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MAIN INSTALLATION
ENHANCED BIOREMEDIATION TREATMENT
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

Defense Depot Memphis, Tennessee

Defense Logistics Agency

Air Force Center for Engineering and the Environment
Contract No. FA8903-04-D-8722
Task Order No. 0016

Revision 1
February 2010

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Prepared for:

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LIST OF ACRONYMS AND ABBREVIATIONS

bgs	Below Ground Surface
cDCE	cis-1,2-Dichloroethene
CF	Chloroform
COC	Contaminant of Concern
CT	Carbon Tetrachloride
CVOC	Chlorinated Volatile Organic Compound
DDMT	Defense Depot Memphis, Tennessee
DO	Dissolved Oxygen
DQO	Data Quality Objective
DSA	Diane Short and Associates, Inc.
e^2M	engineering-environmental Management, Inc.
EBT	Enhanced Bioremediation Treatment
gpm	Gallons per Minute
IDW	Investigation-derived Waste
IW	Injection Well
LCS	Laboratory Calibration Standard
LTM	Long-term Monitoring
LUC	Land Use Control
MACTEC	MACTEC Engineering and Consulting, Inc.
MCL	Maximum Contaminant Level
MFA	Metabolic Fatty Acids
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter
MI	Main Installation
MS/MSD	Matrix Spike/Matrix Spike Duplicate
msl	Mean Sea Level
MW	Monitoring Well
NA	Natural Attenuation
NTU	Nephelometric Turbidity Units
OPS	Operating Properly and Successfully
ORP	Oxidation Reduction Potential
PCE	Tetrachloroethene
PMW	Performance Monitoring Well

LIST OF ACRONYMS AND ABBREVIATIONS

(Continued)

PPM	Parts per Million
psi	Pounds per Square Inch
RA-C	Remedial Action Construction
RA-O	Remedial Action Operations
RAO	Remedial Action Objective
RA SAP	Remedial Action Sampling and Analysis Plan
RAWP	Remedial Action Work Plan
RD	Remedial Design
RL	Reporting Limit
ROD	Record of Decision
TCE	Trichloroethene
tDCE	trans-1,2-Dichloroethene
TDEC	Tennessee Department of Environment and Conservation
TEA	Terminal Electron Acceptor
TOC	Total Organic Carbon
USEPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compound

1.0 INTRODUCTION

HDR|e²M has prepared this Annual Operations Report for Year Two of Enhanced Bioremediation Treatment (EBT) of groundwater on the Main Installation (MI) at Defense Depot Memphis, Tennessee (DDMT) under Contract FA8903-04-D-8722, Task Order 0016 to the Air Force Center for Environmental Excellence. Remedial action operations (RA-O) during Year Two included monthly injection of sodium lactate in the injection wells and quarterly groundwater monitoring in the injection and performance monitoring wells. Maintenance of the lactate-storage and transfer facility and the two trailer-mounted injection systems and repairs to the injection wells were performed as necessary. RA-O was conducted in accordance with the *Remedial Action Work Plan, Main Installation, Rev. 1* (RAWP) (MACTEC, 2005a) and the *Main Installation Final Remedial Design, Rev. 1* (RD) (CH2MHILL, 2004). Groundwater sampling and laboratory analyses were performed in accordance with the *Remedial Action Sampling and Analysis Plan, Defense Depot Memphis, Tennessee, Rev. 1* (RA SAP) (MACTEC, 2005b).

1.1 SITE LOCATION AND DESCRIPTION

DDMT is located in southeastern Memphis, Shelby County, Tennessee approximately 5 miles east of the Mississippi River and just northeast of Interstate 240 (Figure 1). DDMT originated as a military facility in the early 1940s; it received, warehoused, and distributed supplies common to all U.S. military services and some civil agencies located primarily in the southeastern United States, Puerto Rico, and Panama. Stocked items included food; clothing; petroleum products; construction materials; and industrial, medical, and general supplies. In 1995, DDMT was placed on the list of the Department of Defense facilities to be closed under Base Realignment and Closure. Storage and distribution of material continued until the facility closed in September 1997.

The property consists of approximately 642 acres and includes the MI and Dunn Field. The MI contains approximately 578 acres with open storage areas, warehouses, former military family housing, and outdoor recreational areas. Dunn Field, which is located across Dunn Avenue from the north-northwest portion of the MI, contains approximately 64 acres and includes former mineral storage and waste disposal areas.

In 1992, DDMT was added to the National Priorities List (57 Federal Register 47180 No. 199). The lead agency for the environmental restoration activities at DDMT is the Defense Logistics Agency. The regulatory oversight agencies are U.S. Environmental Protection Agency (USEPA) Region 4 and the Tennessee Department of Environment and Conservation (TDEC). DDMT's USEPA Identification Number is TN4210020570.

1.2 GEOLOGY AND HYDROGEOLOGY

The geologic units of interest are (from youngest to oldest): loess, including surface soil; fluvial deposits; Jackson formation/Upper Claiborne group; and Memphis Sand.

The loess consists of wind-blown and deposited, brown to reddish-brown, low-plasticity clayey silt to silty clay. The loess deposits are about 20 to 30 feet thick and are continuous throughout the DDMT area.

The fluvial (terrace) deposits consist of two general layers. The upper layer is a silty, sandy clay that transitions to a clayey sand and ranges from about 10 to 40 feet thick. The lower layer is composed of interlayered sand, sandy gravel, and gravelly sand, and has an average thickness of approximately 40 feet. The uppermost aquifer is the unconfined fluvial aquifer, which consists of saturated sands and gravelly sands in the lower portion of the fluvial deposits. Recharge to this unit is mainly from rainfall infiltration; discharge is to underlying units or laterally into adjacent stream channels. The saturated thickness ranges from 0 feet (dry) to approximately 60 feet, and is controlled by the uppermost clay in the Jackson formation/Upper Claiborne group. Groundwater flow in the fluvial aquifer on the MI is toward the gap in the uppermost clay in the northwest area of the facility. The flow is toward the low point on the gap's southeast side, and the fluvial aquifer is dewatered (or "pinches out") elsewhere on the gap's perimeter. Water level elevations in the fluvial aquifer at the MI range from a high of approximately 240 feet mean sea level (msl) in the northeast to a low of approximately 195 feet msl in the central area.

The intermediate aquifer is locally developed in Jackson formation/Upper Claiborne group deposits, which contain laterally extensive, thick clay deposits. The uppermost clay unit appears to be continuous, except for a large gap in the MI's northwestern area and Dunn Field's southwestern area. There are other possible gaps in the clay off-site, west and northwest of Dunn Field. Where present, these gaps create connections to the underlying intermediate aquifer from the fluvial deposits. Water level elevations in the intermediate aquifer, away from areas of recharge from the fluvial aquifer, are approximately 160 feet msl with a general westward flow.

The Memphis Sand primarily consists of thick-bedded, white to brown or gray, very fine-grained to gravelly, partly argillaceous and micaceous sand. The Memphis Sand ranges from 500 to 890 feet in thickness and begins at a depth below ground surface (bgs) of approximately 120 to 300 feet. The only monitoring well (MW) completed in the Memphis Sand at DDMT is MW-67. The top of the Memphis Sand was identified at 255 feet bgs (elevation of 21 feet above msl). The Memphis aquifer is confined by overlying clays and silts in the Cook Mountain formation (part of the Jackson/Upper Claiborne group) and contains groundwater under strong artesian (confined) conditions regionally. The City of Memphis

obtains the majority of its drinking water from this unit. The Allen Well Field, which is operated by Memphis Light, Gas and Water, is located approximately 2 miles west of DDMT. The Memphis aquifer potentiometric surface at MW-67 is approximately 160 feet msl.

1.3 GROUNDWATER CONDITIONS

Groundwater beneath the MI contains elevated concentrations of chlorinated volatile organic compounds (CVOCs). Nine CVOCs were detected most frequently in past groundwater sampling events:

- Tetrachloroethene (PCE)
- Trichloroethene (TCE)
- cis-1,2-Dichloroethene (cDCE)
- trans-1,2-Dichloroethene (tDCE)
- 1,1-Dichloroethene
- 1,1,2,2-Tetrachloroethane
- 1,1,2-Trichloroethane
- Carbon tetrachloride (CT)
- Chloroform (CF)

The wells with the highest pre-treatment CVOC concentrations were located in the southwest and southeast sections of the MI (Figure 2). These areas, target treatment areas TTA-1 and TTA-2, contained several operational areas that could have resulted in groundwater contamination, and multiple sources are considered responsible for the detected groundwater contamination. The CVOCs most frequently detected above maximum contaminant levels (MCLs) are PCE, TCE, cDCE, CT and CF.

1.4 MAIN INSTALLATION ROD REQUIREMENTS

Remedial action objectives (RAOs) and the selected remedy were presented in *Main Installation Final Record of Decision* (ROD) (CH2MHILL, 2001). The RAOs were developed to allow the transfer and lease of the MI for its intended land use. The groundwater RAOs are:

- to prevent human ingestion of water contaminated with volatile organic compounds (VOCs) in excess of MCLs from potential future onsite wells;
- to reduce concentrations of chemicals of concern to MCLs or lower; and
- to prevent horizontal and vertical offsite migration of groundwater contaminants in excess of MCLs.

The MCLs are 5 micrograms per liter (µg/L) for PCE, TCE, and CT, and 70 µg/L for cDCE. The MCL for total trihalomethanes, which includes CF, is 80 µg/L.

The selected remedy for the MI contained several components. One component, excavation and offsite disposal of lead-contaminated soil, was completed prior to final execution of the ROD. The remaining components are:

- Land use controls (LUCs)
- EBT of CVOCs in TTA-1 and TTA-2.

- Long-term groundwater monitoring (LTM) outside the EBT areas.

This RA-O report describes the EBT activities during Year Two. LUCs have been implemented through a Notice of Land Use Restrictions recorded on 26 January 2005 and annual inspection reports. LTM is being conducted through periodic groundwater sampling events and is reported in separate annual reports.

1.5 REMEDIAL ACTION CONSTRUCTION

Remedial action construction (RA-C) was completed in August 2006 and included the lactate storage and transfer facility, two injection trailers, and injection and performance monitoring wells. System construction was documented in the *Main Installation Remedial Action Completion Report, Rev.0* (HDR|e^{2}M, 2006).

A total of 49 injection wells (IWs) and 30 performance monitoring wells (PMWs) were installed in TTA-1 and TTA-2 (Figures 3 and 4). The well installations in each area are listed below:

- TTA-1 South (MW101 Area): 27 IWs at 9 locations (3-well clusters) and 16 PMWs at 8 locations (2-well clusters).
- TTA-1 South (MW21 Area): 10 IWs at 5 locations (2-well clusters) and 5 PMWs
- TTA-2 (MW85 and MW92 Areas): 12 IWs and 9 PMWs

The final construction inspection was held at the MI on 28 September 2006 with representatives from USEPA, TDEC, and HDR|e^{2}M.

Four wells in TTA-2, two injection wells (IW-85-03 and IW85-04) and two monitoring wells (PMW85-02 and PMW85-03), were determined to have been installed in a perched zone above a relatively continuous clay layer 5 to 10 feet above the water level in surrounding wells. Three of the wells (IW85-03, PMW85-02 and PMW85-03) were abandoned in February 2007. One well, IW85-04 was not abandoned to allow for future monitoring and or injections. Replacement injection wells (IW85-05 and IW85-06) and monitoring wells (PMW85-04 and PMW85-05) were installed within 5 feet of the original locations in February 2007. Abandonment of existing wells, and installation and development of replacement wells were documented in the *Main Installation Enhanced Bioremediation Treatment, Year One Remedial Action Operations Report* (HDR|e^{2}M, 2008).

1.6 YEAR ONE RAO

Year One EBT operations consisted of bi-weekly injection of a two-percent sodium lactate solution into the injection wells in TTA-1 and TTA-2. The initial injection volume per injection well was 167 gallons

in TTA-1 MW-21 area, 250 gallons in TTA-1 MW-101 area, and 111 gallons in TTA-2. The injection volume was increased in the MW-21 area to 500 gallons per well to improve lactate distribution. Groundwater monitoring included field measurements in injection wells prior to the injections and laboratory analysis of groundwater samples from injection wells and monitoring wells. Groundwater samples were collected during a baseline event, two design monitoring events during the first quarter of injections, and four quarterly events. Year One operations and monitoring results were described in the *Main Installation Enhanced Bioremediation Treatment, Year One Remedial Action Operations Report* (HDR|e²M, 2008).

The EBT system generally met the Operating Properly and Successfully (OPS) criteria in the RAWP although some treatment areas responded better than others. The injection and performance monitoring wells were installed at the locations and to the depths planned; the planned volumes of sodium lactate were injected; and the lactate was distributed within the treatment areas but not as widely as planned. There appear to be preferential pathways of groundwater flow, which limited distribution of lactate, particularly in the MW-21 area of TTA-1.

Anaerobic aquifer conditions were created within the EBT zones where lactate was present and the areas expanded during Year One. Anaerobic conditions in the MW-21 area were generally limited to the injection wells. Concentrations of PCE and TCE in groundwater began to decrease shortly after injections began. Concentrations decreased in all areas, even where anaerobic conditions were not widespread, although decreases were greater where there was a demonstrated creation of anaerobic conditions. Concentrations of cDCE, a product of the reductive dechlorination of PCE and TCE, increased in the EBT zones.

Total organic carbon (TOC) was the most useful indicator of active reductive dechlorination. An increase in TOC at an EBT well correlated to an increase in organic carbon (metabolic fatty acids [MFAs]), carbon dioxide, methane, hydrogen and alkalinity. There was a corresponding decline in nitrate and sulfate as they were used as anaerobic electron acceptors, followed by declines in CVOC concentrations. Review of the data suggested that reductive dechlorination was generally occurring where TOC is above 40 to 50 milligrams per liter (mg/L).

The report included the following recommendations to revise the monitoring program and improve the effectiveness of EBT:

- Limit laboratory analyses of quarterly groundwater samples to TOC, dissolved gases (methane, carbon dioxide, ethene and ethane), MFAs and VOCs.

- Use selected monitoring wells for injections in areas where TOC concentrations have not increased and indications of microbial activity have not been observed.
- Add cellulose to the injection solution to provide a slower acting carbon source and increase the microbial population available for reductive dechlorination.
- Inject a bacterial consortium to increase the biodegradation of the parent compounds and daughter products.

The recommendations were implemented during Year Two and are described further below.

