:
Iso-benzene only

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: **Tanks 81 A,B,C**	SITE LOCATION: **NAS Cecil Field**	
WELL NO: CEF-081-25I	SAMPLE ID: CEF-081-25I-201010 18	DATE: 10 / 18 / 2010

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH (ft): 35	STATIC DEPTH TO WATER (ft): 8.38	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable) _____ Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) 3x = 3.63 .0014x40 = .0567 3.785 = .21 +1 = 1.21 1.21 Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 30	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 30	PURGE INITIATED AT: 1355	PURGE ENDED AT: 1421	TOTAL VOLUME PURGED (Liters): 5.2

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1355	—	—	200	8.38	—	—	—	—	—	—	—
1415	4.0	4.0	200	9.06	4.63	27.74	0.124	0.28	0.31	90.1	clear
1418	.6	4.6	200	9.06	4.63	27.77	0.124	0.28	0.31	92.0	clear
1421	.6	5.2	200	9.07	4.62	27.78	0.124	0.27	0.39	93.8	clear
1428	Sample time										

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

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Jeff Krone	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1428	SAMPLING ENDED AT: 1435
PUMP OR TUBING DEPTH IN WELL (feet): 30	SAMPLE PUMP FLOW RATE (mL per minute): 200	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: _____	FILTER SIZE: ____ µm	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
VOCs Iso-benzene	3	CG	40 ml	HCl			8260B	

REMARKS:
Iso-benzene only

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: Tanks 81 A,B,C	SITE LOCATION: NAS Cecil Field	
WELL NO: CEF-081-26I	SAMPLE ID: CEF-081-26I-201010 18	DATE: 10 / 18 / 2010

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH (ft): 35	STATIC DEPTH TO WATER (ft): 8.56	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable) _____ Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) 34 = ~~3.68~~ 3.63 1.056 Liters .0014 X 40 = .056 + 1 = ~~1.056~~ 1.21

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 31	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 31	PURGE INITIATED AT: 1215	PURGE ENDED AT: 1311	TOTAL VOLUME PURGED (Liters): 5.6

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1215	—	—	100	8.56	—						
1305	5.0	5.0	100	8.60	4.68	25.87	0.078	0.41	0.53	104.0	clear
1308	.3	5.3	100	8.61	4.68	25.91	0.077	0.40	0.52	100.7	clear
1311	.3	5.6	100	8.61	4.69	25.90	0.077	0.40	0.45	96.9	
1318	Sample time										

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

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Jeff Krone	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1318	SAMPLING ENDED AT: 1325
PUMP OR TUBING DEPTH IN WELL (feet): 31	SAMPLE PUMP FLOW RATE (mL per minute): 100	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: _____	FILTER SIZE: ____ µm	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
VOCs Iso-benzene	3	CG	40 ml	HCl			8260B	

REMARKS:
Iso-benzene only

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: **Tanks 81 A,B,C**	SITE LOCATION: **NAS Cecil Field**	
WELL NO: CEF-081-27D	SAMPLE ID: CEF-081-27D-201010 19	DATE: 10/ 19 / 2010

PURGING DATA

WELL DIAMETER (in): 2	TUBING DIAMETER (inches): 3/16	WELL SCREEN INTERVAL DEPTH (ft): 55	STATIC DEPTH TO WATER (ft): 8.54	PURGE PUMP TYPE OR BAILER: Peristaltic Pump

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
only fill out if applicable)
_____ Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)
3x = ~~3.23~~ 3.87 Liters
.0014 x 55 = .077 ~~+1 = 1.077~~ x 3.785 = .29 +1 = 1.29

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 51	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 51	PURGE INITIATED AT: 1220	PURGE ENDED AT: 1326	TOTAL VOLUME PURGED (Liters): 6.6

TIME	VOLUME PURGED (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (mlpm)	DEPTH TO WATER (ft)	pH (standard units)	TEMP. (°C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR
1220	—	—	100	8.54	—	—	—	—	—	—	—
1320	6.0	6.0	100	8.55	4.74	25.74	0.062	0.28	4.61	59.4	clear
1323	.3	6.3	100	8.55	4.75	28.80	0.062	0.28	3.68	56.8	clear
1326	.3	6.6	100	8.55	4.75	28.85	0.062	0.27	1.42	55.6	clear
1333	Sample time										

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

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/ Jeff Krone	SAMPLER(S) SIGNATURES:	SAMPLING INITIATED AT: 1333	SAMPLING ENDED AT: 1345
PUMP OR TUBING DEPTH IN WELL (feet): 51	SAMPLE PUMP FLOW RATE (mL per minute): 100	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y (N)	FIELD-FILTERED: Y (N) Filtration Equipment Type: _____	FILTER SIZE: ____ µm	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH		
VOCs Iso-benzene	3	CG	40 ml	HCl			8260B	

REMARKS:
Iso-benzene only

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

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

Tetra Tech NUS, Inc.

YSI EQUIPMENT CALIBRATION SHEET

PROJECT NAME : NAS Cecil Field

INSTRUMENT NAME/MODEL: YSI 556 MPS

SITE NAME: Tanks 81 A, B, C

MANUFACTURER: YSI

PROJECT No.: 112G02267

SERIAL NUMBER: 09G100705 ~~MPE 13302~~

		Date of Calibration (mm/dd/yy)	Person Performing Calibration (Name)	Machine Serial No.	Machine Settings	Instrument Readings Pre-cal	Instrument Readings Post-cal	Calibration Standard (Lot#/Expiration Date)	Comments
pH (4)	(S.U.)	10/18/10	X		pH 4.0	4.15	4.00	Lot# 2803109 Exp.Date: 6/11	
pH (10)	(S.U.)				pH 10.0	9.56	10.00	Lot# 2002012 Exp.Date: 7/11	
D.O.	%					85.3%	100.0	Lot# Exp.Date:	
Cond.	(mS/cm)				1.413	1.74	1.413	Lot# 7807 Exp.Date: 3/11	
Temp.	°C							Lot# Exp.Date:	
ORP	(mV)	10/18/10		ORP 240		259.2	240.0	Lot# 2282 Exp.Date: 3/15	
								Lot# Exp.Date:	
pH (4)	(S.U.)	10/19/10			pH 4.0	3.67	4.00	Lot# 2803109 Exp.Date: 6/11	
pH (10)	(S.U.)			~~1.413~~	pH 10.00	10.01	10.00	Lot# 1002035 Exp.Date: 7/11	
D.O.	%					115.6	100.0	Lot# Exp.Date:	
Cond.	(mS/cm)			1.413		1310	1413	Lot# 7807 Exp.Date: 3/11	
Temp.	°C							Lot# Exp.Date:	
ORP	(mV)			240		245.8	240.0	Lot# 2282 Exp.Date: 3/15	

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

PROJECT NAME : NAS Cecil Field

INSTRUMENT NAME/MODEL: Turbidimeter

SITE NAME: Tanks 81 A, B, C

MANUFACTURER: Lamotte 2020e

PROJECT No.: 112G02267

SERIAL NUMBER: ME-1330Q

Date of Calibration	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot No.)	Remarks and Comments
			Pre-calibration	Post-calibration	Pre-calibration	Post-calibration		
10/18/10		JK	1.0NTU 10.0NTUs	1.0NTU 10.0NTUs	9.99	10.00		
10/18/10		JK	1.0NTU 10.0NTUs	1.0NTU 10.0NTUs	1.34	1.00		
10/19/10		JK	1.0NTU 10.0NTUs	1.0NTU 10.0NTUs	7.48	10.00		
10/19/10		JK	1.0NTU 10.0NTUs	1.0NTU 10.0NTUs	1.36	1.00		
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				
			1.0NTU 10.0NTUs	1.0NTU 10.0NTUs				