2.0 EBT OPERATIONS AND MAINTENANCE

2.1 SODIUM LACTATE INJECTION PROCEDURES

Sodium lactate was injected in all injection wells on a monthly schedule during the second year of RA-O. Each injection event included the following activities:

- Field measurement of groundwater dissolved oxygen (DO), oxidation reduction potential (ORP), pH, temperature, and conductivity in all injection and performance monitoring wells prior to sodium lactate injection. Field measurements were completed in an area prior to injections.
- Filling the trailer-mounted storage tank with sodium lactate injection fluid and additives.
- Injections of sodium lactate at TTA-1 and TTA-2 in the order of injection well numbering, starting at IW21-01, IW101-01, IW85-01, and IW92-01, respectively.

At the completion of each injection event, the trailer-mounted injection system was returned to the storage and transfer facility and rinsed with potable water to prevent biological growth in the storage tank or in other components between injection events. Rinse water was discarded in a grassed area adjacent to Building 265.

2.1.1 Field Measurements

Field measurements were made to document the creation and maintenance of anaerobic aquifer conditions within the EBT zones and were recorded on forms provided in the RAWP. Field measurements were collected before each injection event. When groundwater samples were collected, the pre-injection field measurements were used to confirm stabilization prior to sampling.

For performance monitoring wells with dedicated bladder pumps, measurements were made at the surface using a flow-through cell. Measurements were recorded at approximately 5-minute intervals until the readings stabilized. For injection wells and performance monitoring wells without dedicated pumps, the measurement probe was lowered to the middle of the screened interval and measurements were recorded at 5-minute intervals as with the flow-through cell.

During monitoring events when a sample was to be collected from a well, the well was purged with either a dedicated or portable bladder pump. The parameters were allowed to stabilize in accordance with the RA SAP and the last set of stabilization measurements were used for the pre-injection measurements.

2.1.2 Injection Procedures

Sodium lactate concentrate was pumped to the trailer-mounted 500-gallon storage tank from bulk containers in the concrete-bermed storage and transfer area in Building 265. The initial injection mix was 18 gallons of sodium lactate concentrate (60 percent sodium lactate by weight) and 482 of gallons potable water to create a 2.16 percent sodium lactate injection solution. Digital batch controllers were used to deliver the proper volumes of concentrate and water to the storage tank. A tank-mounted mixer blended the tank contents following filling activities until injections were completed.

Field technicians towed the trailer-mounted tank to individual injection wells. At the injection well, sodium lactate mixture was transferred from the storage tank to the injection well via a flexible hose and transfer pump. Flow rates and pressures were monitored to ensure hose pressures did not exceed 35 pounds per square inch (psi) and a blow-off valve installed at each injection well prevented the well from being over pressurized. Injection volume at each well was monitored using a trailer-mounted totalizer and recorded on the injection form.

2.1.2.1 Year One Changes to Injection Procedures

The initial injections were made as outlined in the RAWP. Changes to injection procedures were made during Year One based on field observations and measurements.

The injection flow rate was increased from 10 gallons per minute (gpm) up to 30 gpm to speed the injection process where the injection wells would accept the higher flow rate without exceeding hose pressure of 35 psi. This change was implemented during the initial injections following testing of the injection wells.

One pound of sugar was added during mixing of each tank of lactate solution in order to remove DO from the near well bore and to improve molecular oxygen removal. Lactate is a preferred substrate for anaerobic bacteria. However, other substrates such as starch or sucrose are preferred for aerobic or nitrate-reducing microorganisms. Addition of table sugar is effective at quickly creating anaerobic conditions. This recommendation was implemented during Injection 13 beginning 26 February 2007.

The RD provided for larger injections volumes at TTA-1 (relative to screen length) than at TTA-2 based on calculated substrate demand. The initial injection volumes at TTA-1 were 167 gallons for each 10-foot screen and 250 gallons for each 15-foot screen, while at TTA-2 initial injection volumes were 111 gallons for each 10-foot screen. The injection volume in the MW-21 area of TTA-1 was increased due to the lack of response observed in the monitoring wells in that area. The volume per well was increased from 167

gallons to 250 gallons during Injection 13 and then increased to 500 gallons per well during Injection 19 on 23 May 2007.

2.1.2.2 Year Two Changes to Injection Procedures

Changes to injections procedures were made during Year Two following approval of the recommendations in the Year One report. The changes from Year One, addition of sugar and the increased injection volumes, were continued.

Beginning with Injection 34 in April 2008, injections were made in nine selected monitoring wells to increase the area being treated (IW-01, PMW21-01, PMW21-02, PMW-21-04, PMW85-05, PMW92-01, PMW92-05, PMW101-08A and B). The target injection volumes were generally the same as nearby injection wells, although the injection flow rate was reduced, where necessary. The injection volumes were increased occasionally based on field measurements. The injections in TTA-2 were increased to 250 gallons per well for Injection 37 in July 2008; the volumes for injection wells were decreased to 167 gallons per well in following monthly injections, but the volumes were maintained at 250 gallons per well in the TTA-2 monitoring wells receiving injections.

EBT performance monitoring procedures were not changed due to injections in the listed monitoring wells. Samples were collected from all injection and performance monitoring wells and the sampling and analytical procedures remained the same, except for the change to laboratory analyses described in Section 3.0.

Beginning with Injection 37 in July 2008, the baseline percentage of lactate in the solution was increased from 2.2 percent to 4.3 percent (36 gallons of sodium lactate concentrate and 464 gallons of water). Pre-injection ORP measurements were reviewed prior to each injection event and the concentration was increased further in selected wells. The change was made because ORP measurements and TOC concentrations had decreased since the injections had been decreased from biweekly to monthly in September 2007. Prior to the initial event in July 2008, ORP and TOC concentration trends were reviewed, and wells with low TOC, high ORP or no indication of reductive dechlorination had an 8.6 percent solution injected. In following monthly injections, wells with an ORP greater than -100 received a solution with double the previous month's sodium lactate concentration and wells with an ORP less than -250 received half the previous month's concentration, except that the concentration did not go below 4.3 percent. Summary data sheets for the Year Two injections listing the injection volume and, after Injection 37, the lactate concentration are provided in Appendix A.

Also beginning with Injection 37, cellulose was added as an electron donor to provide a slower acting carbon source and to increase the microbial population used for reductive dechlorination. A premeasured packet with two pounds of cellulose powder from AR Environmental was added to each 500-gallon tank. The initial conversion of cellulose is by fermentative bacteria and some clostridia (fermentative bacteria) are capable of dechlorinating cDCE. By mixing substrates, a wider range of microorganisms can be employed for the reductive dechlorination process. In addition, the cellulose may not move from the injection point as quickly, increasing TOC at those injection wells where little increase has been observed.

Beginning with Injection 38 in August 2008, bacterial consortia developed by AR Environmental were added to each well to increase the biodegradation of the parent compounds and daughter products. Four gallons of bacterial suspension were poured into each injection point (injection wells and selected monitoring wells) immediately before the lactate solution and additives were injected during Injections 38 and 39 (August and September). One gallon of bacterial suspension was added to each well before Injections 40 and 41 (October and November). AR Environmental considered this sufficient to provide a microbial population capable of performing the necessary reductive dechlorination.

The lactate injections for EBT were to be completed in August 2008. The monthly injections were extended through February 2009 in order to allow time to implement the changes described above.

2.2 SYSTEM MAINTENANCE

System maintenance activities for EBT injection equipment and instruments are performed in accordance with the Operations & Maintenance Manual (HDR|e^{2}M, 2007) and manufacturer recommendations. The equipment identified in the RAWP and the maintenance activities are summarized below.

- Field monitoring equipment - The Horiba U-22XD water quality meter was returned to the manufacturer for repair when found to be inoperable or inaccurate.
- Batch Controller - The drum pump that transfers the sodium lactate through the batch controllers into the trailer tanks failed and was replaced.
- Mechanical Equipment –trucks, generators, forklift, mixers, transfer pumps and gauges
    - The trucks and forklift had required maintenance performed under their lease agreements.
    - Regular maintenance was performed every 100 hours on the generators per manufacturing guidelines, including oil changed and air filters cleaned and inspected. Same maintenance procedures completed on the trash pump and portable air compressor.

- Injection Trailer - Several flat tires were repaired for both trailers.
- General facility maintenance in Building 265 – The building was cleaned on a weekly basis.

3.0 GROUNDWATER MONITORING

Groundwater monitoring was performed to evaluate success of EBT in creating anaerobic conditions in the aquifer and reducing concentrations of CVOCs in groundwater. The EBT groundwater monitoring network consisted of the 49 injection wells and 30 performance monitoring wells installed during RA-C and 8 existing monitoring wells previously used for LTM. Monitoring included primary and secondary performance parameters. The primary parameters were laboratory analyses of VOCs and geochemical parameters for indicators of anaerobic degradation. The geochemical parameters were anions (bromide, chloride, nitrate, nitrite, sulfate and sulfide), alkalinity, total organic carbon, MFA, dissolved gases (ethane, ethane, methane and hydrogen) and metals (arsenic, manganese and selenium). Secondary parameters consisting of DO, ORP, pH, conductivity and temperature, were measured prior to each injection event. When groundwater samples were collected, the field measurements were also used to confirm stabilization; the injections were made after sampling was completed.

During Year Two, laboratory analyses of geochemical parameters were reduced as recommended in the Year One report. Analyses were performed for TOC, dissolved gases (methane, carbon dioxide, ethene and ethane), and MFAs. TOC was monitored to assure that the substrate was sufficient to drive the reductive dechlorination process. Methane and carbon dioxide were useful as direct indicators of microbial growth, and ethene and ethane were included in the same analysis. MFAs provide supporting information for TOC in regard to microbial activity. Other parameters (anions, alkalinity, metals, hydrogen) included during Year One were not considered to provide necessary information. There was either little difference in these parameters at locations where reductive dechlorination was active or not active, or the necessary information was provided by the remaining analyses.

There were five groundwater monitoring events during Year Two, EBT-5 through EBT-9, in December 2007; March, June and December 2008; and March 2009. The event planned for September 2008 was delayed three months while the changes to injection procedures discussed in Section 2.1.2.2 were implemented. The sample schedule for the second year of RA-O is provided on Table 1.

3.1 MONITORING PROCEDURES

Groundwater samples were collected using low-flow purging methods from 49 injection wells and 38 monitoring wells. Samples were collected using dedicated PVC or stainless steel bladder pumps in all monitoring wells, except MW-101, and with stainless steel portable pumps in the injection wells. MW-101 has three screened intervals; groundwater samples were collected from the top and bottom screened intervals. Teflon® bladders and Teflon®-lined polyethylene tubing were used for each well. Following

sampling, the bladders and tubing for each well without a dedicated pump were placed in separate, sealed plastic bags and stored for future sample events. The pumping rate at each well was set such that the water levels would not decline more than 1.2 inches (0.1 foot). Field quality control samples (field duplicates, trip blanks, field equipment blanks, and matrix spike/matrix spike duplicates [MS/MSD]) were collected to evaluate sampling techniques and decontamination procedures.

Water quality parameters were measured at 5 to 10 minute intervals during purging using a flow-through cell with either a Horiba U-22XD or a YSI 556. The units are similar, except that the Horiba has an internal turbidity meter; a HACH 2100P turbidity meter is used with the YSI. The units were calibrated each morning prior to sampling, and if abnormal readings were observed during the day, the instruments were recalibrated in the field. Purging continued up to two hours to meet the stabilization criteria in the RA SAP: three successive readings within $\pm$0.1 for pH, $\pm$10 milliVolts for ORP, $\pm$3 percent for specific conductance, <20 nephelometric turbidity unit (NTU) for turbidity, and $\pm$10 percent for DO. Samples were collected when stabilization criteria were met or the field team leader approved the variance from the criteria. All measurements were recorded on field sampling forms. Specific variances are discussed for each sample event in section 3.2. Variances were generally limited to the turbidity criterion (5 to 15 wells per event); during one event, DO readings at 9 wells were not usable due to a meter malfunction.

During sampling, HACH Instruments field test kits were used to measure ferrous iron and carbon dioxide. The samples were collected according to the manufacturer's instructions. The test kit for carbon dioxide includes three ranges: 0 to 10 mg/L, 0 to 50 mg/L, and 0 to 100 mg/L. The test was repeated with decreasing range until the measured concentration was within the narrowest range.

Water levels measurements were made prior to each sample event. Measurements were made using a Solinist Model 101 water level meter with an electronic sensor and tape graduated in 0.01-foot increments.

3.2 YEAR TWO MONITORING

Groundwater samples were collected immediately before the first injection event of the following quarter; the pre-injection field measurements for that event were used to confirm stabilization prior to sample collection. The sample dates for each event and the associated injection event are stated in the following sections.

3.2.1 EBT-5

EBT-5 groundwater samples were collected from the 87 EBT injection and performance monitoring wells on 10 to 19 December 2007 prior to Injection 30. Water levels were measured in all EBT wells on 7 December 2007. Samples were sent to Kemron Environmental Services in Marietta, Ohio for analysis. The final stabilization measurements and the field test results for ferrous iron and carbon dioxide in the first quarter event are shown on Table 2. The samples were collected according to the procedures described above with the following exceptions:

- Samples were collected from 8 wells (IW21-04A, IW21-04B, IW21-05A, IW92-04, IW92-05, IW92-08, IW101-05A, IW101-06A,) with elevated turbidity measurements (24.4 NTUs to 99.5 NTUs) after purging the wells for a minimum of two hours.

3.2.2 EBT-6

EBT-6 groundwater samples were collected from the 87 EBT injection and performance monitoring wells on 10 to 19 March 2008 prior to Injection 33. Water levels were measured in all EBT wells on 7 March 2008. Samples were sent to Microbac Laboratories (formerly Kemron) in Marietta, Ohio for analysis. The final stabilization measurements and the field test results for ferrous iron and carbon dioxide in the second quarter event are shown on Table 3. The samples were collected according to the procedures described above with the following exceptions:

- Samples were collected from 5 wells (IW21-05A, IW92-02, IW92-04, IW92-05, and IW92-08) with elevated turbidity measurements (24.4 NTUs to 76.2 NTUs) after purging the wells for a minimum of two hours.
- DO readings at 9 wells (IW92-02, IW92-03, DR2-5, PMW21-02, PMW-21-03, PMW85-01, PMW85-05, PMW92-02, and PMW92-03) are suspect due to a meter malfunction.