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: 81 ABC
Project No.: CTO JM09 112G02267
Location: NAS Cecil Field
Personnel: Jeff Krone
Weather Conditions: Sunny 80°
Measuring Device: Heron Skinny dipper
Tidally Influenced: Yes ___ No _X_
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)* NAVD-88	Total Well Depth (feet)*	Water Level Indicator Reading (feet)* BTOC	Thickness of Free Product (feet)*	Groundwater Elevation (feet)* NAVD-88	Comments
CEF-081-04I	10/18/10	1130	77.54	30.00	7.72			
CEF-081-22I		1155	78.35	35.00	8.51			
CEF-081-24I		1151	78.39	35.00	8.38			
CEF-081-25I		1200	78.19	35.00	8.38			
CEF-081-26I		1203	77.87	35.00	8.56			
CEF-081-21I		1144	78.78	35.00	8.99			
CEF-081-18I		1142	78.33	35.00	8.38			
CEF-081-19I		1153	78.15	35.00	8.27			
CEF-081-20I		1132	77.63	35.00	7.65			partially destroyed
CEF-081-05I		1136	77.84	30.00	7.98			
CEF-081-02I		1138	77.42	30.00	7.56			

* All measurements to the nearest 0.01 foot

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER № 2101

PROJECT NO: 112602267	FACILITY: NAS Cecil Field 81 ABC	PROJECT MANAGER: Rob Simcik	PHONE NUMBER: 412921 8163	LABORATORY NAME AND CONTACT: Empirical / Kim Kostecr
SAMPLERS (SIGNATURE): Jeff Krone		FIELD OPERATIONS LEADER: Kara Wimble	PHONE NUMBER: 904 730 4169 x217	ADDRESS: 621 Mainstream Drive Suite 270
		CARRIER/WAYBILL NUMBER: FEDEX Airbill 8660 1730 2377		CITY, STATE: Nashville, TN 37228

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G
PRESERVATIVE USED: HCl

DATE YEAR 2010	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: VOCs	150 Benzene only							COMMENTS
10/18	1318	CEF-081-26I-20101018				GW	G	3	X								Cool to 4°C
10/18	1333	CEF-081-27D-20101018				GW	G	3	X								
10/18	1438	CEF-081-25I-20101018				GW	G	3	X								
10/18	1505	CEF-081-22I-20101018				GW	G	3	X								
10/18		Trip blank				QC	G	2	X								

1. RELINQUISHED BY	DATE 10/19/10	TIME 1600	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER № 2102

PROJECT NO: 112G02267	FACILITY: Cecil Field 81 ABC	PROJECT MANAGER: Rob Simeik	PHONE NUMBER: 412 921 8163	LABORATORY NAME AND CONTACT: Empirical Labs / Kim Kostzer
SAMPLERS (SIGNATURE): Jeff Krone		FIELD OPERATIONS LEADER: Kara Wimble	PHONE NUMBER: 904 730-4669 x217	ADDRESS: 621 Mainstream Drive Suite 270
		CARRIER/WAYBILL NUMBER: FedEx Airbill 866017302377		CITY, STATE: Nashville, TN 37228

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

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

PRESERVATIVE USED: HCl

TYPE OF ANALYSIS: VOCs (iso-benzene only)

DATE YEAR 2010	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	VOCs (iso-benzene only)								COMMENTS
10/19	1111	CEF-081-04I-201010	19			GW	G	3	X								Cool to 4° C
10/19	1159	CEF-081-24I-201010	19			GW	G	3	X								
10/19	1248	CEF-081-28D-201010	19			GW	G	3	X								

1. RELINQUISHED BY	DATE 10/19/10	TIME 1600	1. RECEIVED BY	DATE / TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE / TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE / TIME

COMMENTS

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

ATTACHMENT C

GROUNDWATER ANALYTICAL REPORT
OCTOBER 2010

Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO: **R. SIMCIK** **DATE:** **DECEMBER 8, 2010**

FROM: **MICHELLE ALLEN** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – VOC-Isopropylbenzene**
CTO JM09, NAS CECIL FIELD
SDG CTOJM09CF_009

SAMPLES: 8/Aqueous /VOC

CEF-081-04I-20101019	CEF-081-22I-20101018	CEF-081-24I-20101019
CEF-081-25I-20101018	CEF-081-26I-20101018	CEF-081-27D-20101018
CEF-081-28D-20101019	Trip Blank	

OVERVIEW

The sample set for CTO JM09 NAS Cecil Field SDG CTOJM09CF_009 consisted of eight (8) aqueous environmental samples including one (1) aqueous trip blank sample. The samples were analyzed as indicated above for the volatile organic compound (VOC), isopropylbenzene. No field duplicate pairs were associated with this Sample Delivery Group (SDG).

The samples were collected by TetraTech NUS on October 18 and 19, 2010 and analyzed by Empirical Laboratories, LLC. All analyses were conducted in accordance with SW-846 Methods 8260B analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters:

* • Data Completeness
* • Holding Times/Sample Preservation
* • Initial/Continuing Calibrations
* • Laboratory Method Blank Results
* • Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

The text of this report is formatted to address only gross non-compliances resulting in the rejection of data and the elimination of false positives.

VOC

No issues were identified.

NOTES

The positive result reported below the Limit of Quantitation (LOQ) but above the Limit of Detection (LOD) was qualified as estimated, (J).

TO: R. SIMCIK
SDG: CTOJM09CF_009

EXECUTIVE SUMMARY

Laboratory Performance Issues: There were no laboratory issues.

Other Factors Affecting Data Quality: The result reported below the LOQ but above the LOD was qualified as estimated, (J).

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) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (January 2006). The text of this report has been formulated to address only those problem areas affecting data quality.

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

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 x 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 DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02267	NSAMPLE	CEF-081-04I-20101019			CEF-081-22I-20101018			CEF-081-24I-20101019			CEF-081-25I-20101018		
SDG: CTOJM09CF_009	LAB_ID	1010159-06			1010159-04			1010159-07			1010159-03		
FRACTION: OV	SAMP_DATE	10/19/2010			10/18/2010			10/19/2010			10/18/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ISOPROPYLBENZENE		1.2			2.66			2.99			3.63		

PROJ_NO: 02267	NSAMPLE	CEF-081-26I-20101018			CEF-081-27D-20101018			CEF-081-28D-20101019			Trip Blank_20101018		
SDG: CTOJM09CF_009	LAB_ID	1010159-01			1010159-02			1010159-08			1010159-05		
FRACTION: OV	SAMP_DATE	10/18/2010			10/18/2010			10/19/2010			10/18/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ISOPROPYLBENZENE		0.723	J	P	0.25	U		1.18			0.25	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

ANALYSIS DATA SHEET

CEF-081-04I-20101019

Laboratory:	Empirical Laboratories, LLC			SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)			Project:	CTO JM09 Site 81abc_2010
Matrix:	Ground Water	Laboratory ID:	1010159-06	File ID:	1015906.D
Sampled:	10/19/10 11:11	Prepared:	10/22/10 00:00	Analyzed:	10/22/10 19:05
Solids:		Preparation:	5030B	Dilution:	1

Batch: 0J21016 Sequence: 0J29601 Calibration: 0288001 Instrument: MS-VOA4

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
98-82-8	Isopropylbenzene	1.20	0.250	0.500	1.00	

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	29.95	99.8	75 - 120	
Dibromofluoromethane	30.00	31.30	104	85 - 115	
1,2-Dichloroethane-d4	30.00	32.60	109	70 - 120	
Toluene-d8	30.00	30.77	103	85 - 120	

ANALYSIS DATA SHEET

CEF-081-22I-20101018

Laboratory:	Empirical Laboratories, LLC			SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)			Project:	CTO JM09 Site 81abc_2010
Matrix:	Ground Water	Laboratory ID:	1010159-04	File ID:	1015904.D
Sampled:	10/18/10 15:05	Prepared:	10/22/10 00:00	Analyzed:	10/22/10 18:35
Solids:		Preparation:	5030B	Dilution:	1

Batch: 0J21016 Sequence: 0J29601 Calibration: 0288001 Instrument: MS-VOA4

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
98-82-8	Isopropylbenzene	2.66	0.250	0.500	1.00	

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	29.65	98.8	75 - 120	
Dibromofluoromethane	30.00	31.51	105	85 - 115	
1,2-Dichloroethane-d4	30.00	30.62	102	70 - 120	
Toluene-d8	30.00	29.60	98.7	85 - 120	

ANALYSIS DATA SHEET

CEF-081-24I-20101019

Laboratory:	Empirical Laboratories, LLC			SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)			Project:	CTO JM09 Site 81abc_2010
Matrix:	Ground Water	Laboratory ID:	1010159-07	File ID:	1015907.D
Sampled:	10/19/10 11:59	Prepared:	10/22/10 00:00	Analyzed:	10/22/10 19:34
Solids:		Preparation:	5030B	Dilution:	1