3.2.3 EBT-7

EBT-7 groundwater samples were collected from the 87 EBT injection and performance monitoring wells on 9 to 19 June 2008 prior to Injection 36. Water levels were measured in all EBT wells on 6 June. Samples were sent to Microbac Laboratories in Marietta, Ohio for analysis. The final stabilization measurements and the field test results for ferrous iron and carbon dioxide in the third quarter sampling event are shown on Table 4. The samples were collected according to the procedures described above with the following exceptions:

- Samples were collected from 7 wells (IW92-06, IW92-07, IW92-08, PMW101-04A, PMW85-05, PMW92-04, PMW92-05) with elevated turbidity measurements (20 NTUs to 48.7 NTUs) after purging the wells for a minimum of two hours.

3.2.4 EBT-8

EBT-8 groundwater samples were collected from the 87 EBT injection and performance monitoring wells on 8 to 17 December prior to Injection 42. Water levels were measured in all EBT wells on 5 December 2007. Samples were sent to Microbac Laboratories in Marietta, Ohio for analysis. The final stabilization measurements and the field test results for ferrous iron and carbon dioxide in the fourth quarter sampling event are shown on Table 5. The samples were collected according to the procedures described above with the following exceptions:

- Samples were collected from wells (IW21-01B, IW21-02A, IW21-02B, IW21-03B, IW21-04A, IW85-01, IW85-02, IW85-06, IW92-03, IW92-04, IW92-05, IW92-07, IW92-08, PMW85-05, PMW92-01) with elevated turbidity levels ranging from 23.2 to 343 NTUs after two hours of purging.

3.2.5 EBT-9

EBT-9 groundwater samples were collected from the 87 EBT injection and performance monitoring wells on 9 to 17 March 2009 following the final injections in February. Water levels were measured in all EBT wells on 6 March 2009. Samples were sent to Microbac Laboratories in Marietta, Ohio for analysis. The final stabilization measurements and the field test results for ferrous iron and carbon dioxide in the fourth quarter sampling event are shown on Table 6. The samples were collected according to the procedures described above with the following exceptions:

- Samples were collected from (IW-01, IW21-03B, IW21-05A, IW85-01, IW85-02, IW85-06, IW92-03, IW92-04, IW92-05, ,IW92-06, IW92-07, IW92-08, IW101-08C, PMW92-01, PMW92-05) with elevated turbidity levels ranging from 32.1 to 427 NTUs after two hours of purging.

3.3 IDW MANAGEMENT

The waste generated during RA-O was classified as either non-investigative waste or investigation-derived waste (IDW). Non-investigative waste, such as packaging materials, personal protective equipment, disposable sampling supplies, and other inert refuse, was collected, containerized, and transported to a designated collection bin for disposal at a municipal landfill.

During each groundwater sampling event, the IDW consisted of wastewater from equipment decontamination and groundwater from purging prior to sampling. The purge water and wastewater generated during sampling were transported using sealed 5-gallon buckets to a 550-gallon polyethylene tank on Dunn Field. A grab sample was collected when the tank was full and the water was discharged following approval of a one-time discharge request from the City of Memphis.

4.0 SUMMARY OF MONITORING RESULTS

4.1 HYDROGEOLOGY

Water level measurements for the five monitoring events are shown on Table 7. Groundwater contour maps for TTA-1 and TTA-2 during each sample event are shown on Figures 5 through 14.

- The groundwater flow is generally to the east-northeast in TTA1, but it varies locally from easterly in the MW-21 area to northerly in the MW-101 area.
- The groundwater flow is generally to the southwest in TTA2.

4.2 FIELD MEASUREMENTS – SECONDARY PARAMETERS

Field measurements of secondary parameters were measured in all injection and performance monitoring wells prior to injections in each area. The results are used to document the creation and maintenance of anaerobic aquifer conditions within the EBT zones. The RAWP identified specific metrics for anaerobic aquifer conditions:

- ORP: Sustained in the range of -50 mV to – 200 mV to promote conditions favorable for reductive dechlorination and less favorable for methanogenesis
- DO: Sustained at concentrations less than 1 mg/L
- pH: Sustained between 6 and 8 standard units

Summary data sheets for each round of pre-injection measurements during Year One are provided in Appendix B. Review of the Year One data indicated the ORP measurements provided the most consistent and representative indicator of aquifer conditions. DO measurements were apparently affected by the lactate solution and results were variable and, in many cases, unrealistic (greater than 6 mg/L). The pH was consistently near 6 in all wells.

The pre-injection ORP measurements for Injections 27 through 44 are summarized separately for IWs and MWs in each treatment area in Appendix C (C-1 through C-3). The dominant terminal electron acceptor (TEA) in a well for each measurement is denoted on the tables by blue, yellow, green, orange and red shading of data points denoting oxygen, nitrate, iron, sulfate and carbon dioxide (methanogenic), respectively. The following assumptions were made:

1) Aerobic conditions are represented by an ORP of 200 mV or higher.
2) Nitrate reduction is the dominant TEA process from 200 to -50 mV.
3) Iron reduction is the dominant TEA process from -50 to -220 mV.
4) Sulfate reduction is dominant between -220 and -240 mV.

5) Methanogenesis will occur below -240 mV.

ORP values in the iron reducing stage -50 to -220 mV and below are indicative of anaerobic conditions.

TTA-1 MW-21 area: Initial Year Two ORP values in the injection wells were in the nitrate reduction range then decreased into the iron-reduction range for most of Year 2 with some wells occasionally exhibiting sulfate-reduction or methanogenic conditions in late 2008 and into 2009. The monitoring wells in the MW-21 area initially indicated aerobic conditions but decreased to nitrate reduction for most of the year (see Appendix C- 1).

In the TTA-1 MW-101 area, the ORP values in the injection wells were in the iron reduction range throughout the year, with some wells decreasing to sulfate-reduction or methanogenic conditions in late 2008 and into 2009. The ORP values in the monitoring wells in the MW-101 area were in the nitrate reduction or iron reduction range throughout Year Two (see Appendix C-2).

In the TTA-2 area, the injection well ORP values were in the lower nitrate to iron reduction range with a substantial number of wells exhibiting sulfate reduction and methanogenesis towards the latter part of the year and into 2009. The monitoring wells in TTA-2 had ORP values primarily in the nitrate range throughout 2008 and into 2009 (see Appendix C-3).

The effect of lactate injections in selected monitoring wells beginning in April 2008 can be seen in the ORP values for those wells in all three areas. The monitoring wells used for injections are noted in Appendix C.

4.3 GEOCHEMICAL RESULTS

Geochemical analyses were performed on groundwater samples collected during five monitoring events, EBT-5 through EBT-9, to evaluate the extent of anaerobic degradation. Groundwater samples were collected from 49 injection wells and 38 monitoring wells; samples were collected from two screened intervals in MW-101. The geochemical parameters were TOC, MFAs and dissolved gases (carbon dioxide, ethane, ethene and methane). Samples collected during EBT-5 through EBT-7 were also analyzed for anions (bromide chloride, nitrate, nitrite, sulfate, and sulfide), alkalinity, dissolved gas (hydrogen) and metals (arsenic, manganese, and selenium). Laboratory analytical parameters were reduced for EBT-8 and EBT-9 in accordance with recommendations in the Year One report. The complete analytical results for geochemical analyses of Year Two groundwater samples are presented in Appendix D (Tables D-6 through D-10).

4.3.1 Data Quality Evaluation

Geochemical data collected during the five Year Two sampling events were reviewed based on guidelines in the RA SAP. The review was completed by an independent data validation contractor, Diane Short and Associates, Inc (DSA) and summarized by HDR|e²M. Based on the review and project data quality objectives (DQOs), the geochemical data are acceptable and usable except for those results flagged as rejected. Data flagged as rejected (R) are unusable. Data flagged as estimated (J) or having estimated reporting limits (RLs) (UJ) are acceptable and usable, with an understanding of the data limitations.

Detailed evaluations of data quality for Year Two sampling events are provided in Appendix E, with the data narratives prepared by DSA. The significant findings are summarized below.

Rejected data were limited to the following:

- carbon dioxide results in 9 samples in the EBT-7 sampling event were flagged rejected due to closing calibrations which did not meet the 30% D (drift) criterion for the method RSK-175.
- a pyruvic acid result in one sample from the EBT-8 event was flagged rejected based upon low MS/MSD recovery.

Geochemical data from all five EBT events were flagged as estimated J with the following primary causes:

- In the analysis of EBT-7 geochemical samples, an RSK-175 instrument malfunction causing missed holding times, which resulted in estimated carbon dioxide and methane data in several samples. Holding times were also missed for several samples in EBT-6 resulting in J flags for nitrate and nitrite data.
- Carbon dioxide was typically problematic in the RSK-175 method due to high levels causing calibrations outside of criterion. This resulted in the flagging of carbon dioxide as J in samples for all events. Other analytes qualified on the basis of calibration included nitrate in EBT-5, TOC in EBT-6 and EBT-7, and bromide in EBT-7.
- Several samples were qualified J based on laboratory calibration standard (LCS) discrepancies in EBT-5, EBT-6 and EBT-7 including nitrate, carbon dioxide, and methane.
- Several analytes in samples from EBT-5, EBT-6 and EBT-7 were qualified J for low MS/MSD recoveries, including alkalinity, chloride, TOC, sulfate, and selenium,

Overall, the geochemical data met project DQOs and were determined to be sufficient and valid for supporting decisions regarding the efficiency of EBT in the treatment areas.

4.3.2 Geochemical Analytical Results

Quarterly monitoring of geochemical parameters was performed to evaluate the success of EBT in creating conditions favorable for reductive dechlorination in the aquifer. The geochemical analytical results for the Year Two events are shown by treatment area on Tables 8, 9 and 10. A summary of the mean concentrations for TOC, dissolved gases (ethane, ethene, methane, and carbon dioxide) and MFAs in injection wells and monitoring wells in each treatment area are shown on Table 11 for the baseline (September 2006) and the Year Two events.

The injection wells in all treatment areas had substantial increases and remained high in TOC, most MFAs, carbon dioxide, and methane. Selected monitoring wells used for injections after April 2008 (IW-01, PMW21-01, PMW21-02, PMW-21-04, PMW101-08A/B, PMW85-05, PMW92-01, and PMW92-05) exhibited increasingly higher levels of MFA, carbon dioxide, methane, and TOC following injections (EBT-7 through EBT-9).

Monitoring wells in all treatment areas showed significant increases above the baseline and Year One in MFAs. However, only 5 of 16 monitoring wells in the MW-101 area had reported levels of MFA in EBT-9. Although not as pronounced as in injection wells, TOC values were consistently above the baseline in the monitoring wells in all EBT areas.

Methane concentrations generally increased and remained high throughout Year Two in the injection and monitoring wells in all EBT areas, indicating significant biological activity. Ethane and ethene were not detected in either injection or monitoring wells.

4.4 VOLATILE ORGANIC COMPOUND RESULTS

VOC analyses were performed on groundwater samples collected during five monitoring events, EBT-5 through EBT-9. Groundwater samples were collected from 49 injection wells and 38 monitoring wells; samples were collected from two screened intervals in MW-101. The complete analytical results for VOC analyses of Year Two groundwater samples are presented in Appendix D (Tables D-1 through D-5).

4.4.1 Data Quality Evaluation

VOC data collected during the five Year Two sampling events were reviewed based on guidelines in the RA SAP. The review was completed by DSA and summarized by HDR|e²M. Based on the review and project DQOs, the VOC data are acceptable and usable except for those results flagged as rejected. Data flagged as rejected (R) are unusable. Data flagged as estimated (J) or having estimated RLs (UJ) are acceptable and usable, with an understanding of the data limitations.

Detailed evaluations of data quality for Year Two sampling events are provided in Appendix E, with the data narratives prepared by DSA. The significant findings are summarized below.

Rejected data were limited to the following:

- vinyl acetate results in 34 samples in the EBT-8 sampling event were flagged as rejected R based on calibrations missing criterion for the method SW8260B. Since this is not a contaminant of concern it is not expected to impact remedial decisions in the treatment areas.

VOC data from all five EBT events were flagged as estimated J with the following primary causes:

- Analytes were observed in some method blanks. Whenever methylene chloride or acetone was detected in associated samples at a level less than 10x the method blank (corrected for dilution), the result was qualified as UB. Such results are usable as nondetects. The "B"- qualified data were reported at levels below the RL and, therefore, should not adversely impact data quality. Several analytes were detected in the equipment blanks above RLs. When analytes are present in both the field blank and the associated samples, the results in the samples are qualified in the same manner as for method blanks. Since the analytes found in the blanks are not significant contaminants of concern (COCs) at the site, data quality is not expected to be adversely impacted.
- Results for several analytes in samples from the EBT-7 and EBT-8 were qualified estimated J based on the possibility of some bias associated with calibration drift, where a discrepancy in % D was observed.
- When a high LCS % recovery was associated with a non-detect in samples, no qualifier was added since the indicated bias is high. When the target is detected, the result is qualified as estimated J since data could be biased high proportional to the LCS %R. All results associated with low recoveries are qualified as estimated J. Several analytes in the EBT-7, EBT-8 and EBT-9 sample results were qualified as estimated J based on LCS recoveries.
- Results for several analytes in parent samples collected in EBT-6, EBT-7, EBT-8, and EBT-9 were qualified estimated J based on low MS/MSD recoveries. Most of these analytes are not COCs and will not impact the use of the data.

Overall, the VOC data met project DQOs and were determined to be sufficient and valid for supporting decisions regarding the effectiveness of the EBT system in the treatment areas.

4.4.2 VOC Analytical Results

The results for each sampling event are discussed in the following sections based on concentrations detected above the RL for the CVOCs that are the EBT target compounds and daughter products: PCE, TCE, tDCE, cDCE, vinyl chloride, CT and CF.

4.4.2.1 EBT-5 Results

EBT-5 sampling of injection and monitoring wells was performed 10 to 19 December 2007. Analytical results for the primary CVOCs and other VOCs detected above the RLs are shown by treatment area on Tables 12, 13 and 14.

Groundwater samples were collected from 17 wells in the MW-21 area. Table 12 lists the analytical results for all constituents detected above the RL in one or more samples. The analytical results for the primary groundwater contaminants were:

- PCE was reported in 16 wells with a maximum concentration of 178 µg/L in MW-21.
- TCE was reported in 16 wells with a maximum concentration of 49 µg/L in PMW21-04.
- cDCE was reported in 14 wells with a maximum concentration of 88.2 µg/L in IW21-01A.

Groundwater samples were collected from 45 wells in the MW-101 area. Table 13 lists the analytical results for all constituents detected above the RL in one or more samples. The analytical results for the primary groundwater contaminants were:

- PCE was reported in 40 wells with a maximum concentration of 125 µg/L in MW-101T.
- TCE was reported in 31 wells with a maximum concentration of 132 µg/L in PMW101-08B.
- cDCE was reported in 42 wells with a maximum concentration of 255 µg/L in IW101-07C.

Groundwater samples were collected from 25 wells in the TTA-2 area. Table 14 lists the analytical results for all constituents detected above the RL in one or more samples. The analytical results for the primary groundwater contaminants were:

- PCE was reported in 24 wells with a maximum concentration of 192 µg/L in DR2-1.
- TCE was reported in 21 wells with a maximum concentration of 39.3 µg/L in PMW85-05.
- cDCE was reported in 25 wells with a maximum concentration of 160 µg/L in PMW92-04.
- CT was reported in 15 wells with a maximum concentration of 158 µg/L in PMW85-05.
- CF was reported in 24 wells with a maximum concentration of 87.4 µg/L in IW85-05.

4.4.2.2 EBT-6 Results

EBT-6 sampling of injection and monitoring wells was performed 10 to 19 March 2008. Analytical results for the primary CVOCs and other VOCs detected above the RLs are shown by treatment area on Tables 15, 16 and 17.

Groundwater samples were collected from 17 wells in the MW-21 area. Table 15 lists the analytical results for all constituents detected above RLs in one or more samples. The analytical results for the primary groundwater contaminants were:

- PCE was reported in samples from 17 wells with a maximum concentration of 193 µg/L in PMW21-01.
- TCE was reported in samples from 17 wells with a maximum concentration of 54.2 µg/L in PMW21-01.
- cDCE was reported in samples from 13 wells with a maximum concentration of 80.2 µg/L in IW21-01A.

Groundwater samples were collected from 45 wells in the MW-101 area. Table 16 lists the analytical results for all constituents detected above RLs in one or more samples. The analytical results for the primary groundwater contaminants were:

- PCE was reported in samples from 38 wells with a maximum concentration of 113 µg/L in MW-101T
- TCE was reported in samples from 31 wells with a maximum concentration of an estimated 115J µg/L in PMW101-08B.
- cDCE was reported in samples from 41 wells with a maximum concentration of 325 µg/L in IW101-07C.

Groundwater samples were collected from 25 wells from the TTA-2 area. Table 17 lists the analytical results for all constituents detected above RLs in one or more samples. The analytical results for the primary groundwater contaminants were:

- PCE was reported in samples from 26 wells with a maximum concentration of 173 µg/L in PMW92-05.
- TCE was reported in samples from 24 wells with a maximum concentration of 38.7 µg/L in PMW85-05.
- cDCE was reported in samples from 25 wells with a maximum concentration of 179 µg/L in PMW92-06.

- CT was reported in samples from 17 wells with a maximum concentration of 154 µg/L in PMW85-05.
- CF was reported in samples from 26 wells with a maximum concentration of 143 µg/L in IW85-05.

4.4.2.3 EBT-7 Results

EBT-7 sampling of injection and monitoring wells was performed 9 to 19 June 2008. Analytical results for the primary CVOCs and other VOCs detected above the RLs are shown by treatment area on Tables 18, 19 and 20.

Groundwater samples were collected from 17 wells from the MW-21 area. Table 18 lists the analytical results for all constituents detected in one or more samples. The analytical results for the primary groundwater contaminants were:

- PCE was reported in samples from 16 wells with a maximum concentration of 154 µg/L in MW-21.
- TCE was reported in samples from 16 wells with a maximum concentration of 55.5 µg/L in PMW21-04.
- cDCE was reported in samples from 14 wells with a maximum concentration of 91.4 µg/L in IW21-01A.

Groundwater samples were collected from 45 wells from the MW-101 area. Table 19 lists the analytical results for all constituents detected in one or more samples. The analytical results for the primary groundwater contaminants were:

- PCE was reported in samples from 37 wells with a maximum concentration of 101 µg/L in MW-101T.
- TCE was reported in samples from 35 wells with a maximum concentration of 161 µg/L in PMW101-08B.
- cDCE was reported in samples from 42 wells with a maximum concentration of 311 µg/L in IW101-08C.

Groundwater samples were collected from 25 wells from the TTA-2 area. Table 20 lists the analytical results for all constituents detected in one or more samples. The analytical results for the primary groundwater contaminants were:

- PCE was reported in samples from 22 wells with a maximum concentration of 168 µg/L in PMW92-05.
- TCE was reported in samples from 21 wells with a maximum concentration of 34.5 µg/L in PMW85-05.
- cDCE was reported in samples from 25 wells with a maximum concentration of 178 µg/L in PMW92-06
- CT was reported in samples from 13 wells with a maximum concentration of 143 µg/L in PMW85-05.
- CF was reported in samples from 23 wells with a maximum concentration of 81.7 µg/L in IW85-01.

4.4.2.4 EBT-8 Results

EBT-8 sampling of injection and monitoring wells was performed 8 to 17 December 2008. Analytical results for the primary CVOCs and other VOCs detected above the RLs are shown by treatment area on Tables 21, 22 and 23.

Groundwater samples were collected from 17 wells from the MW-21 area. Table 21 lists the analytical results for all constituents detected in one or more samples. The analytical results for the primary groundwater contaminants were:

- PCE was reported in samples from 12 wells with a maximum concentration of 192 µg/L in MW-21.
- TCE was reported in samples from 10 wells with a maximum concentration of 23.9 µg/L in PMW21-01.
- cDCE was reported in samples from 15 wells with a maximum concentration of 96.8 µg/L in IW21-03A.

Groundwater samples were collected from 45 wells from the MW-101 area. Table 22 lists the analytical results for all constituents detected in one or more samples. The analytical results for the primary groundwater contaminants were:

- PCE was reported in samples from 32 wells with a maximum concentration of 65.4 µg/L in PMW101-08A.
- TCE was reported in samples from 30 wells with a maximum concentration of 103 µg/L in PMW101-08B.

- cDCE was reported in samples from 43 wells with a maximum concentration of 295 µg/L in IW101-07C.

Groundwater samples were collected from 25 wells from the TTA-2 area. Table 23 lists the analytical results for all constituents detected in one or more samples. The analytical results for the primary groundwater contaminants were:

- PCE was reported in samples from 18 wells with a maximum concentration of 137 µg/L in DR2-1.
- TCE was reported in samples from 12 wells with a maximum concentration of 26.6 µg/L in PMW85-05.
- cDCE was reported in samples from 25 wells with a maximum concentration of 193 µg/L in PMW92-06.
- CT was reported in samples from 5 wells with a maximum concentration of an estimated 112J µg/L in DR2-5.
- CF was reported in samples from 17 wells with a maximum concentration of 98.7 µg/L in PMW85-05.

4.4.2.5 EBT-9 Results

EBT-9 sampling of injection and monitoring wells was performed 9 to 17 March 2009. Analytical results for the primary CVOCs and other VOCs detected above the RLs are shown by treatment area on Tables 24, 25 and 26.

Groundwater samples were collected from 17 wells from the MW-21 area. Table 24 lists the analytical results for all constituents detected in one or more samples. The analytical results for the primary groundwater contaminants were:

- PCE was reported in samples from 14 wells with a maximum concentration of 179 µg/L in MW-21.
- TCE was reported in samples from 15 wells with a maximum concentration of 21.4 µg/L in PMW21-02.
- cDCE was reported in samples from 16 wells with a maximum concentration of an estimated 134J µg/L in IW21-03A.

Groundwater samples were collected from 45 wells from the MW-101 area. Table 25 lists the analytical results for all constituents detected in one or more samples. The analytical results for the primary groundwater contaminants were:

- PCE was reported in samples from 31 wells with a maximum concentration of 55.6 µg/L in MW-101B.
- TCE was reported in samples from 29 wells with a maximum concentration of 50 µg/L in PMW101-05B.
- cDCE was reported in samples from 44 wells with a maximum concentration of 238 µg/L in IW101-07C.

Groundwater samples were collected from 25 wells from the TTA-2 area. Table 26 lists the analytical results for all constituents detected in one or more samples. The analytical results for the primary groundwater contaminants were:

- PCE was reported in samples from 15 wells with a maximum concentration of 150 µg/L in DR2-1.
- TCE was reported in samples from 10 wells with a maximum concentration of 35 µg/L in DR2-5.
- cDCE was reported in samples from 24 wells with a maximum concentration of 200 µg/L in PMW92-06.
- CT was reported in samples from 6 wells with a maximum concentration of 206 µg/L in DR2-5.
- CF was reported in samples from 12 wells with a maximum concentration of an estimated 86.4 µg/L in PMW85-05.

4.4.3 CVOC Concentration Trends

A comparison of reported concentrations for PCE, TCE, and cDCE in the baseline and Year Two sampling events for each treatment area are shown on Tables 27, 28 and 29. CT and CF are also shown for TTA-2 on Table 29.

During Year Two, PCE and TCE concentrations decreased in all three areas in the injection wells and to a lesser extent in the performance monitoring wells. cDCE generally increased in all three areas in both sets of wells. In TTA-2, CT and CF concentrations decreased in all injection and monitoring wells, except IW-85-06 and DR2-5; in PMW-85-05, CT decreased but CF increased.

The trend in the plume isopleths over time for PCE, TCE, cDCE, CT and CF are shown by treatment area in Figures 15 to 24.

In all three areas, there is a reduction in the plume extent and the maximum concentrations for PCE and TCE, and an increase in the maximum concentrations for cDCE.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This section present conclusions regarding the specific 'OPS' criteria presented in the RAWP and the general progress of EBT in reducing groundwater contaminant concentrations to below MCLs.

5.1 OPERATING PROPERLY AND SUCCESSFULLY

The metrics for determining that EBT is operating properly are:

- Injection and performance monitoring wells are installed at the locations and to the depths indicated in the RAWP.
- Lactate is distributed throughout the EBT zones.
- Planned volumes of sodium lactate injection fluid can be injected into each TTA area injection well.

The metrics for determining that EBT is operating successfully are:

- Anaerobic aquifer conditions are created within the EBT zones after no more than two quarters of injections.
- Anaerobic aquifer conditions are maintained within the EBT zones.
- Concentrations of dissolved PCE and TCE in an EBT zone begin to decrease no more than two quarters after anaerobic aquifer conditions have been created in the EBT zone.

5.1.1 Operating Properly

The operating properly criteria have generally been met.

Well Installation

The injection and performance monitoring wells were installed as described in the RAWP. Two injection wells and two monitoring wells in TTA-2, found to have been screened above the target zone, were replaced in February 2007.

Lactate Distribution

Sodium lactate has been distributed throughout the treatment areas to varying degrees based on the MFA and TOC analyses.

MFA and TOC concentrations decreased at the beginning of Year Two following the change from biweekly to monthly injections. The concentrations in all injection wells increased following the changes to the lactate solution in July 2008. TOC and MFA concentrations in many monitoring wells increased

after injections began in selected monitoring wells in April 2008 and the changes to the lactate solution. However, even with the changes in the injection procedures, 12 of 18 monitoring wells in the MW-101 area of TTA-1 did not contain MFAs in EBT-9 samples. The following table lists the total number of injection and monitoring wells in each treatment area and the number of wells with MFAs reported as of EBT-9 (from Tables 8 to 10).

	TTA-1, MW-21		TTA-1, MW-101		TTA-2	
Well Type	IWs	MWs	IWs	MWs	IWs	MWs
Total Wells	10	7	27	18	12	13
Wells with MFAs Reported	10	7	27	6	12	12

The amount of lactate distributed throughout the aquifer is indicated in the following table which lists the average TOC concentration and the total of the average concentration of each MFA for the injection wells and monitoring wells in each area (from Table 11). The effect of the changes in injection procedures is evident in the average concentrations for EBT-8 and EBT-9, especially in injection wells.

			Baseline	EBT-5	EBT-6	EBT-7	EBT-8	EBT-9
TTA-1, MW-21	Injection Wells	TOC	4	423	177	244	2593	2537
		Total MFAs	0	475	288	484	4604	4719
	Monitoring Wells	TOC	4	<1	3	2	11.6	18.8
		Total MFAs	0	0	0	2	30	43
TTA-1, MW-101	Injection Wells	TOC	4	251	289	291	2921	4689
		Total MFAs	0	581	680	534	4999	6733
	Monitoring Wells	TOC	3	50.6	39.4	20.8	56.2	39.9
		Total MFAs	0	108	72	32	107	65
TTA-2	Injection Wells	TOC	4	1472	2099	2508	5521	17205
		Total MFAs	1	2177	3410	4334	10066	36520
	Monitoring Wells	TOC	7	134	77	209	82	57
		Total MFAs	0	292	150	419	152	109

All values in mg/L.

Injection Volumes

The planned injection volumes were met, as documented by the injection summaries in Appendix A.

5.1.2 Operating Successfully

The operating successfully criteria have generally been met with anaerobic conditions created and PCE and TCE concentrations decreased in the treatment areas. However, anaerobic conditions were not created over the full extent of the treatment areas and a few wells did not have significant decreases in PCE and TCE concentrations.

Anaerobic Conditions Created and Maintained

Anaerobic conditions were to be created in the treatment areas after no more than two quarters of injections and then maintained. Secondary parameters metrics were provided in the RAWP: DO less than 1 mg/L; ORP between -50 and -200 mV and pH between 6 and 8.

As noted previously, ORP was used during Year Two as the primary measure of anaerobic condition. The following table lists the average ORP (mV) concentration for the injection wells and monitoring wells in each area (from Appendix C):

EBT Wells		Base	EBT-1	EBT-2	EBT-3	EBT-4	EBT-5	EBT-6	EBT-7	EBT-8	EBT-9
		ORP	ORP	ORP	ORP	ORP	ORP	ORP	ORP	ORP	ORP
TTA-1, MW-21	IW	58	-12	-108	-141	-92	-78	-79	-42	-48	-120
	MW	111	160	175	191	143	166	166	146	132	42
TTA-1, MW-101	IW	133	-37	-174	-142	-145	-103	-97	-93	-90	-146
	MW	175	105	49	-14	-32	-9	-17	-1	-14	-55
TTA-2	IW	63	-92	-177	-126	-122	-82	-102	-25	-124	-178
	MW	142	90	73	44	37	50	41	46	-20	-10

Anaerobic conditions were maintained at the injection wells and some monitoring wells during Year Two. An increase in ORP occurred after the change to monthly injections, but ORP decreased after changes to the injection solution were implemented in July 2008. The average ORP in the performance monitoring wells only reached the target range in one area during Year Two, TTA-1, MW-101 in EBT-9. However, decreases in PCE and TCE concentrations discussed in the following section indicate that reductive dechlorination was occurring at most monitoring wells throughout the treatment period.