Batch: 0J21016 Sequence: 0J29601 Calibration: 0288001 Instrument: MS-VOA4

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
98-82-8	Isopropylbenzene	2.99	0.250	0.500	1.00	

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	31.14	104	75 - 120	
Dibromofluoromethane	30.00	32.37	108	85 - 115	
1,2-Dichloroethane-d4	30.00	32.37	108	70 - 120	
Toluene-d8	30.00	31.60	105	85 - 120	

ANALYSIS DATA SHEET

CEF-081-25I-20101018

Laboratory:	Empirical Laboratories, LLC			SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)			Project:	CTO JM09 Site 81abc_2010
Matrix:	Ground Water	Laboratory ID:	1010159-03	File ID:	1015903.D
Sampled:	10/18/10 14:28	Prepared:	10/22/10 00:00	Analyzed:	10/22/10 18:06
Solids:		Preparation:	5030B	Dilution:	1

Batch: 0J21016 Sequence: 0J29601 Calibration: 0288001 Instrument: MS-VOA4

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
98-82-8	Isopropylbenzene	3.63	0.250	0.500	1.00	

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	31.04	103	75 - 120	
Dibromofluoromethane	30.00	32.88	110	85 - 115	
1,2-Dichloroethane-d4	30.00	32.66	109	70 - 120	
Toluene-d8	30.00	31.66	106	85 - 120	

ANALYSIS DATA SHEET

CEF-081-26I-20101018

Laboratory:	Empirical Laboratories, LLC			SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)			Project:	CTO JM09 Site 81abc_2010
Matrix:	Ground Water	Laboratory ID:	1010159-01	File ID:	1015901.D
Sampled:	10/18/10 13:18	Prepared:	10/22/10 00:00	Analyzed:	10/22/10 22:32
Solids:		Preparation:	5030B	Dilution:	1

Batch: 0J21016 Sequence: 0J29601 Calibration: 0288001 Instrument: MS-VOA4

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
98-82-8	Isopropylbenzene	0.723	0.250	0.500	1.00	I

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	31.26	104	75 - 120	
Dibromofluoromethane	30.00	31.36	105	85 - 115	
1,2-Dichloroethane-d4	30.00	33.21	111	70 - 120	
Toluene-d8	30.00	31.16	104	85 - 120	

ANALYSIS DATA SHEET

CEF-081-27D-20101018

Laboratory:	Empirical Laboratories, LLC			SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)			Project:	CTO JM09 Site 81abc_2010
Matrix:	Ground Water	Laboratory ID:	1010159-02	File ID:	1015902.D
Sampled:	10/18/10 13:33	Prepared:	10/22/10 00:00	Analyzed:	10/22/10 17:36
Solids:		Preparation:	5030B	Dilution:	1

Batch: 0J21016 Sequence: 0J29601 Calibration: 0288001 Instrument: MS-VOA4

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
98-82-8	Isopropylbenzene		0.250	0.500	1.00	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	29.87	99.6	75 - 120	
Dibromofluoromethane	30.00	31.96	107	85 - 115	
1,2-Dichloroethane-d4	30.00	32.70	109	70 - 120	
Toluene-d8	30.00	29.29	97.6	85 - 120	

ANALYSIS DATA SHEET

CEF-081-28D-20101019

Laboratory:	Empirical Laboratories, LLC			SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)			Project:	CTO JM09 Site 81abc_2010
Matrix:	Ground Water	Laboratory ID:	1010159-08	File ID:	1015908.D
Sampled:	10/19/10 12:48	Prepared:	10/22/10 00:00	Analyzed:	10/22/10 20:04
Solids:		Preparation:	5030B	Dilution:	1

Batch: 0J21016 Sequence: 0J29601 Calibration: 0288001 Instrument: MS-VOA4

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
98-82-8	Isopropylbenzene	1.18	0.250	0.500	1.00	

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	30.27	101	75 - 120	
Dibromofluoromethane	30.00	30.53	102	85 - 115	
1,2-Dichloroethane-d4	30.00	32.66	109	70 - 120	
Toluene-d8	30.00	29.97	99.9	85 - 120	

ANALYSIS DATA SHEET

Trip Blank

Laboratory:	Empirical Laboratories, LLC			SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)			Project:	CTO JM09 Site 81abc_2010
Matrix:	Water	Laboratory ID:	1010159-05	File ID:	1015905.D
Sampled:	10/18/10 00:00	Prepared:	10/22/10 00:00	Analyzed:	10/22/10 17:06
Solids:		Preparation:	5030B	Dilution:	1

Batch: 0J21016 Sequence: 0J29601 Calibration: 0288001 Instrument: MS-VOA4

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
98-82-8	Isopropylbenzene		0.250	0.500	1.00	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	30.51	102	75 - 120	
Dibromofluoromethane	30.00	31.50	105	85 - 115	
1,2-Dichloroethane-d4	30.00	32.61	109	70 - 120	
Toluene-d8	30.00	31.40	105	85 - 120	

APPENDIX C

SUPPORT DOCUMENTATION

HOLDTIME

SDG CTOJM09CF_

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	UG/L	Trip Blank_20101018	1010159-05	NM	10/18/2010	10/22/2010	10/22/2010	4	0	4
OV	UG/L	CEF-081-28D-20101019	1010159-08	NM	10/19/2010	10/22/2010	10/22/2010	3	0	3
OV	UG/L	CEF-081-27D-20101018	1010159-02	NM	10/18/2010	10/22/2010	10/22/2010	4	0	4
OV	UG/L	CEF-081-26I-20101018	1010159-01	NM	10/18/2010	10/22/2010	10/22/2010	4	0	4
OV	UG/L	CEF-081-25I-20101018	1010159-03	NM	10/18/2010	10/22/2010	10/22/2010	4	0	4
OV	UG/L	CEF-081-24I-20101019	1010159-07	NM	10/19/2010	10/22/2010	10/22/2010	3	0	3
OV	UG/L	CEF-081-22I-20101018	1010159-04	NM	10/18/2010	10/22/2010	10/22/2010	4	0	4
OV	UG/L	CEF-081-04I-20101019	1010159-06	NM	10/19/2010	10/22/2010	10/22/2010	3	0	3

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
Revision 01: Data package revised to adjust the project name to "CTO JM09 Site 81abc_2010."
Revision 02: Data package revised to replace the calibration forms due to an inconsistency for isopropylbenzene. No sample results were affected by the correction.

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.

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

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.

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

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER № 2101 | PAGE 1 OF 2

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G02267	NAS Cecil Field 81 ABC	Rob Simcik	412921 8163	Empirical / Kim Kostecc
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
Jeff Krone		Kara Wimble	904 730 4649 x217	621 Mainstream Drive Suite 270
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FEDEX Airbill 8660 1730 2377		Nashville, TN 37228

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G
PRESERVATIVE USED: HCl

DATE YEAR 2010	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: VOCs 1,3,5 Benzene only								COMMENTS
10/18	1318	CEF-081-26I-20101018				GW	G	3	X								Cool to 4°C -01
10/18	1333	CEF-081-27D-20101018				GW	G	3	X								1010159- -02
10/18	1428	CEF-081-25I-20101018				GW	G	3	X								-03
10/18	1505	CEF-081-22I-20101018				GW	G	3	X								-04
10/19		Trip blank				QC	G	2	X								-05

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	10/19/10	1600	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY	10/20/10	08:30

COMMENTS

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

4.0°C

4/02R FORM NO. TtNUS-001

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CTOJM09CF_009 Summ Package

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER № 2102 | PAGE 2 OF 2

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G02067	Cecil Field 81 ABC	Rob Simeik	412 921 8163	Empirical Labs/Kim Kostzer
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
Jeff Krone		Kara Wimble	904 730-4669 x217	621 Mainstream Drive Suite 270
		CARRIER/WAYBILL NUMBER		CITY, STATE
		866017302377 Fedex Airbill		Nashville, TN 37228