Decrease in PCE and TCE Concentrations

PCE and TCE concentrations were to decrease no more than two quarters after anaerobic aquifer conditions were created. Analytical results for EBT-9 samples show significant decreases in PCE concentrations in almost all injection and monitoring wells (Tables 27 to 29). In addition, significant decreases were seen in TCE concentrations in the MW-101 area of TTA-1, the only area with pre-injection TCE concentrations greater than 100 µg/L. A concurrent increase in cDCE concentrations was seen in most wells. Several wells had decreased cDCE concentrations in EBT-9 samples; bacteria consortia were added to all injection wells from August through November 2008, between the EBT-7 and EBT-8 sample events. The following tables compare the maximum, minimum and average concentrations from the Baseline and EBT-9 samples for PCE, TCE and cDCE in all three areas, and for CT and CF in TTA-2. In all three areas, maximum and average concentrations decreased for PCE and TCE and increased for cDCE. In TTA-2, average concentrations decreased for CT and CF.

The number of EBT wells with concentrations exceeding the MCL are also shown. The number of wells exceeding MCLs have decreased for PCE, TCE and CT. The number of MCL exceedances have increased for cDCE and remain the same for CF.

PCE	MCL	**Baseline**				**EBT-9**			
	5 µg/L	Max	Min	Avg	No. of Wells Exceeding MCLs	Max	Min	Avg	No. of Wells Exceeding MCLs
TTA-1, MW-21	IW	286	41.5	148.7	10	111	<1	11.2	7
	PMW	199	6.4	110.1	7	179	10.8	67.4	4
TTA-1, MW-101	IW	232	0.6	97.2	24	36.3	<1	5.7	11
	PMW	257	0.6	113.3	16	55.6	<1	13.9	9
TTA-2	IW	196	1.1	122.2	10	33.9	<1	5.6	3
	PMW	252	40.4	134.0	11	150	<1	36.1	5

TCE	MCL	**Baseline**				**EBT-9**			
	5 µg/L	Max	Min	Avg	No. of Wells Exceeding MCLs	Max	Min	Avg	No. of Wells Exceeding MCLs
TTA-1, MW-21	IW	64.5	14.8	36.5	10	21.4	0.4	5.2	5
	PMW	87.7	5.0	40.0	6	16.6	2.4	10.0	3
TTA-1, MW-101	IW	316.0	0.3	53.4	10	44.4	<1	6.5	7
	PMW	232.0	0.3	32.9	5	29.2	<1	7.3	4
TTA-2	IW	26.9	2.6	10.0	8	14.8	<1	1.9	2
	PMW	39.7	2.9	15.3	10	35	<1	6.8	4

cDCE	MCL	Baseline				EBT-9			
	70 µg/L	Max	Min	Avg	No. of Wells Exceeding MCLs	Max	Min	Avg	No. of Wells Exceeding MCLs
TTA-1, MW-21	IW	4.1	0.8	2.2	0	134	0.9	29.9	3
	PMW	4.2	0.5	2.2	0	57.4	1.5	17.2	0
TTA-1, MW-101	IW	22.9	0.3	3.4	0	238	4.6	78.6	12
	PMW	14.6	0.3	2.2	0	72.1	<1	35.0	1
TTA-2	IW	57.9	0.7	17.7	0	166	4.4	58.0	5
	PMW	149.0	4.7	37.8	2	200	7.3	88.0	5

CT	MCL	Baseline				EBT-9			
	5 µg/L	Max	Min	Avg	No. of Wells Exceeding MCLs	Max	Min	Avg	No. of Wells Exceeding MCLs
TTA-2	IW	168	2.0	47.1	10	6.7	<1	0.9	2
	PMW	222	8.9	88.5	11	206	<1	33.2	3

CF	MCL	Baseline				EBT-9			
	80 µg/L*	Max	Min	Avg	No. of Wells Exceeding MCLs	Max	Min	Avg	No. of Wells Exceeding MCLs
TTA-2	IW	68.9	7.0	23.4	0	86.4	<.3	8.1	1
	PMW	82.7	5.6	29.8	1	68.8	<.3	9.6	0

* MCL for total trihalomethanes shown.

The changes in CVOC concentrations in the two areas of TTA-1 and in TTA-2 are also shown by the isopleths on Figures 15 to 24.

5.2 OVERALL EVALUATION OF THE EBT SYSTEM AFTER YEAR TWO

The EBT wells were classified as positive where either reductive dechlorination was apparent or there was a loss of CVOC mass, or negative where there was neither reductive dechlorination nor CVOC mass loss. The wells were classified based on comparison of VOC analytical results from the baseline and EBT-9 sample events (Tables 27 to 29) and from the mass balance charts in Appendix F. Wells were considered positive for reductive dechlorination where a definite loss of progenitor (PCE or CT) was mirrored by an increase in known daughter products (TCE/cDCE or CF). Wells considered negative had no evidence of CVOC attenuation.

The positive wells were further analyzed by evaluating the mass of the progenitor and daughter products to the total mass of CVOCs. During active reductive dechlorination, the percent of the total of the progenitor should decrease, while the percent of the total of one or more daughter products should

increase. Some of the positive wells were responding better than others and had very active reductive dechlorination; these wells were then classified best. At many of the 'best' locations, cDCE concentrations, which initially increased with the reduction of PCE and TCE concentrations, have begun to decrease in EBT-8 and EBT-9 samples. The wells in each classification are shown on Table 30; there were a total of 61 wells classified 'best', 17 wells classified 'positive' and 7 wells classified 'negative'. Two wells (IW101-09A and PMW101-07A) were not classified because of very low concentrations throughout EBT monitoring. Mass balance charts, which illustrate the breakdown of PCE to daughter products are shown for the EBT wells in Appendix F.

Seven wells were classified as negative for reductive dechlorination or mass loss, four wells in the MW-21 area of TTA-1 (MW-21, MW-115, PMW21-02 and PMW21-05) and three wells in TTA-2 (DR2-1, DR2-5 and MW-85). All were limited in carbon substrate based on TOC and MFA results, except for PMW21-02, which was one of the monitoring wells selected for injections.

A surprising result noticed in Year One was the lack of increase in TOC or MFA concentrations at some injection wells (IW21-02A, -02B and 03A; and IW101-02B, 05B and -06B). The lactate appeared to move away from these locations rapidly after injection. These wells did not have significant increases in TOC or MFA concentrations until EBT-8, after the changes in injection procedures. All these wells, except IW21-02A) had significant decreases in PCE and TCE, mainly after TOC and MFA concentrations increased.

Although significant reductions in PCE, TCE and CT concentrations were observed in TTA-1 and TTA-2, EBT did not achieve the goal of reducing concentrations below MCLs. Several wells in the EBT areas have concentrations in EBT-9 samples over 50 µg/L for PCE (IW21-02A, MW-21, MW-101, DR2-1 and DR2-5) and for CT (MW-85, DR2-6). These locations are generally on the upgradient or side-gradient edge of the injection areas. In the MW-21 area of TTA-1, there is apparent on-site migration of PCE based on upgradient LTM well, MW-219; the April 2009 PCE concentration in MW-219 was 41 µg/L.

Although cDCE concentrations have increased significantly in the EBT areas, the analytical results do not indicate a widespread build-up above MCLs in the fluvial aquifer at the MI. Only six performance monitoring wells exceeded the MCL for cDCE during EBT-9. In addition, recent LTM results, described in the *Annual Long-Term Monitoring Report-2009, Main Installation* (HDR|e^{2}M, 2010), show that only three LTM wells exceeded the MCL for cDCE during the two 2009 sample events; these wells were in close proximity to EBT areas. Build-up of cDCE through reductive dechlorination will continue to be evaluated during LTM.

5.3 RECOMMENDATIONS

Although MCLs were not achieved throughout the EBT areas, further lactate injections are not recommended. Source investigation for the MI groundwater plumes, including TTA-1 and TTA-2, was performed under a separate task order to identify soil contamination impacting shallow groundwater. In addition, trend analysis of historical groundwater results was performed to evaluate plume stability in the central area of the MI and groundwater modeling was performed to evaluate the impact of the shallow groundwater plumes on the deeper Memphis aquifer. The results were presented in *Main Installation Source Area Investigation, Rev.0* (HDR|e²M, 2009). While the source area investigation identified potential sources for each of the groundwater plumes, the concentrations of CVOCs in the soil were low and did not warrant remedial action. In addition, groundwater modeling and trend analysis did not support the need for active groundwater treatment.

Based on the source investigation results and the reduction in CVOC concentrations in the EBT areas, additional injections are not considered necessary at this time. The MI RAO for reduction of CVOC concentrations below MCLs should be achieved over time through natural attenuation (NA). LTM will continue until MCLs are achieved and additional monitoring wells will be installed in the intermediate and Memphis aquifers to monitor groundwater concentrations and confirm the groundwater model results. Progress of NA towards meeting the RAOs will be documented in Annual LTM reports. Five-year reviews will summarize progress of the remedy and will recommend modifications if necessary.

6.0 REFERENCES

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TABLES

TABLE 1
EBT SAMPLE SCHEDULE
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	EBT 5 Dec-07	EBT 6 Mar-08	EBT 7 Jun-08	EBT 8 Dec-08	EBT 9 Mar-09
IW101-01A	X	X	X	X	X
IW101-01B	X	X	X	X	X
IW101-01C	X	X	X	X	X
IW101-02A	X	X	X	X	X
IW101-02B	X	X	X	X	X
IW101-02C	X	X	X	X	X
IW101-03A	X	X	X	X	X
IW101-03B	X	X	X	X	X
IW101-03C	X	X	X	X	X
IW101-04A	X	X	X	X	X
IW101-04B	X	X	X	X	X
IW101-04C	X	X	X	X	X
IW101-05A	X	X	X	X	X
IW101-05B	X	X	X	X	X
IW101-05C	X	X	X	X	X
IW101-06A	X	X	X	X	X
IW101-06B	X	X	X	X	X
IW101-06C	X	X	X	X	X
IW101-07A	X	X	X	X	X
IW101-07B	X	X	X	X	X
IW101-07C	X	X	X	X	X
IW101-08A	X	X	X	X	X
IW101-08B	X	X	X	X	X
IW101-08C	X	X	X	X	X
IW101-09A	X	X	X	X	X
IW101-09B	X	X	X	X	X
IW101-09C	X	X	X	X	X
IW21-01A	X	X	X	X	X
IW21-01B	X	X	X	X	X
IW21-02A	X	X	X	X	X
IW21-02B	X	X	X	X	X
IW21-03A	X	X	X	X	X
IW21-03B	X	X	X	X	X
IW21-04A	X	X	X	X	X
IW21-04B	X	X	X	X	X
IW21-05A	X	X	X	X	X
IW21-05B	X	X	X	X	X
IW85-01	X	X	X	X	X
IW85-02	X	X	X	X	X
IW85-03	A	A	A	A	A
IW85-04	-	-	-	-	-
IW85-05	X	X	X	X	X
IW85-06	X	X	X	X	X
IW92-01	X	X	X	X	X
IW92-02	X	X	X	X	X
IW92-03	X	X	X	X	X
IW92-04	X	X	X	X	X
IW92-05	X	X	X	X	X
IW92-06	X	X	X	X	X
IW92-07	X	X	X	X	X

TABLE 1
EBT SAMPLE SCHEDULE
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	EBT 5 Dec-07	EBT 6 Mar-08	EBT 7 Jun-08	EBT 8 Dec-08	EBT 9 Mar-09
IW92-08	X	X	X	X	X
DR1-3	X	X	X	X	X
DR2-1	X	X	X	X	X
DR2-5	X	X	X	X	X
IW-01	X	X	X	X	X
MW-21	X	X	X	X	X
MW-85	X	X	X	X	X
MW101B	X	X	X	X	X
MW101T	X	X	X	X	X
MW-115	X	X	X	X	X
PMW101-01A	X	X	X	X	X
PMW101-01B	X	X	X	X	X
PMW101-02A	X	X	X	X	X
PMW101-02B	X	X	X	X	X
PMW101-03A	X	X	X	X	X
PMW101-03B	X	X	X	X	X
PMW101-04A	X	X	X	X	X
PMW101-04B	X	X	X	X	X
PMW101-05A	X	X	X	X	X
PMW101-05B	X	X	X	X	X
PMW101-06A	X	X	X	X	X
PMW101-06B	X	X	X	X	X
PMW101-07A	X	X	X	X	X
PMW101-07B	X	X	X	X	X
PMW101-08A	X	X	X	X	X
PMW101-08B	X	X	X	X	X
PMW21-01	X	X	X	X	X
PMW21-02	X	X	X	X	X
PMW21-03	X	X	X	X	X
PMW21-04	X	X	X	X	X
PMW21-05	X	X	X	X	X
PMW85-01	X	X	X	X	X
PMW85-02	A	A	A	A	A
PMW85-03	A	A	A	A	A
PMW85-04	X	X	X	X	X
PMW85-05	X	X	X	X	X
PMW92-01	X	X	X	X	X
PMW92-02	X	X	X	X	X
PMW92-03	X	X	X	X	X
PMW92-04	X	X	X	X	X
PMW92-05	X	X	X	X	X
PMW92-06	X	X	X	X	X

Notes:
X: Sample collected
-: Sample not collected or planned
A: Abandoned
MW101 B and MW101T are two screened intervals in the same well.