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G
PRESERVATIVE USED: HCl

DATE YEAR 2010	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: VOC (iso-benzene only)							COMMENTS
10/19	1111	CEF-081-04I-20101019				GW	G	3	X							Cool to 4°C -06
10/19	1159	CEF-081-24I-20101019				GW	G	3	X							1010159 -07
10/19	1248	CEF-081-28D-20101019				GW	G	3	X							-08

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	10/19/10	1600	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY	10/20/10	08:30

COMMENTS

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

4/02R

4.0°C FORM NO. TtNUS-001

9

CTOJM09CF_009 Summ Package

PREPARATION BATCH SUMMARY

SW8260B

Laboratory: Empirical Laboratories, LLC SDG: CTOJM09CF_009

Client: Tetra Tech NUS, Inc. (T010) Project: CTO JM09 Site 81abc_2010

Batch: 0J21016 Batch Matrix: Water Preparation: 5030B

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
Blank	0J21016-BLK1	10/22/10 00:00	5.00	5.00
LCS	0J21016-BS1	10/22/10 00:00	5.00	5.00
CEF-081-26I-20101018	1010159-01	10/22/10 00:00	5.00	5.00
CEF-081-27D-20101018	1010159-02	10/22/10 00:00	5.00	5.00
CEF-081-25I-20101018	1010159-03	10/22/10 00:00	5.00	5.00
CEF-081-22I-20101018	1010159-04	10/22/10 00:00	5.00	5.00
Trip Blank	1010159-05	10/22/10 00:00	5.00	5.00
CEF-081-04I-20101019	1010159-06	10/22/10 00:00	5.00	5.00
CEF-081-24I-20101019	1010159-07	10/22/10 00:00	5.00	5.00
CEF-081-28D-20101019	1010159-08	10/22/10 00:00	5.00	5.00

SURROGATE STANDARD RECOVERY AND RT SUMMARY

SW8260B

Laboratory:	Empirical Laboratories, LLC	SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)	Project:	CTO JM09 Site 81abc_2010
Sequence:	0J29601	Instrument:	MS-VOA4
		Calibration:	0288001

Surrogate Compound	Spike Level	% Recovery	Recovery Limits	RT	CCV RT	RT Diff	RT Diff Limit	Q
Calibration Check (0J29601-CCV1) ug/L				Lab File ID: SEQ-CCV1.D		Analyzed: 10/22/10 14:27		
Bromofluorobenzene	30.00	99.8	80 - 120	16.515	16.515	0.0000	+/-1.000	
Dibromofluoromethane	30.00	103	80 - 120	8.998	8.998	0.0000	+/-1.000	
1,2-Dichloroethane-d4	30.00	107	80 - 120	10.261	10.261	0.0000	+/-1.000	
Toluene-d8	30.00	101	80 - 120	14.197	14.197	0.0000	+/-1.000	
LCS (0J21016-BS1) ug/L				Lab File ID: V4LCS01.D		Analyzed: 10/22/10 15:10		
Bromofluorobenzene	30.00	97.8	75 - 120	16.52	16.515	0.0050	+/-1.000	
Dibromofluoromethane	30.00	103	85 - 115	8.993	8.998	-0.0050	+/-1.000	
1,2-Dichloroethane-d4	30.00	108	70 - 120	10.256	10.261	-0.0050	+/-1.000	
Toluene-d8	30.00	101	85 - 120	14.192	14.197	-0.0050	+/-1.000	
Blank (0J21016-BLK1) ug/L				Lab File ID: V4BLK1.D		Analyzed: 10/22/10 16:37		
Bromofluorobenzene	30.00	101	75 - 120	16.513	16.515	-0.0020	+/-1.000	
Dibromofluoromethane	30.00	102	85 - 115	9.006	8.998	0.0080	+/-1.000	
1,2-Dichloroethane-d4	30.00	105	70 - 120	10.239	10.261	-0.0220	+/-1.000	
Toluene-d8	30.00	103	85 - 120	14.195	14.197	-0.0020	+/-1.000	
Trip Blank (1010159-05) ug/L				Lab File ID: 1015905.D		Analyzed: 10/22/10 17:06		
Bromofluorobenzene	30.00	102	75 - 120	16.513	16.515	-0.0020	+/-1.000	
Dibromofluoromethane	30.00	105	85 - 115	8.996	8.998	-0.0020	+/-1.000	
1,2-Dichloroethane-d4	30.00	109	70 - 120	10.239	10.261	-0.0220	+/-1.000	
Toluene-d8	30.00	105	85 - 120	14.195	14.197	-0.0020	+/-1.000	
CEF-081-27D-20101018 (1010159-02) ug/L				Lab File ID: 1015902.D		Analyzed: 10/22/10 17:36		
Bromofluorobenzene	30.00	99.6	75 - 120	16.514	16.515	-0.0010	+/-1.000	
Dibromofluoromethane	30.00	107	85 - 115	9.007	8.998	0.0090	+/-1.000	
1,2-Dichloroethane-d4	30.00	109	70 - 120	10.25	10.261	-0.0110	+/-1.000	
Toluene-d8	30.00	97.6	85 - 120	14.196	14.197	-0.0010	+/-1.000	
CEF-081-25I-20101018 (1010159-03) ug/L				Lab File ID: 1015903.D		Analyzed: 10/22/10 18:06		
Bromofluorobenzene	30.00	103	75 - 120	16.514	16.515	-0.0010	+/-1.000	
Dibromofluoromethane	30.00	110	85 - 115	8.997	8.998	-0.0010	+/-1.000	
1,2-Dichloroethane-d4	30.00	109	70 - 120	10.259	10.261	-0.0020	+/-1.000	
Toluene-d8	30.00	106	85 - 120	14.196	14.197	-0.0010	+/-1.000	
CEF-081-22I-20101018 (1010159-04) ug/L				Lab File ID: 1015904.D		Analyzed: 10/22/10 18:35		
Bromofluorobenzene	30.00	98.8	75 - 120	16.519	16.515	0.0040	+/-1.000	
Dibromofluoromethane	30.00	105	85 - 115	9.012	8.998	0.0140	+/-1.000	
1,2-Dichloroethane-d4	30.00	102	70 - 120	10.255	10.261	-0.0060	+/-1.000	
Toluene-d8	30.00	98.7	85 - 120	14.191	14.197	-0.0060	+/-1.000	

SURROGATE STANDARD RECOVERY AND RT SUMMARY

SW8260B

Laboratory:	Empirical Laboratories, LLC	SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)	Project:	CTO JM09 Site 81abc_2010
Sequence:	0J29601	Instrument:	MS-VOA4
		Calibration:	0288001

Surrogate Compound	Spike Level	% Recovery	Recovery Limits	RT	CCV RT	RT Diff	RT Diff Limit	Q
CEF-081-04I-20101019 (1010159-06) ug/L				Lab File ID: 1015906.D		Analyzed: 10/22/10 19:05		
Bromofluorobenzene	30.00	99.8	75 - 120	16.518	16.515	0.0030	+/-1.000	
Dibromofluoromethane	30.00	104	85 - 115	9.01	8.998	0.0120	+/-1.000	
1,2-Dichloroethane-d4	30.00	109	70 - 120	10.253	10.261	-0.0080	+/-1.000	
Toluene-d8	30.00	103	85 - 120	14.199	14.197	0.0020	+/-1.000	
CEF-081-24I-20101019 (1010159-07) ug/L				Lab File ID: 1015907.D		Analyzed: 10/22/10 19:34		
Bromofluorobenzene	30.00	104	75 - 120	16.52	16.515	0.0050	+/-1.000	
Dibromofluoromethane	30.00	108	85 - 115	9.022	8.998	0.0240	+/-1.000	
1,2-Dichloroethane-d4	30.00	108	70 - 120	10.255	10.261	-0.0060	+/-1.000	
Toluene-d8	30.00	105	85 - 120	14.201	14.197	0.0040	+/-1.000	
CEF-081-28D-20101019 (1010159-08) ug/L				Lab File ID: 1015908.D		Analyzed: 10/22/10 20:04		
Bromofluorobenzene	30.00	101	75 - 120	16.523	16.515	0.0080	+/-1.000	
Dibromofluoromethane	30.00	102	85 - 115	9.006	8.998	0.0080	+/-1.000	
1,2-Dichloroethane-d4	30.00	109	70 - 120	10.259	10.261	-0.0020	+/-1.000	
Toluene-d8	30.00	99.9	85 - 120	14.195	14.197	-0.0020	+/-1.000	
CEF-081-26I-20101018 (1010159-01) ug/L				Lab File ID: 1015901.D		Analyzed: 10/22/10 22:32		
Bromofluorobenzene	30.00	104	75 - 120	16.52	16.515	0.0050	+/-1.000	
Dibromofluoromethane	30.00	105	85 - 115	9.012	8.998	0.0140	+/-1.000	
1,2-Dichloroethane-d4	30.00	111	70 - 120	10.265	10.261	0.0040	+/-1.000	
Toluene-d8	30.00	104	85 - 120	14.201	14.197	0.0040	+/-1.000	

LCS / LCS DUPLICATE RECOVERY

SW8260B

Laboratory:	Empirical Laboratories, LLC	SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)	Project:	CTO JM09 Site 81abc_2010
Matrix:	Water		
Batch:	0J21016	Laboratory ID:	0J21016-BS1
Preparation:	5030B	Initial/Final:	5 mL / 5 mL

ANALYTE	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC.	QC LIMITS REC.
Isopropylbenzene	50.00	49.9	99.9	75 - 125

INTERNAL STANDARD AREA AND RT SUMMARY
SW8260B

Laboratory:	Empirical Laboratories, LLC	SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)	Project:	CTO JM09 Site 81abc_2010
Sequence:	0J29601	Instrument:	MS-VOA4
		Calibration:	0288001

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Calibration Check (0J29601-CCV1)			Lab File ID: SEQ-CCV1.D			Analyzed: 10/22/10 14:27			
Fluorobenzene	1179642	11.859	1192036	11.87	99	50 - 200	-0.0110	+/-0.50	
Chlorobenzene-d5	469658	15.558	495309	15.559	95	50 - 200	-0.0010	+/-0.50	
1,4-Dichlorobenzene-d4	540038	17.452	531452	17.463	102	50 - 200	-0.0110	+/-0.50	
LCS (0J21016-BS1)			Lab File ID: V4LCS01.D			Analyzed: 10/22/10 15:10			
Fluorobenzene	1158881	11.854	1179642	11.859	98	50 - 200	-0.0050	+/-0.50	
Chlorobenzene-d5	448055	15.553	469658	15.558	95	50 - 200	-0.0050	+/-0.50	
1,4-Dichlorobenzene-d4	529132	17.457	540038	17.452	98	50 - 200	0.0050	+/-0.50	
Blank (0J21016-BLK1)			Lab File ID: V4BLK1.D			Analyzed: 10/22/10 16:37			
Fluorobenzene	1094659	11.857	1179642	11.859	93	50 - 200	-0.0020	+/-0.50	
Chlorobenzene-d5	414185	15.556	469658	15.558	88	50 - 200	-0.0020	+/-0.50	
1,4-Dichlorobenzene-d4	467234	17.45	540038	17.452	87	50 - 200	-0.0020	+/-0.50	
Trip Blank (1010159-05)			Lab File ID: 1015905.D			Analyzed: 10/22/10 17:06			
Fluorobenzene	1047228	11.847	1179642	11.859	89	50 - 200	-0.0120	+/-0.50	
Chlorobenzene-d5	383555	15.556	469658	15.558	82	50 - 200	-0.0020	+/-0.50	
1,4-Dichlorobenzene-d4	454791	17.45	540038	17.452	84	50 - 200	-0.0020	+/-0.50	
CEF-081-27D-20101018 (1010159-02)			Lab File ID: 1015902.D			Analyzed: 10/22/10 17:36			
Fluorobenzene	1051144	11.858	1179642	11.859	89	50 - 200	-0.0010	+/-0.50	
Chlorobenzene-d5	406071	15.558	469658	15.558	86	50 - 200	0.0000	+/-0.50	
1,4-Dichlorobenzene-d4	469922	17.452	540038	17.452	87	50 - 200	0.0000	+/-0.50	
CEF-081-25I-20101018 (1010159-03)			Lab File ID: 1015903.D			Analyzed: 10/22/10 18:06			
Fluorobenzene	1030442	11.858	1179642	11.859	87	50 - 200	-0.0010	+/-0.50	
Chlorobenzene-d5	392835	15.557	469658	15.558	84	50 - 200	-0.0010	+/-0.50	
1,4-Dichlorobenzene-d4	475044	17.451	540038	17.452	88	50 - 200	-0.0010	+/-0.50	
CEF-081-22I-20101018 (1010159-04)			Lab File ID: 1015904.D			Analyzed: 10/22/10 18:35			
Fluorobenzene	1107362	11.863	1179642	11.859	94	50 - 200	0.0040	+/-0.50	
Chlorobenzene-d5	412013	15.552	469658	15.558	88	50 - 200	-0.0060	+/-0.50	
1,4-Dichlorobenzene-d4	479494	17.456	540038	17.452	89	50 - 200	0.0040	+/-0.50	
CEF-081-04I-20101019 (1010159-06)			Lab File ID: 1015906.D			Analyzed: 10/22/10 19:05			
Fluorobenzene	1114531	11.861	1179642	11.859	94	50 - 200	0.0020	+/-0.50	
Chlorobenzene-d5	410097	15.561	469658	15.558	87	50 - 200	0.0030	+/-0.50	
1,4-Dichlorobenzene-d4	483120	17.455	540038	17.452	89	50 - 200	0.0030	+/-0.50	
CEF-081-24I-20101019 (1010159-07)			Lab File ID: 1015907.D			Analyzed: 10/22/10 19:34			
Fluorobenzene	1098401	11.863	1179642	11.859	93	50 - 200	0.0040	+/-0.50	
Chlorobenzene-d5	410554	15.553	469658	15.558	87	50 - 200	-0.0050	+/-0.50	
1,4-Dichlorobenzene-d4	476268	17.457	540038	17.452	88	50 - 200	0.0050	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SW8260B

Laboratory:	Empirical Laboratories, LLC	SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)	Project:	CTO JM09 Site 81abc_2010
Sequence:	0J29601	Instrument:	MS-VOA4
		Calibration:	0288001

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
CEF-081-28D-20101019 (1010159-08)			Lab File ID: 1015908.D			Analyzed: 10/22/10 20:04			
Fluorobenzene	1122732	11.857	1179642	11.859	95	50 - 200	-0.0020	+/-0.50	
Chlorobenzene-d5	419776	15.556	469658	15.558	89	50 - 200	-0.0020	+/-0.50	
1,4-Dichlorobenzene-d4	482374	17.45	540038	17.452	89	50 - 200	-0.0020	+/-0.50	
CEF-081-26I-20101018 (1010159-01)			Lab File ID: 1015901.D			Analyzed: 10/22/10 22:32			
Fluorobenzene	1045005	11.863	1179642	11.859	89	50 - 200	0.0040	+/-0.50	
Chlorobenzene-d5	403733	15.553	469658	15.558	86	50 - 200	-0.0050	+/-0.50	
1,4-Dichlorobenzene-d4	472727	17.457	540038	17.452	88	50 - 200	0.0050	+/-0.50	

HOLDING TIME SUMMARY
SW8260B

Laboratory: Empirical Laboratories, LLC
SDG: CTOJM09CF_009
Client: Tetra Tech NUS, Inc. (T010)
Project: CTO JM09 Site 81abc_2010

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-081-26I-20101018	10/18/10 13:18	10/20/10 08:30	10/22/10 00:00	N/A	14.00	10/22/10 22:32	4.43	14.00	
CEF-081-27D-20101018	10/18/10 13:33	10/20/10 08:30	10/22/10 00:00	N/A	14.00	10/22/10 17:36	4.21	14.00	
CEF-081-25I-20101018	10/18/10 14:28	10/20/10 08:30	10/22/10 00:00	N/A	14.00	10/22/10 18:06	4.19	14.00	
CEF-081-22I-20101018	10/18/10 15:05	10/20/10 08:30	10/22/10 00:00	N/A	14.00	10/22/10 18:35	4.19	14.00	
Trip Blank	10/18/10 00:00	10/20/10 08:30	10/22/10 00:00	N/A	14.00	10/22/10 17:06	4.75	14.00	
CEF-081-04I-20101019	10/19/10 11:11	10/20/10 08:30	10/22/10 00:00	N/A	14.00	10/22/10 19:05	3.37	14.00	
CEF-081-24I-20101019	10/19/10 11:59	10/20/10 08:30	10/22/10 00:00	N/A	14.00	10/22/10 19:34	3.36	14.00	
CEF-081-28D-20101019	10/19/10 12:48	10/20/10 08:30	10/22/10 00:00	N/A	14.00	10/22/10 20:04	3.34	14.00	