TABLE 2
FINAL FIELD MEASUREMENTS, EBT-5 SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Date	Time Sampled	Sample Depth ft (btoc)	Depth to Water ft (btoc)	Purge Rate mL/min	Volume Purged Liters	pH	Temp °C	Specific Conductivity mS/cm	Dissolved Oxygen mg/L	Oxidation Reduction Potential mV	Turbidity NTUs	Ferrous Iron mg/L	Carbon Dioxide mg/L
IW101-01A	12/10/2007	9:40	129.0	90.1	200	11.1	6.1	17.9	9.68	1.92	-104	4.6	2.0	200
IW101-01B	12/10/2007	11:45	120 0	90 0	240	5.8	6.5	17.9	0.90	0.88	-132	3.0	2.6	60
IW101-01C	12/10/2007	13:15	99.0	90.0	200	8.0	6.2	18.0	0.90	0.44	-118	11.2	2.0	50
IW101-02A	12/10/2007	14:55	131.0	90 2	180	6.9	6.2	18.0	3.27	1 56	-163	6.4	N/T	N/T
IW101-02B	12/10/2007	16:25	117.0	90.2	280	5.0	6.3	18.9	0.90	2.20	-86	7.5	2.4	50
IW101-02B	12/13/2007	14:30	117.0	90.3	240	4.4	6.3	18.3	0.43	4.44	69	0.0	N/A	N/A
IW101-02C	12/11/2007	10:02	100.0	90.7	260	8.4	6.1	19.7	1.00	0.65	-150	6.5	3.0	100
IW101-03A	12/11/2007	14:30	133.0	90.8	180	8.0	6.0	20.7	1.05	6.90	-80	14.6	3.0	100
IW101-03B	12/11/2007	16:15	117.0	90.8	180	5.7	6.0	20.6	0.90	2.18	43	0.0	2.0	100
IW101-03C	12/12/2007	9:20	101.0	90.0	200	7.9	5.9	17.9	0.90	2.96	-96	0.7	2.0	70
IW101-04A	12/12/2007	11:50	131.0	90.9	180	6.0	6.0	18.0	9.86	0.00	-102	18.4	2.0	165
IW101-04B	12/12/2007	13:05	115.0	90.8	160	4.0	6.3	17.7	0.90	2.50	-96	2.6	2.6	100
IW101-04C	12/12/2007	15:15	99.0	90.8	200	9.8	6.5	18.4	1.00	1.87	-86	0.1	3.0	55
IW101-05A	12/10/2007	11:10	129.0	89.9	140	11.6	6.6	16.9	3.71	1.97	-32	36.6	3.6	75
IW101-05B	12/10/2007	13:35	115.0	90.6	160	5.9	6.2	18.2	0.47	3.99	25	0.0	1.8	90
IW101-05C	12/10/2007	15:40	98.0	90.5	160	8.2	6.2	19.0	0.54	0.51	-86	8.7	3.4	15
IW101-06A	12/11/2007	11:35	131.0	91.2	160	16.0	6.3	21.1	1.09	7.77	-23	25.6	3.2	145
IW101-06B	12/11/2007	13:05	101.0	91.1	160	6.0	6.1	20.2	0.34	2.25	12	0.0	0.4	125
IW101-06C	12/11/2007	14:29	101.0	91.1	240	6.6	6.1	21.0	0.45	5.28	-61	0.0	3.2	115
IW101-07A	12/11/2007	16:18	131.0	91.4	160	4.4	6.3	20.4	0.43	7.61	-42	13.2	3.6	110
IW101-07B	12/12/2007	9:30	113.0	91.8	180	6.8	6.5	18.3	0.39	2.76	-90	1.7	4.4	100
IW101-07C	12/12/2007	12:10	100.0	91.8	200	17.4	6.2	18.4	0.93	3.20	-67	0.0	6.4	125
IW101-08A	12/13/2007	11:15	131.0	91.2	180	9.6	6.3	17.9	0.90	3.97	-52	9.3	3.0	50
IW101-08B	12/12/2007	15:11	115.0	91.2	120	7.8	6.6	19.0	0.68	2.84	-116	3.9	4.8	60
IW101-08C	12/13/2007	10:00	99.0	91.9	240	16.6	6.1	18.7	1.68	0.98	-58	0.0	2.6	90
IW101-09A	12/13/2007	13:05	132.0	91.7	280	7.8	6.2	18.6	0.90	3.04	-6	9.6	0.0	75
IW101-09B	12/13/2007	15:15	116.0	91.6	240	6.1	6.1	18.4	9.34	1.23	-34	3.6	2.8	150
IW101-09C	12/14/2007	8:45	101.0	91.6	240	19.2	6.2	18.3	1.01	3.16	-15	3.1	2.4	85
IW21-01A	12/17/2007	15:40	102.0	92.2	200	10.0	6.4	17.2	1.69	6.18	-94	19.4	0.0	60
IW21-01B	12/17/2007	16:20	94.0	92.4	240	8.1	6.4	18.3	0.90	1.53	-103	10.9	2.6	120
IW21-02A	12/17/2007	12:50	105.0	92.4	240	6.2	6.0	17.9	0.29	2.10	-25	6.0	2.4	100
IW21-02B	12/17/2007	14:50	95.0	92.5	280	7.1	5.8	17.8	0.24	2.56	-76	5.9	2.8	100
IW21-03A	12/17/2007	9:16	104.0	91.3	200	8.7	6.3	16.0	0.38	5.78	39	1.7	2.0	50
IW21-03B	12/17/2007	11:10	96.0	91.0	200	10.6	6.3	17.8	1.00	3.78	-129	8.1	2.8	150
IW21-04A	12/14/2007	15:30	90.5	91.0	200	24.2	6.0	16.7	0.18	1.92	-46	36.5	2.8	125
IW21-04B	12/17/2007	10:20	94.0	91.3	280	26.6	6.6	18.0	0.57	2.68	-22	46.9	2.6	75
IW21-05A	12/14/2007	11:40	106.0	90.8	200	27.4	6 2	17.2	5.88	2.66	2	38.7	3.0	250
IW21-05A	12/17/2007	14:17	106.0	90.7	180	21.1	6.1	16.9	1.63	5.75	-72	99.5	N/A	N/A
IW21-05B	12/14/2007	13:25	95.0	90.5	290	16.9	6.2	17.0	0.84	1.54	-110	3.4	2.6	60
IW85-01	12/18/2007	12:30	96 0	94.5	100	3.6	6 2	20.5	0.82	9.13	25	15.7	4.0	110
IW85-02	12/18/2007	15:50	98.0	95.8	50	3.7	6.4	15.5	3.61	0.83	-77	13.9	6.0	225
IW85-05	12/19/2007	8:25	101.0	96.4	180	8.2	6.4	20.5	0 34	3.03	-40	16.3	3.0	100
IW85-06	12/19/2007	8:30	103.0	97.2	130	6.2	6.3	19.5	0.85	5.77	-35	1.9	3.4	150
IW92-01	12/13/2007	14:45	89.0	87.2	60	5.9	6.1	20.2	0.96	4.01	-45	-1.6	4.0	130
IW92-02	12/14/2007	8:40	90.0	88.7	N/A	1.5	6.3	10.7	1.05	4.84	4	22.0	N/A	N/A
IW92-03	12/14/2007	10:47	92.0	91.7	60	3.4	6.0	14.0	2 41	9.22	20	12.7	4.0	225
IW92-04	12/14/2007	14:07	92.0	92.4	20	0.5	6.4	14.5	6.54	14.83	15	24.4	N/A	N/A
IW92-05	12/18/2007	7:20	92.0	92.3	80	3.7	6.8	17.9	11.07	0.18	-112	61 8	N/A	N/A
IW92-06	12/17/2007	9:17	93.0	92.3	140	4.2	6.7	19.3	11.06	2.59	-81	6.9	4.6	500

TABLE 2
FINAL FIELD MEASUREMENTS, EBT-5 SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Date	Time Sampled	Sample Depth ft (btoc)	Depth to Water ft (btoc)	Purge Rate mL/min	Volume Purged Liters	pH	Temp °C	Specific Conductivity mS/cm	Dissolved Oxygen mg/L	Oxidation Reduction Potential mV	Turbidity NTUs	Ferrous Iron mg/L	Carbon Dioxide mg/L
IW92-07	12/17/2007	16:10	95.0	93.9	80	9.3	6.4	19.7	3.79	8.80	-13	27.9	3.4	285
IW92-08	12/18/2007	10:35	95.0	94 5	50	3.0	6.3	14.2	5 84	12.56	2	-1.3	3.8	95
DR1-3	12/13/2007	11:30	121.6	91.0	100	5.2	6.5	17.1	0.50	1.14	-30	-0.8	4.2	100
DR2-1	12/10/2007	8:23	92.3	88 2	120	3.3	6.0	16.4	0.27	8.30	116	-20.3	0.0	70
DR2-5	12/10/2007	14:14	98.6	96.4	80	3 3	6.1	17.9	0.18	9 42	104	-6.4	0.0	25
IW-01	12/11/2007	16:00	97.8	95.4	105	3.2	5.3	22.2	0.28	2.42	110	-2.2	1.4	400
MW-21	12/18/2007	9:40	99.2	92.5	240	9.4	6.0	16.5	0.36	3.49	150	0.0	0.2	75
MW-85	12/10/2007	11:35	105.1	98.9	80	5.6	6.6	17.1	1.00	2.97	-68	-1.3	4.6	125
MW-101B	12/11/2007	12:42	133.0	90.3	260	8.0	6.0	20.5	0.90	4.16	87	15.4	0.0	75
MW-101T	12/11/2007	11:25	115.0	90.3	200	4.7	5.9	21.0	0.90	6.01	124	4.1	0.0	75
MW-115	12/18/2007	14:20	94.9	90.2	200	9.4	6.0	17.8	0.26	3.37	78	0.0	1.6	25
PMW101-01A	12/13/2007	12:57	129.6	96.1	120	6.5	6.8	17.6	3.37	3.40	-155	12.6	4.4	250
PMW101-01B	12/13/2007	15:18	108.9	90.2	140	5.3	6.4	18.3	0.48	0.92	-95	0.0	4.0	110
PMW101-02A	12/14/2007	8.20	128.0	90.9	180	4.0	6.8	17.1	0 68	0.61	-146	0.2	7.4	100
PMW101-02B	12/14/2007	10:29	108.3	91.2	200	5.1	6.5	18.3	0.65	0.49	-126	0.0	3.6	150
PMW101-03A	12/13/2007	10:30	130.1	91.1	100	3.1	6.5	16.2	0.62	2.59	40	0.0	0.4	70
PMW101-03B	12/13/2007	8:37	110.1	91.2	200	8.2	6.6	17.8	0.71	1.07	-105	0.0	4.4	90
PMW101-04A	12/14/2007	12:04	128.8	90.5	200	6.5	7.0	17.7	0.80	0.56	-175	0.0	6.2	120
PMW101-04B	12/14/2007	13:55	109.5	91.1	120	10.1	6.4	17.9	0.47	0.68	-102	0.0	6.8	100
PMW101-05A	12/18/2007	9:40	115.7	90.7	200	5.7	6.6	17.9	0.42	0.09	-121	0.0	6.4	125
PMW101-05B	12/18/2007	11:15	98.2	91.1	180	10.4	6.4	18.1	0.31	0.89	-65	0.0	2.6	65
PMW101-06A	12/17/2007	14:23	130.8	91.4	120	5.2	6.1	17.7	0.27	1.92	58	0.0	0.0	100
PMW101-06B	12/14/2007	15:20	110.2	91.4	120	4.2	6.5	17.4	0.43	0.55	-129	0.0	5.4	200
PMW101-07A	12/17/2007	15:50	128.7	91.4	120	3.6	6.3	18.7	0.39	1.99	-64	0.0	3.0	100
PMW101-07B	12/18/2007	8:06	108.7	91.5	200	6.0	5.9	17.6	0.15	1.94	105	0.0	0.0	35
PMW101-08A	12/17/2007	8:50	108.9	92.3	60	3.2	6.3	14.8	0.44	3.02	52	3.1	0.4	50
PMW101-08B	12/17/2007	11:37	108.9	92.2	120	8.2	6.0	19.5	0.12	3.37	78	0.0	0.8	35
PMW21-01	12/15/2007	9:20	100.9	92.2	200	4.2	6.1	16.7	0.32	6.02	177	2 2	0.0	25
PMW21-02	12/18/2007	11:30	102.1	91.3	240	5.7	6.0	17.3	0.34	5.70	158	1.8	1.4	80
PMW21-03	12/18/2007	11:33	101.2	90.6	160	3.3	6.1	17.1	0.24	9.42	190	1.1	2.0	50
PMW21-04	12/18/2007	13:15	100.2	90.5	200	6.9	6.0	16.7	0.42	1.61	173	0.0	0.0	120
PMW21-05	12/18/2007	12:39	105.1	88.7	220	4.0	6.0	18.1	0.21	9.70	87	0.0	0.0	50
PMW85-01	12/10/2007	15:58	100.7	97.4	120	3.5	6.1	18.7	0.19	9.46	99	-0.5	0.0	15
PMW85-04	12/11/2007	9:23	100.0	98.0	100	3.1	6.4	20.9	3.23	3.39	-105	2.5	4.2	275
PMW85-05	12/11/2007	12:05	101.0	97.0	100	6.0	5.8	23.1	0.20	3.18	106	16.9	0.0	90
PMW92-01	12/13/2007	8:55	99.0	94.6	100	3.2	6.2	17.6	0.32	4.31	146	0.5	0.0	75
PMW92-02	12/12/2007	15:55	100.7	94.4	80	3.2	6.8	18.0	2.44	3.63	-108	4.9	0.0	250
PMW92-03	12/12/2007	13:35	98.6	93.8	80	3.3	6.4	17.8	0.44	2.42	107	-1.4	0.4	110
PMW92-04	12/12/2007	11:10	98.5	94.9	100	3.3	6.5	18.4	0.56	1.77	-29	7.3	3.6	100
PMW92-05	12/12/2007	9:20	96.7	93.56 (TOP)	60	3.1	5 9	16.9	0.24	5.66	191	-0.2	0.0	75
PMW92-06	12/11/2007	13:55	98 9	95.5	80	3.6	6.4	23.2	1.04	2.06	-81	-2.2	3 2	100