ANALYSIS SEQUENCE SUMMARY

SW8260B

Laboratory:	Empirical Laboratories, LLC	SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)	Project:	CTO JM09 Site 81abc_2010
Sequence:	0J28708	Instrument:	MS-VOA4
Calibration:	0288001		

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	0J28708-TUN1	SEQ-TUN1.D	10/12/10 07:37
Cal Standard	0J28708-CAL1	SEQ-CAL1.D	10/12/10 08:07
Cal Standard	0J28708-CAL2	SEQ-CAL2.D	10/12/10 08:37
Cal Standard	0J28708-CAL3	SEQ-CAL3.D	10/12/10 09:07
Cal Standard	0J28708-CAL4	SEQ-CAL4.D	10/12/10 09:36
Cal Standard	0J28708-CAL5	SEQ-CAL5.D	10/12/10 10:06
Cal Standard	0J28708-CAL6	SEQ-CAL6.D	10/12/10 10:36
Cal Standard	0J28708-CAL7	SEQ-CAL7.D	10/12/10 11:05
Cal Standard	0J28708-CAL8	SEQ-CAL8.D	10/12/10 11:35
Cal Standard	0J28708-CAL9	SEQ-CAL9.D	10/12/10 12:04
Initial Cal Check	0J28708-ICV1	SEQ-ICV1.D	10/12/10 12:34

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8260B

Laboratory:	Empirical Laboratories, LLC	SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)	Project:	CTO JM09 Site 81abc_2010
Lab File ID:	SEQ-TUN1.D	Injection Date:	10/12/10
Instrument ID:	MS-VOA4	Injection Time:	07:37
Sequence:	0J28708	Lab Sample ID:	0J28708-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	23.9	PASS
75	30 - 60% of 95	48.7	PASS
95	Base peak, 100% relative abundance	100	PASS
96	5 - 9% of 95	7.11	PASS
173	Less than 2% of 174	0	PASS
174	50 - 200% of 95	69.7	PASS
175	5 - 9% of 174	7.95	PASS
176	95 - 101% of 174	95	PASS
177	5 - 9% of 176	6.78	PASS

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory:	Empirical Laboratories, LLC	SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)	Project:	CTO JM09 Site 81abc_2010
Calibration:	0288001	Instrument:	MS-VOA4
Matrix:	Water	Calibration Date:	10/12/2010 6:38:20AM

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Acetone	7.811479E-02	12.98642	4.883875	0.1651504			15	
Acrolein	1.164793E-02	21.2898	4.749857	0.2749885	0.9992237		0.995	
Acrylonitrile	7.719652E-02	8.91034	5.496889	0.192848			15	
Benzene	0.8358386	7.447958	11.46056	6.101201E-02			15	
Bromobenzene	0.648934	9.294358	16.67811	3.162201E-02			15	
Bromochloromethane	0.1409376	19.66609	8.614375	0.1381148	0.9990308		0.995	
Tert-Amyl Methyl Ether	0.744538	29.44834	11.85422	6.899229E-02	0.9999147		0.995	
Bromodichloromethane	0.3122862	7.199629	12.56544	5.775564E-02			15	
Bromoform	0.520988	13.39114	15.98744	2.734544E-02			SPCC (0.1)	
Bromomethane	0.1808652	14.08194	3.995111	0.1613203			15	
Bromofluorobenzene	0.8833723	3.304377	16.52356	1.912178E-02			15	
n-Butylbenzene	1.237578	7.553513	17.77633	2.847747E-02			15	
2-Butanone	0.1098025	12.49449	7.96125	0.1101004			15	
sec-Butylbenzene	1.685923	6.87793	17.36067	2.429653E-02			15	
tert-Butylbenzene	1.161811	8.417131	17.20733	2.399951E-02			15	
Carbon disulfide	0.7279408	7.388771	5.927556	0.1240831			15	
Carbon tetrachloride	0.2951898	6.707225	11.39922	4.289152E-02			15	
Chlorobenzene	1.543806	11.24769	15.59067	0.0172928			SPCC (0.3)	
Chloroethane	0.16213	5.915595	4.138667	0.1800098			15	
Chloroform	0.4416533	12.35422	8.738889	0.10134			CCC (20)	
2-Chloroethyl vinyl ether	0.1485167	9.852501	13.20544	4.766954E-02			15	
Chloromethane	0.2046249	9.440292	3.416625	0.1821392			SPCC (0.1)	
1-Chlorohexane	0.7481532	13.54377	15.55333	2.749431E-02			15	
2-Chlorotoluene	1.335529	8.32063	16.88311	0.0178394			15	
4-Chlorotoluene	1.313181	9.407734	16.94211	1.944844E-02			15	
Cyclohexane	0.2944015	6.758321	11.25233	4.634363E-02			15	
Dibromochloromethane	0.7153446	8.227871	14.58	3.012385E-02			15	
1,2-Dibromo-3-chloropropane	0.1264341	20.12126	18.08956	3.416032E-02	0.9984303		0.995	
1,2-Dibromoethane (EDB)	0.6051969	8.389087	14.81344	4.322662E-02			15	
Dibromomethane	0.1760147	7.308508	12.37689	5.150049E-02			15	
1,2-Dichlorobenzene	1.008607	8.182712	17.74889	2.767189E-02			15	
1,3-Dichlorobenzene	1.086699	12.24273	17.43522	2.117104E-02			15	

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory:	Empirical Laboratories, LLC	SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)	Project:	CTO JM09 Site 81abc_2010
Calibration:	0288001	Instrument:	MS-VOA4
Matrix:	Water	Calibration Date:	10/12/2010 6:38:20AM

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
1,4-Dichlorobenzene	1.243319	13.70698	17.47762	1.795493E-02			15	
Dichlorodifluoromethane	0.1891346	5.980716	3.232333	0.1998126			15	
1,1-Dichloroethane	0.418837	7.039043	7.088333	0.1360939			SPCC (0.1)	
1,2-Dichloroethane	0.2920688	6.676541	10.47089	9.660483E-02			15	
1,1-Dichloroethene	0.2047309	8.80159	5.421222	0.1470215			CCC (20)	
cis-1,2-Dichloroethene	0.2539806	8.500709	8.276556	0.1125492			15	
trans-1,2-Dichloroethene	0.237595	8.308158	6.627889	0.1558001			15	
1,2-Dichloroethene (total)	0.2457878	8.307382	0	0			15	
1,2-Dichloropropane	0.2327228	7.286534	12.44056	4.960852E-02			CCC (20)	
1,3-Dichloropropane	0.8731742	8.835219	14.34878	3.405028E-02			15	
2,2-Dichloropropane	0.2849644	15.98146	8.946222	0.1070355	0.9991256		0.995	
1,1-Dichloropropene	0.2922463	8.085133	11.12544	6.355423E-02			15	
cis-1,3-Dichloropropene	0.3503386	8.51877	13.44233	4.778818E-02			15	
trans-1,3-Dichloropropene	0.7460596	8.686804	13.94544	4.750241E-02	0.9987458		0.995	
Diisopropyl Ether	0.8241016	7.808748	8.034222	0.1212186			15	
Ethylbenzene	2.209905	9.371095	15.75267	2.660989E-02			CCC (20)	
Ethyl tert-Butyl Ether	0.6440833	8.289269	8.980111	0.1155358			15	
Ethyl Methacrylate	0.6350853	15.54931	14.42889	4.426725E-02	0.9987937		0.995	
Hexachlorobutadiene	0.2639412	12.24359	19.45767	2.079233E-02	0.9985922		0.995	
2-Hexanone	0.3733401	24.00448	14.53588	2.457738E-02	0.9990205		0.995	
Iodomethane	0.2978907	38.05978	5.468111	0.0851372	0.9984697		0.995	
Isopropylbenzene	1.746379	11.7757	16.49213	2.846942E-02		0.9993308	0.99	
p-Isopropyltoluene	1.410458	12.23948	17.48356	0.0231966			15	
Methylene chloride	0.2747203	9.799394	5.622778	0.1150049			15	
Methyl Acetate	0.2014545	11.45819	5.662375	0.1851835			15	
Methylcyclohexane	0.2554207	7.841342	13.18589	3.196291E-02			15	
Naphthalene	1.293816	15.4847	19.43033	3.506097E-02	0.9992359		0.995	
Methyl Methacrylate	0.1810655	13.51891	12.88022	0.1067331			15	
4-Methyl-2-pentanone	0.2175995	9.243582	13.6	1.937434E-02			15	
Methyl t-Butyl Ether	0.5675005	8.933146	6.842667	0.1403714			15	
n-Propylbenzene	2.027251	7.998311	16.80856	2.232981E-02			15	
Styrene	1.398485	12.78473	16.16522	2.535922E-02			15	

INITIAL CALIBRATION DATA (Continued)

SW8260B

Laboratory:	Empirical Laboratories, LLC	SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)	Project:	CTO JM09 Site 81abc_2010
Calibration:	0288001	Instrument:	MS-VOA4
Matrix:	Water	Calibration Date:	10/12/2010 6:38:20AM

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
1,1,2,2-Tetrachloroethane	0.571341	6.879798	16.23211	1.457299E-02			SPCC (0.3)	
1,1,1,2-Tetrachloroethane	0.5897171	7.884472	15.53133	1.789641E-02			15	
tert-Butyl alcohol	1.872277E-02	8.580325	5.431222	0.1939848			15	
Tetrachloroethene	0.672589	7.991221	14.99656	3.157054E-02			15	
Toluene	1.332562	12.69402	14.27644	3.516708E-02			CCC (20)	
1,2,3-Trichlorobenzene	0.5416388	11.47717	19.64078	2.791796E-02			15	
1,2,4-Trichlorobenzene	0.600548	10.65399	19.2	0.0262916			15	
1,1,2-Trichloroethane	0.4671038	8.954989	14.09111	1.621246E-02			15	
1,1,1-Trichloroethane	0.3172406	6.912256	10.70211	6.868758E-02			15	
Tetrahydrofuran	5.696619E-02	23.84813	9.590714	0.1575383	0.9977767		0.995	
Trichloroethene	0.2427317	7.359239	12.51733	4.375905E-02			15	
Trichlorofluoromethane	0.3588331	6.617386	4.754778	0.136445			15	
1,2,3-Trichloropropane	0.1774321	10.50135	16.33711	2.084805E-02			15	
1,3,5-Trimethylbenzene	1.387364	6.937917	17.00567	2.039971E-02			15	
1,2,4-Trimethylbenzene	1.435102	7.578538	17.28522	2.407134E-02			15	
1,1,2-Trichloro-1,2,2-trifluoroethane	0.2344612	8.315713	5.692889	0.1918493			15	
Vinyl chloride	0.1877522	17.83565	3.594	0.2135421		0.9976122	CCC (20)	
m,p-Xylene	1.622775	12.97502	15.91389	3.051657E-02			15	
o-Xylene	1.737591	9.782529	16.22211	0.0209374			15	
Vinyl acetate	0.4755489	18.07545	7.343667	0.2055285	0.9996767		0.995	
Xylenes (total)	1.661047	11.65853	0	0			15	
Dibromofluoromethane	0.3194396	1.636608	9.023	0.1104891			15	
1,2-Dichloroethane-d4	6.155599E-02	2.425279	10.27133	5.054035E-02			15	
Toluene-d8	2.302504	4.363621	14.19967	2.300475E-02			15	
tert-Amyl alcohol	9.646573E-03	24.13734	10.066	9.176771E-02	0.9995923		0.995	
tert-Amyl ethyl ether	0.5101943	9.31806	13.10133	4.172372E-02			15	

INITIAL CALIBRATION CHECK

SW8260B

Laboratory:	Empirical Laboratories, LLC	SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)	Project:	CTO JM09 Site 81abc_2010
Instrument ID:	MS-VOA4	Calibration:	0288001
Lab File ID:	SEQ-ICV1.D	Calibration Date:	10/12/10 06:38
Sequence:	0J28708	Injection Date:	10/12/10
Lab Sample ID:	0J28708-ICV1	Injection Time:	12:34

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	ICV	ICAL	ICV	MIN (#)	ICV	LIMIT (#)
Isopropylbenzene	L	50.00	55.60	1.746379	2.150923		11.2	20

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

* Values outside of QC limits

ANALYSIS SEQUENCE SUMMARY
SW8260B

Laboratory:	Empirical Laboratories, LLC	SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)	Project:	CTO JM09 Site 81abc_2010
Sequence:	0J29601	Instrument:	MS-VOA4
Calibration:	0288001		

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	0J29601-TUN1	SEQ-TUN1.D	10/22/10 13:58
Calibration Check	0J29601-CCV1	SEQ-CCV1.D	10/22/10 14:27
LCS	0J21016-BS1	V4LCS01.D	10/22/10 15:10
Blank	0J21016-BLK1	V4BLK1.D	10/22/10 16:37
Trip Blank	1010159-05	1015905.D	10/22/10 17:06
CEF-081-27D-20101018	1010159-02	1015902.D	10/22/10 17:36
CEF-081-25I-20101018	1010159-03	1015903.D	10/22/10 18:06
CEF-081-22I-20101018	1010159-04	1015904.D	10/22/10 18:35
CEF-081-04I-20101019	1010159-06	1015906.D	10/22/10 19:05
CEF-081-24I-20101019	1010159-07	1015907.D	10/22/10 19:34
CEF-081-28D-20101019	1010159-08	1015908.D	10/22/10 20:04
CEF-081-26I-20101018	1010159-01	1015901.D	10/22/10 22:32

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8260B

Laboratory:	Empirical Laboratories, LLC	SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)	Project:	CTO JM09 Site 81abc_2010
Lab File ID:	SEQ-TUN1.D	Injection Date:	10/22/10
Instrument ID:	MS-VOA4	Injection Time:	13:58
Sequence:	0J29601	Lab Sample ID:	0J29601-TUN1

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	17.8	PASS
75	30 - 60% of 95	43.1	PASS
95	Base peak, 100% relative abundance	100	PASS
96	5 - 9% of 95	7.15	PASS
173	Less than 2% of 174	0	PASS
174	50 - 200% of 95	87	PASS
175	5 - 9% of 174	7.2	PASS
176	95 - 101% of 174	95.9	PASS
177	5 - 9% of 176	7.04	PASS

CONTINUING CALIBRATION CHECK

SW8260B

Laboratory:	Empirical Laboratories, LLC	SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)	Project:	CTO JM09 Site 81abc_2010
Instrument ID:	MS-VOA4	Calibration:	0288001
Lab File ID:	SEQ-CCV1.D	Calibration Date:	10/12/10 06:38
Sequence:	0J29601	Injection Date:	10/22/10
Lab Sample ID:	0J29601-CCV1	Injection Time:	14:27

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Isopropylbenzene	L	100.0	98.82	1.746379	1.82655		-1.2	20
Bromofluorobenzene	A	30.00	29.94	0.8833723	0.8817459		-0.2	20
Dibromofluoromethane	A	30.00	30.87	0.3194396	0.3287489		2.9	20
1,2-Dichloroethane-d4	A	30.00	32.18	6.155599E-02	6.604122E-02		7.3	20
Toluene-d8	A	30.00	30.30	2.302504	2.32569		1.0	20

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

* Values outside of QC limits

ANALYSIS DATA SHEET

Blank

Laboratory:	Empirical Laboratories, LLC			SDG:	CTOJM09CF_009
Client:	Tetra Tech NUS, Inc. (T010)			Project:	CTO JM09 Site 81abc_2010
Matrix:		Laboratory ID:	0J21016-BLK1	File ID:	V4BLK1.D
Sampled:		Prepared:		Analyzed:	10/22/10 16:37
Solids:		Preparation:	5030B	Dilution:	