TABLE 3
FINAL FIELD MEASUREMENTS, EBT-6 SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Date	Time Sampled	Sample Depth ft (btoc)	Depth to Water ft (btoc)	Purge Rate mL/min	Volume Purged Liters	pH	Temp °C	Specific Conductivity mS/cm	Dissolved Oxygen mg/L	Oxidation Reduction Potential mV	Turbidity NTUs	Ferrous Iron mg/L	Carbon Dioxide mg/L
IW101-01A	3/10/2008	9:40	129.0	90.1	240	10.8	5.8	18.3	1.70	2.98	-73	11.6	4.2	190
IW101-01B	3/10/2008	11:20	120.0	90.2	260	7.4	6.2	19.1	0.56	2.42	-116	0.0	4.4	150
IW101-01C	3/10/2008	13:05	99.0	90.1	260	8.9	5.9	19.2	0.46	2.66	-137	19.7	2.4	100
IW101-02A	3/10/2008	15:00	131 0	90.3	240	5.2	6.0	19.8	1.23	1.90	-142	14.6	3.2	200
IW101-02B	3/11/2008	8:45	117.0	90.3	240	7.1	6.0	18.3	0.36	1.39	69	0.0	3.2	85
IW101-02C	3/11/2008	9:20	100.0	90.8	240	9.0	5.9	18.4	0.75	0.00	-177	6.8	2.6	110
IW101-03A	3/11/2008	11:05	133.0	91.1	240	4.9	5.9	18.4	0.90	4.18	-124	18.8	4.2	100
IW101-03B	3/11/2008	11:30	117.0	91.0	240	9.0	5.9	18.9	0.34	2.29	-106	7.4	1.8	100
IW101-03C	3/11/2008	13:20	101.0	91.0	240	5.8	5.8	19.2	0.91	3.10	-121	5.8	1.6	110
IW101-04A	3/12/2008	15:40	131.0	90.6	240	11.4	6.2	21.0	5.77	2.80	-14	10.6	3.4	270
IW101-04B	3/12/2008	15:00	115.0	90.6	140	5.1	6.4	20.4	0.75	2.79	-110	14.4	3.2	115
IW101-04C	3/13/2008	9:50	99.0	91.0	260	7.7	6.9	19.0	0.59	2.56	-128	4.0	4.0	75
IW101-05A	3/13/2008	11:45	129.0	90.8	200	9.9	6.1	19.6	4.50	1.99	-124	16.0	4.4	450
IW101-05B	3/13/2008	12:55	115.0	90.5	260	6.0	6.2	19.5	0.39	2.59	60	0.0	0.0	140
IW101-05C	3/13/2008	14:30	98.0	90.4	240	10.2	6.3	20.6	0.46	3.50	-142	18.9	4.0	110
IW101-06A	3/14/2008	9:15	131.0	90.9	260	12.6	6.5	19.1	1.09	6.36	-20	0.0	3.4	90
IW101-06B	3/14/2008	9:00	101.0	91.0	260	11.2	5.9	18.5	0.49	0.19	-107	0.0	0.8	65
IW101-06C	3/14/2008	10:45	101.0	91.0	260	8.8	5.9	19.3	0.49	1.49	-154	0.0	1.0	80
IW101-07A	3/11/2008	13:15	131.0	91.9	240	4.8	5.9	20.5	0.50	2.63	-109	17.0	4.4	90
IW101-07B	3/11/2008	15:40	113.0	91.8	240	5.8	6.5	19.4	0.55	3.47	-127	8.6	3.4	70
IW101-07C	3/12/2008	8:55	100.0	91.8	200	5.9	6.2	18.6	0.77	1.13	-121	4.4	4.2	135
IW101-08A	3/14/2008	13:10	131.0	91.1	260	10.9	6.2	19.6	0.73	3.80	-113	0.0	4.2	125
IW101-08B	3/14/2008	15:25	115.0	91.1	260	5.3	6.8	20.3	0.46	3.44	-75	0.0	3.4	125
IW101-08C	3/14/2008	15:10	99.0	91.6	260	8.1	5.9	19.6	0.94	1.26	-101	0.0	2.6	150
IW101-09A	3/12/2008	10:20	132.0	91.6	240	11.0	6.3	19.5	0.59	4.39	-124	18.6	0.0	85
IW101-09B	3/12/2008	11:50	116.0	91.5	200	8.0	6.1	20.2	2.47	3.71	-33	17.9	4.4	335
IW101-09C	3/12/2008	12:10	101.0	91.5	240	7.2	5.9	20.1	1.50	0.95	-87	2.9	3.8	70
IW21-01A	3/17/2008	10:20	102.0	92.5	240	10.4	6.6	17.1	2.42	2.66	-136	5.5	4.0	185
IW21-01B	3/17/2008	10:25	94.0	92.7	240	8.4	6.1	17.4	0.19	0.57	-75	0.1	3.6	95
IW21-02A	3/17/2008	12:15	105.0	92.6	240	4.4	6.4	18.6	0.32	4.08	-157	4.2	2.0	110
IW21-02B	3/17/2008	13:00	95.0	92.7	240	10.5	6.3	19.0	0.31	3.87	-106	0.0	4.4	130
IW21-03A	3/17/2008	14:50	104.0	91.2	240	5.2	6.3	19.6	0.32	2.92	12	0.0	2.2	95
IW21-03B	3/17/2008	15:10	96.0	90.9	220	9.7	6.4	18.9	1.01	5.37	-131	1.9	3.2	120
IW21-04A	3/18/2008	9:00	90.5	91.0	240	8.6	6.8	18.3	0.54	4.47	-184	8.2	3.4	120
IW21-04B	3/18/2008	9:00	94.0	91.2	240	8.2	6.3	18.2	0.84	0.43	-146	0.0	3.2	250
IW21-05A	3/18/2008	14:00	106.0	90.5	260	27.4	6.5	19.9	1.32	1.83	-142	73.7	4.2	105
IW21-05B	3/18/2008	12:10	95.0	91.5	240	10.8	6.4	18.3	0.63	0.40	-175	9.6	4.3	95
IW85-01	3/18/2008	9:29	96.0	94.5	120	5.9	6.1	21.0	0.99	4.14	-20	0.0	3.6	145
IW85-02	3/18/2008	12:08	98.0	96.1	160	11.7	6.1	21.6	1.54	5.43	-32	1.0	3.4	200
IW85-05	3/19/2008	8:20	101.0	96.7	140	5.2	6.4	18.2	0.67	7.53	15	3.1	2.4	200
IW85-06	3/19/2008	9:35	103.0	97.2	100	15.8	7.0	18.9	2.28	5.14	-72	19.3	1.2	100
IW92-01	3/13/2008	14:30	89.0	85.9	100	6.4	6.9	22.2	0.63	4.32	-74	9.6	3.0	75
IW92-02*	3/14/2008	9:45	90.0	87.7	50	4.0	6.9	18.3	1.23	27.56	-46	40.3	2.2	125
IW92-03*	3/14/2008	13:25	92.0	91.5	80	5.7	6.8	21.3	3.26	18.82	-41	3.3	2.0	150
IW92-04	3/18/2008	10:35	92.0	92.5	15	2.6	6.5	18.8	5.14	5.24	-7	24.4	nr	nr
IW92-05	3/17/2008	14:15	92.0	91.2	25	7.2	6.4	22.1	2.85	4.75	-73	25.2	nr	nr
IW92-06	3/19/2008	10:40	93.0	92.3	100	3.7	6.8	16.5	12.83	0.62	-44	17.8	nr	nr
IW92-07	3/18/2008	10:40	95.0	94.2	130	5.6	6.5	20.1	2.36	8.11	-89	9.5	2.8	400
IW92-08	3/19/2008	8:15	95.0	94.6	15	1.9	7.0	24.0	13.13	1.64	-86	76.2	2.0	560

TABLE 3
FINAL FIELD MEASUREMENTS, EBT-6 SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Date	Time Sampled	Sample Depth ft (btoc)	Depth to Water ft (btoc)	Purge Rate mL/min	Volume Purged Liters	pH	Temp °C	Specific Conductivity mS/cm	Dissolved Oxygen mg/L	Oxidation Reduction Potential mV	Turbidity NTUs	Ferrous Iron mg/L	Carbon Dioxide mg/L
DR1-3	3/14/2008	8:56	121.6	92.2	100	3.4	6.5	17.3	0.46	5.83	-41	0.1	3.0	140
DR2-1	3/10/2008	14:55	92.3	88.2	52	3.3	5.9	19.2	0.26	1.33	27	18.3	3.0	240
DR2-5*	3/12/2008	12.40	98.6	96.4	120	3.4	6.1	20.8	0.19	12.99	84	7.1	0.0	60
IW-01	3/13/2008	11:25	97.8	95.6	150	7.2	5.3	20.6	0.26	0.47	114	6.5	3.3	455
MW-21	3/14/2008	15.40	99.2	92.4	160	4.5	5.9	18.0	0 27	6.57	98	0.0	0.0	110
MW-85	3/12/2008	15:30	105.1	98.9	140	8.5	6.6	21.8	1.07	4.31	-115	10.3	3.6	260
MW-101B	3/14/2008	13:20	133.0	90.2	200	4.7	6.5	19.9	0.41	2.96	-110	0.0	3.2	70
MW-101T	3/14/2008	11:50	115.0	90.2	260	12.5	6.4	19.5	0.37	4.05	71	0.0	3.4	75
MW-115	3/17/2008	15:34	94.9	90.4	140	4.0	6.0	20.3	0.26	7.22	97	0.0	0.6	120
PMW101-01A	3/10/2008	8:43	129.6	90.4	240	4.0	6.2	17.2	2 49	1.30	-99	8.5	3.6	235
PMW101-01B	3/10/2008	11:15	108.9	90.6	200	7.9	6.5	19.0	1 03	0.85	-69	0.0	5.8	200
PMW101-02A	3/10/2008	14:00	128.0	91.2	240	3.4	6.5	20.1	0.54	1.59	-74	0.0	3.8	245
PMW101-02B	3/10/2008	15:32	108.3	91.3	180	3.8	6.6	19.4	0.57	1.13	-83	0.0	4.2	155
PMW101-03A	3/11/2008	9:05	130.1	91.4	240	5.2	6.7	17.0	0.65	1.57	-11	0.0	3.4	105
PMW101-03B	3/11/2008	11:55	110.1	91.4	240	10.7	6.7	18.3	0.70	0.89	-16	0.0	3.4	160
PMW101-04A	3/11/2008	14:20	128.8	90.6	140	7.5	7.1	19.2	0.91	0.53	-138	0.0	2.8	100
PMW101-04B	3/11/2008	15:22	109.5	90.1	120	5.0	6.6	19.0	0.52	0.78	-65	0.0	3.6	100
PMW101-05A	3/12/2008	9:10	115.7	90.7	100	9.1	6.5	16.8	0.59	6.40	-28	0.0	2.8	180
PMW101-05B	3/12/2008	10:53	98.2	91.1	120	4.1	6.3	17.8	0.32	5.82	34	0.0	3.4	75
PMW101-06A	3/12/2008	13.:34	130.8	91.3	140	6.5	6.1	20.4	0.38	5.70	48	0.0	3.2	140
PMW101-06B	3/12/2008	15:23	110.2	91.3	120	4.8	6.3	20.8	0.49	4 66	-18	0.0	3.2	120
PMW101-07A	3/13/2008	8:20	128.7	91.4	140	4.6	6.5	18.2	0.48	2.23	12	0.0	2.4	125
PMW101-07B	3/13/2008	11:13	108.7	91.6	120	4.5	6.1	19.5	0.20	1.96	117	0.0	0.0	65
PMW101-08A	3/13/2008	13:02	108.9	92.2	140	5.0	6.5	20.8	0.56	3.18	84	8.5	0.2	125
PMW101-08B	3/13/2008	14:45	108.9	92.0	120	4.8	6.1	20.7	0.15	2.49	108	0.0	0.2	50
PMW21-01	3/14/2008	14:05	100.9	92.2	240	4.3	6.0	18.2	0.33	5.88	74	0.6	0.0	125
PMW21-02*	3/17/2008	9:14	102.1	91.7	200	3.7	6.1	16.4	0.27	11.90	129	0.0	0.0	85
PMW21-03*	3/17/2008	11:10	101.2	91.0	100	3.4	6.0	18.2	0.27	18.42	130	0.5	0.0	85
PMW21-04	3/17/2008	13:48	100.2	90.8	100	4.1	6.0	19.9	0.34	8.42	110	0.0	0.0	110
PMW21-05	3/14/2008	11:27	105.1	88.6	120	4.3	6.0	19.8	0.28	7.81	82	3.5	0.0	90
PMW85-01*	3/13/2008	9:09	100.7	97.9	160	8.3	6.6	19.2	0.68	24.03	-70	0.6	3.0	150
PMW85-04	3/12/2008	11:00	100.0	98.0	85	3.6	6.6	20.9	1.00	7.15	-123	9.0	2.8	260
PMW85-05*	3/12/2008	9:00	101.0	97.1	160	6.4	5.7	19.6	0.21	11.46	154	19.1	0.0	125
PMW92-01	3/10/2008	11:55	99.0	94.6	200	3.3	6.1	19.6	0.22	6.62	102	8.3	0.0	140
PMW92-02*	3/10/2008	8:45	100.7	94.5	240	6.2	6.9	15.6	1.12	18.39	-120	14.9	1.5	280
PMW92-03*	3/11/2008	8:10	98.6	92.9	220	3.8	6.3	17.9	0.40	18.08	107	-9.3	0.0	110
PMW92-04	3/11/2008	11:35	98.5	95.1	120	8.3	6.4	20.1	0.46	1.01	-73	7.3	2.8	135
PMW92-05	3/11/2008	13:59	96.7	TOP(94.9)	40	3.1	5.7	21.1	0.24	4.90	127	0 0	0.0	150
PMW92-06	3/11/2008	15:55	98.9	95.8	150	3.6	6.5	20.9	1.67	0.50	-125	1.9	3.0	375