Batch: 0J21016 Sequence: 0J29601 Calibration: 0288001 Instrument: MS-VOA4

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
98-82-8	Isopropylbenzene		0.250	0.500	1.00	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	30.19	101	75 - 120	
Dibromofluoromethane	30.00	30.74	102	85 - 115	
1,2-Dichloroethane-d4	30.00	31.59	105	70 - 120	
Toluene-d8	30.00	31.05	103	85 - 120	

ANALYSIS DATA SHEET

LCS

Laboratory:	Empirical Laboratories, LLC		SDG:	CTOJM09CF_009	
Client:	Tetra Tech NUS, Inc. (T010)		Project:	CTO JM09 Site 81abc_2010	
Matrix:		Laboratory ID:	0J21016-BS1	File ID:	V4LCS01.D
Sampled:		Prepared:		Analyzed:	10/22/10 15:10
Solids:		Preparation:	5030B	Dilution:	

Batch: 0J21016 Sequence: 0J29601 Calibration: 0288001 Instrument: MS-VOA4

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
98-82-8	Isopropylbenzene	49.9	0.250	0.500	1.00	

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	29.34	97.8	75 - 120	
Dibromofluoromethane	30.00	30.94	103	85 - 115	
1,2-Dichloroethane-d4	30.00	32.36	108	70 - 120	
Toluene-d8	30.00	30.27	101	85 - 120	

ATTACHMENT D

FTMR 01 for TANKS 81 A, B, AND C

TETRA TECH NUS
FIELD TASK MODIFICATION REQUEST FORM

LTM/NAS Cecil Field Project/Installation Name	**CTO JM09, 112G002267** CTO & Project Number	**01** Task Mod. Number
SAP for Tanks 81 A, B, and C Modification To (e.g. Work Plan)	**Tanks 81 A, B, and C** Site/Sample Location	**12/1/10** Date

Activity Description: The groundwater at Building 81, Tanks A, B, and C is currently being sampled and analyzed for isopropylbenzene on a quarterly basis in accordance with the Sampling and Analysis Plan (SAP) for Tanks 81 A, B, and C. The SAP identifies seven total monitoring wells (CEF-081-04I, CEF-081-22I, CEF-081-24I, CEF-081-25I, CEF-081-26I, CEF-081-27D, and CEF-081-28D) from which groundwater is to be sampled during the quarterly events. Prior to obtaining groundwater samples during the quarterly events, synoptic water levels and total wells depths are measured and recorded on a site-specific groundwater measurement sheet for the sample wells. It was identified during the July 2010 sampling event that the intermediate groundwater flow was estimated to be to the north-northwest and south-southwest. Prior to this event, groundwater flow at the site was estimated to be to the north-northwest, and occasionally slightly northeast only. The southern component measured during this event is the first southern groundwater flow component at the site since sampling began. Based on this finding, the Team decided during the November 2010 BCT meeting that water levels measurements will be collected from eight additional wells (CEF-081-01I, CEF-081-02I, CEF-081-03I, CEF-081-05I, CEF-081-18I, CEF-081-19I, CEF-081-20I, CEF-081-21I) during future quarterly sampling events to estimate intermediate zone groundwater flow. The wells included in the quarterly groundwater sampling events, as well as the additional groundwater elevation measurement wells are shown on Figure 1.

Reason for Change: An unforeseen groundwater flow component was measured during the July 2010 sampling event. Results of this additional assessment will provide information to be used in determining if the existing sampling plan is adequate for the site conditions. The proposed changes to the sampling plan are relatively minor and therefore preparing a new UFP SAP for this modification is not appropriate.

Recommended Disposition: Verification of acceptance of the revised sampling program via approval of this FTMR via e-mail approval from Tetra Tech PM, BRAC PMO RPM, EPA, and FDEP (attached in project file).

T. Johnston — 11-29-10

Quality Assurance Manager (QAPP lead developer) — Date

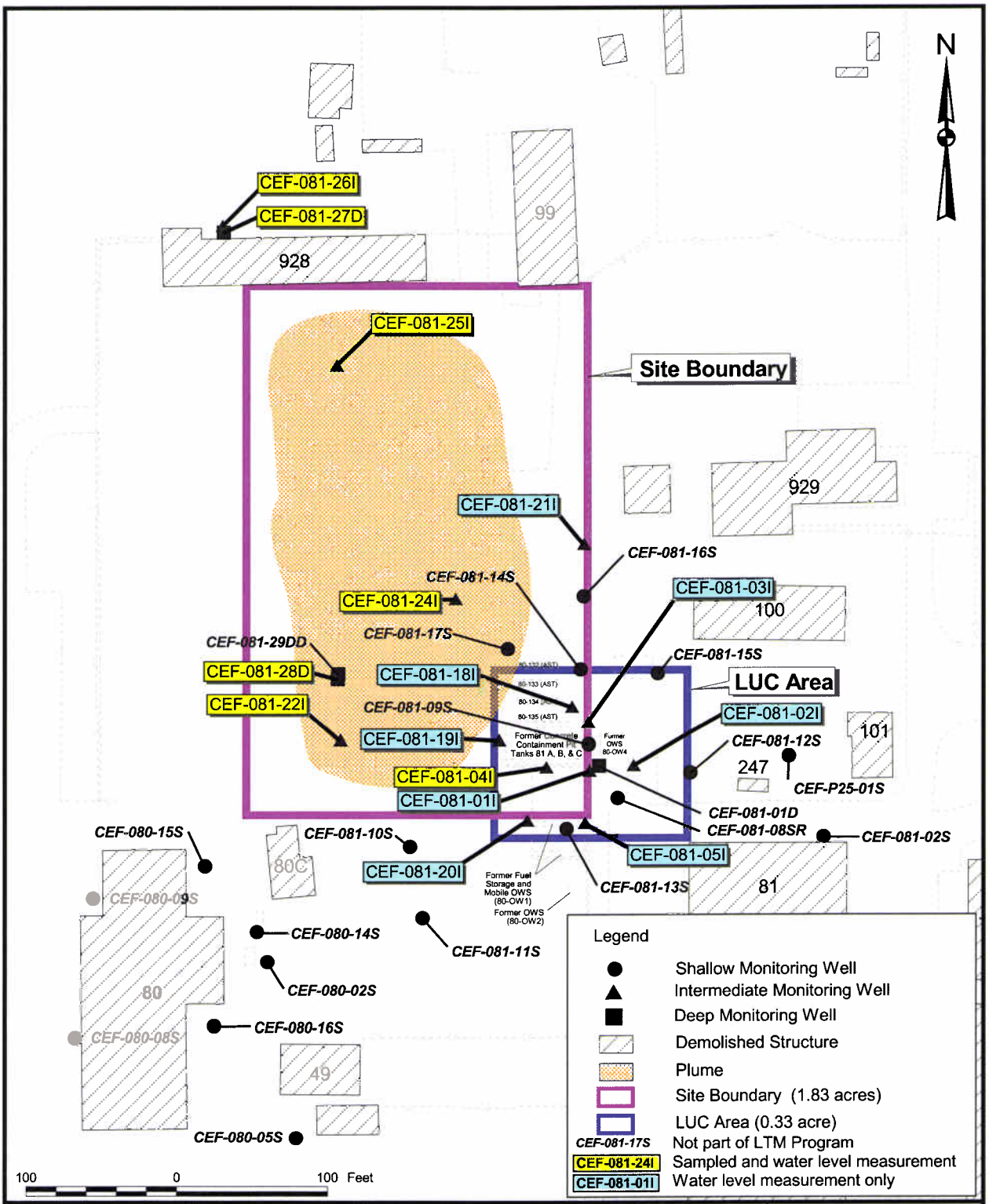
Approved Disposition:

Project/Task Order Manager (Signature) — 11/29/10 Date

Distribution:

Program/Project File – 112G02267
Project/Task Order Manager – Robert Simcik
Field Operations Leader – Jeff Krone
BRAC PMO RPM – Art Sanford

Other: _____



DRAWN BY MJJ	DATE 24Nov10	MONITORING WELL LOCATION MAP TANKS 81 A, B, & C NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 2267
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1 / REV 0

NAVFAC

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