TABLE 4
FINAL FIELD MEASUREMENTS, EBT-7 SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Date	Time Sampled	Sample Depth ft (btoc)	Depth to Water ft (btoc)	Purge Rate mL/min	Volume Purged Liters	pH	Temp °C	Specific Conductivity mS/cm	Dissolved Oxygen mg/L	Oxidation Reduction Potential mV	Turbidity NTUs	Ferrous Iron mg/L	Carbon Dioxide mg/L
IW101-01A	6/9/2008	9:25	129.0	89.8	240	12.6	6.2	21.5	3.97	1.46	-13	0.0	7.6	195
IW101-01B	6/9/2008	12:20	120.0	84.8	160	12.6	6.3	23.9	0.54	0.21	-42	5 7	7.4	140
IW101-01C	6/9/2008	13:50	99 0	89.8	220	7.0	6.1	23.2	0.50	0.00	-50	15.6	1.6	100
IW101-02A	6/9/2008	16:25	131.0	90.0	240	7.2	6.2	23.9	1.13	0.00	-128	0 0	3.2	130
IW101-02B	6/9/2008	14:25	117.0	90.9	100	3.1	6.3	24.2	0.74	0.82	-103	0.0	4.2	170
IW101-02C	6/10/2008	10:55	100.0	90.7	140	5.7	6.1	23.8	0.78	0.47	-35	4.4	6 6	95
IW101-03A	6/10/2008	15:30	133.0	90.9	240	6.1	6.1	23.1	1.03	3.24	-30	6.6	3.4	150
IW101-03B	6/11/2008	10:20	117.0	90.9	240	22.6	6.3	21.8	1.11	2.54	-107	0.0	7.4	150
IW101-03C	6/11/2008	11:25	101.0	91.0	240	5.9	6.0	21.8	1.10	1.69	-44	0.0	3.6	125
IW101-04A	6/13/2008	09:50	131.0	91.0	240	25.4	6.2	21.5	3.91	0.00	-51	4.8	8.0	310
IW101-04B	6/13/2008	11:25	115.0	90.8	300	11.2	6.4	20.8	0.67	6.54	-20	2.6	8.4	140
IW101-04C	6/13/2008	12:45	99.0	90.8	240	17.7	6.6	21.3	0.57	1.30	-20	2.1	7.8	75
IW101-05A	6/13/2008	15:30	129.0	90.8	220	14.2	6.1	23.3	4.06	3.50	32	10.6	7.2	295
IW101-05B	6/16/2008	08:50	115.0	90.4	240	11.6	6.2	20.8	0.39	7.10	155	0.0	0.0	100
IW101-05C	6/16/2008	10:10	98.0	90.4	400	12.8	6.4	20.4	0.53	3.97	-31	9.9	4.6	95
IW101-06A	6/13/2008	10:05	131.0	91.1	300	16.9	6.2	21.3	1.56	0.30	18	7.6	3.2	140
IW101-06B	6/16/2008	13:00	101.0	91.2	320	9.2	6.2	21.3	0.39	2.97	64	6.4	1.0	75
IW101-06C	6/16/2008	13:50	101.0	91.1	280	11.5	6.2	20.8	0.46	0.86	0	0.1	3.4	100
IW101-07A	6/11/2008	13:40	131.0	91.8	200	7.4	6.2	23.9	0.50	1.49	-75	5.9	5.6	90
IW101-07B	6/11/2008	15:00	113.0	91.7	120	3.3	6.6	25.5	0.48	0.69	-55	3.1	3.2	50
IW101-07C	6/12/2008	09:10	100 0	91.8	180	6.1	6.2	24.4	0.66	5.84	16	2.6	4.6	80
IW101-08A	6/16/2008	15:30	131.0	91.1	360	13.1	6.5	21.6	0.63	2.37	-21	0.0	3.2	105
IW101-08B	6/17/2008	08:50	115.0	91.4	360	18.9	6.7	19.9	0.66	8.00	-126	0.0	7.0	100
IW101-08C	6/17/2008	10:55	99.0	91.9	400	16.5	6.4	21.3	1.14	1.42	-40	0.0	9.4	175
IW101-09A	6/12/2008	11:15	132.0	91.7	150	9.2	6.2	24.4	0.52	4.69	11	15.2	0.0	100
IW101-09B	6/12/2008	13:55	116.0	91.6	260	13.5	6.2	23.4	3.34	0.29	-20	9.1	4.8	190
IW101-09C	6/12/2008	15:20	101.0	91.5	240	12.0	5.8	22.8	1.42	4.02	73	3.1	6.8	210
IW21-01A	6/17/2008	10:10	102.0	92.4	160	11.0	6.4	22.7	1.78	7.14	-31	11.8	6.0	220
IW21-01B	6/17/2008	12:04	94.0	92 5	220	4.5	6.7	20.4	1.22	6.65	-28	6.4	5.5	170
IW21-02A	6/17/2008	14:50	105.0	92.5	200	9.8	6.2	20.2	0.33	8.48	-8	5.3	1.0	125
IW21-02B	6/18/2008	08:50	95.0	92.5	230	5.5	6.0	19.0	0.26	10.10	8	1.9	2.4	140
IW21-03A	6/18/2008	08:50	104.0	91.2	400	13.0	6.2	18.8	0.32	3.08	2	0.7	2.2	90
IW21-03B	6/18/2008	10:20	96.0	90.7	400	16.0	6.3	19.3	1.45	0.39	-84	5.4	9.0	140
IW21-04A	6/18/2008	11:35	90.5	91.0	400	9.2	6.4	19.3	1.00	0.00	-89	1.3	8.8	130
IW21-04B	6/18/2008	13:25	94.0	91.1	240	14.2	6.5	20.3	0.97	0.00	-22	15.4	9.2	120
IW21-05A	6/17/2008	14:00	106.0	90.7	260	24.0	6.1	20.9	4.54	0.00	-30	10.2	6.6	320
IW21-05B	6/17/2008	15:20	95.0	90.5	400	12.2	6.5	20.1	0.59	0.00	-122	0.0	3.6	140
IW85-01	6/18/2008	09:00	96.0	94.3	86	5.2	6.2	23.4	3.41	0.25	-88	0.0	5.0	175
IW85-02	6/17/2008	11:00	98.0	95.8	60	6.0	6.3	23.1	1.60	0.00	-98	8.4	7.0	225
IW85-05	6/17/2008	15:45	101.0	96.2	88	4.4	6.2	23.5	1.00	1.58	-69	13.6	6.2	200
IW85-06	6/17/2008	13:25	103.0	96.7	101	9.1	6.3	24.1	2 06	0.00	-95	18.9	5.0	275
IW92-01	6/17/2008	10:10	89.0	92.4	160	11.0	6.4	22.7	1.78	7.14	-31	11.8	6.0	220
IW92-02	6/10/2008	16:20	90.0	94.4	75	2.8	13.0	24.9	2.43	3.43	-228	7.8	5.2	210
IW92-03	6/10/2008	12:20	92.0	91.3	70	8.4	13.1	28.3	9.14	4.49	-182	16.2	8.0	275
IW92-04	6/11/2008	08:06	92.0	92.2	40	2.0	12.0	27.0	10.10	2.51	-160	9.2	6.0	275
IW92-05	6/11/2008	12:50	92.0	91.5	80	4.5	10.8	24.8	9.90	5.47	-191	19.7	5.0	300
IW92-06	6/13/2008	08:40	93.0	92.3	65	5.9	12.9	27.9	9.00	4.31	-230	26.9	nr	nr
IW92-07	6/13/2008	13:20	95.0	94.0	80	10.8	6.3	24.4	9.00	0.54	-151	48.7	1.5	80

TABLE 4
FINAL FIELD MEASUREMENTS, EBT-7 SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Date	Time Sampled	Sample Depth ft (btoc)	Depth to Water ft (btoc)	Purge Rate mL/min	Volume Purged Liters	pH	Temp °C	Specific Conductivity mS/cm	Dissolved Oxygen mg/L	Oxidation Reduction Potential mV	Turbidity NTUs	Ferrous Iron mg/L	Carbon Dioxide mg/L
IW92-08	6/17/2008	07:35	95.0	94 2	20	2.5	6.3	31.2	5.91	1.99	-108	70.0	nr	30
DR1-3	6/13/2008	10:03	121.6	92.8	110	4.0	6.4	20.9	0.47	4.36	44	0.0	3.0	150
DR2-1	6/9/2008	09:55	92.3	88.0	40	4.9	6 7	27.5	99.90	3.06	70	7.1	7.0	180
DR2-5	6/18/2008	11:10	98.6	96.2	40	3.0	6.1	25.6	0.15	6.47	106	0.0	0.0	45
IW-01	6/16/2008	11:30	97.8	95.4	120	10.0	5.7	25.2	0 55	0.00	-74	2.4	8.0	150
MW-21	6/16/2008	11:30	99.2	92.5	130	3.3	5.9	21.1	0.29	7.48	199	0 9	2.0	140
MW-85	6/16/2008	15:40	105.1	98.7	75	4.0	6.2	26.9	0.37	0.00	-111	2.2	4.0	200
MW101B	6/10/2008	14:00	133.0	90.4	180	6.1	6.2	21.5	0.40	0.87	47	0.0	1.8	90
MW101T	6/10/2008	12:40	115.0	90.4	180	12.0	6.1	23.8	0.39	1.24	158	0.0	0.0	85
MW-115	6/13/2008	12:15	94.9	90.5	160	4.2	6.0	21.6	0.28	1.93	137	0.0	1.2	120
PMW101-01A	6/9/2008	11:10	129.6	89.9	120	3.1	6.5	22.6	2.66	20.92	-109	4.6	3.6	400
PMW101-01B	6/9/2008	09:29	108.9	90.1	140	14.5	6.2	21.4	0.84	3.83	-68	0.0	3.2	200
PMW101-02A	6/10/2008	08:35	128 0	90.7	120	4.7	6.4	22.3	0.53	4.57	-45	0.6	5.0	300
PMW101-02B	6/9/2008	14:25	108.3	90.9	100	3.1	6.3	24.2	0.74	0.82	-103	0.0	4.2	170
PMW101-03A	6/10/2008	12:50	130.1	92.2	160	5.2	6.9	21.1	0.80	6.54	-67	0.0	2.8	145
PMW101-03B	6/10/2008	10:55	110.1	91.2	140	4.4	6.7	20.7	0.77	4.96	-87	1.1	2.4	210
PMW101-04A	6/11/2008	08:05	128.8	90.5	130	6.7	7.1	20.5	0.67	16.51	-38	20.0	8.6	80
PMW101-04B	6/10/2008	14:25	109.5	91.0	200	4.6	6.5	21.0	0.46	1.84	-32	0.0	6.2	140
PMW101-05A	6/11/2008	09:22	115.7	90.7	100	3.2	6.5	21.1	0.58	4.56	43	0.0	2.8	150
PMW101-05B	6/11/2008	12:00	98.2	91.1	210	14.6	6.6	20.9	0.55	5.45	50	0.0	9.4	145
PMW101-06A	6/12/2008	09:05	130.8	91.3	150	5.5	6 2	20.5	0 38	6.33	102	0.0	7.2	165
PMW101-06B	6/11/2008	14:10	110.2	91.3	130	3.4	6.4	23.9	0.49	8.30	47	0.2	4.5	185
PMW101-07A	6/12/2008	10:53	128.7	91.4	110	3.8	6.3	22.7	0.51	11.44	87	0.0	2.8	195
PMW101-07B	6/12/2008	12:35	108.7	91.6	150	4.8	6.0	21.9	0.23	2.20	147	0.0	2.6	95
PMW101-08A	6/12/2008	14:24	108.9	92.1	190	5.9	6.4	23.8	0.65	4.14	16	0.3	2.6	200
PMW101-08B	6/13/2008	08:15	108.9	92.1	220	5.3	6.2	21.6	0.42	4.51	94	4.9	2.5	240
PMW21-01	6/16/2008	09:20	100.9	92.3	200	6.3	6.1	20.0	0.31	4.71	161	0.0	1.6	170
PMW21-02	6/16/2008	13:40	102.1	91.3	140	4.8	6.0	22.9	0.28	3.79	162	0.0	2.0	100
PMW21-03	6/13/2008	15:29	101.2	90.7	120	4.1	6.0	22.8	0.27	5.30	168	11.3	0.2	125
PMW21-04	6/13/2008	14:05	100.2	90.6	90	3.3	6.0	22.5	0.35	3.20	148	0.0	1.6	185
PMW21-05	6/16/2008	15:20	105.1	88.7	110	3.2	6 0	23.9	0.30	6.79	204	0.0	0.4	100
PMW85-01	6/18/2008	13:10	100.7	97.7	85	4.3	6.2	23.4	0.17	7.16	35	0.0	0.0	65
PMW85-04	6/18/2008	11:35	100.0	97.9	50	3.2	6.4	27.7	2.90	1.57	-103	10.1	3.4	650
PMW85-05	6/18/2008	14:55	101.0	96.9	90	10.7	6.0	24.7	0.36	2.67	-46	40.5	5.6	140
PMW92-01	6/16/2008	09:20	99.0	92.3	200	6.3	6.1	20.0	0.31	4.71	161	0.0	1 6	170
PMW92-02	6/10/2008	16:20	100.7	94.4	75	2.8	13.0	24.9	2.43	3.43	-228	7.8	5.2	210
PMW92-03	6/11/2008	10:15	98.6	93.7	70	3.9	6.2	24.2	0.31	6.00	89	11.5	0 0	115
PMW92-04	6/12/2008	11:45	98.5	94.8	80	9.6	10.3	25.8	0.38	3.93	-136	25.7	6.4	150
PMW92-05	6/12/2008	15:15	96.7	93.7	40	4.7	5.9	27.8	0.19	4.06	112	20.0	1.4	75
PMW92-06	6/16/2008	13:40	98.9	95.5	70	3.2	6.3	27.9	1.06	0.00	-174	3.0	5 8	150

TABLE 5
FINAL FIELD MEASUREMENTS, EBT-8 SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Date	Time Sampled	Sample Depth ft (btoc)	Depth to Water ft (btoc)	Purge Rate mL/min	Volume Purged Liters	pH	Temp °C	Specific Conductivity mS/cm	Dissolved Oxygen mg/L	Oxidation Reduction Potential mV	Turbidity NTUs	Ferrous Iron mg/L	Carbon Dioxide mg/L
IW101-01A	12/8/2008	9:19	129.0	90 2	140	8.8	6.4	17.7	14.20	0.63	-149	19.7	8.2	645
IW101-01B	12/8/2008	10:55	120.0	90.0	145	8.0	6.3	17.8	9.40	0.85	-169	17.9	5.4	375
IW101-01C	12/8/2008	12:10	99.0	90.1	180	8.2	6.2	18.3	12.00	0.58	-134	12.7	5.8	525
IW101-02A	12/8/2008	13:35	131.0	90.0	280	6.5	6.2	18.4	2.63	2.57	-157	7.0	2.8	400
IW101-02B	12/8/2008	14:48	117.0	89.9	280	7.9	6 0	19 1	6.88	1.53	-140	17.4	3.2	800
IW101-02C	12/8/2008	15:50	100.0	90.5	270	5.2	6.0	19.4	5.61	1.20	-123	15.6	2.9	550
IW101-03A	12/10/2008	11:24	133.0	91.2	140	8.1	6.0	16.0	2.60	1.56	-129	8.2	7.6	175
IW101-03B	12/10/2008	12:35	117.0	90.9	140	6.9	6.1	17.2	6.44	0.37	-105	19.9	6.2	500
IW101-03C	12/10/2008	14:20	101.0	91.2	350	5.4	6.0	18.0	5.26	0.84	-72	12.8	2.6	375
IW101-04A	12/15/2008	11:35	131.0	91.6	150	12.0	6.4	15.3	19.90	0.00	-199	19.7	5.4	550
IW101-04B	12/15/2008	13:21	115.0	91.4	140	12.9	6.2	16.0	7.47	0.40	-142	19.9	5.2	350
IW101-04C	12/15/2008	15:17	99.0	91.3	180	14.0	6.4	17.3	19.60	0.31	-96	18.7	8.6	350
IW101-05A	12/12/2008	15:05	129.0	91.4	200	9.2	6.5	19.3	16.90	0.00	-153	17.1	8.0	450
IW101-05B	12/12/2008	16:34	115.0	90.9	250	11.2	6.0	18.6	2.25	0.48	-138	17.6	7.0	250
IW101-05C	12/15/2008	9:15	98.0	90.9	140	5.7	5.6	17.6	2.69	9.81	-122	13.9	2.6	275
IW101-06A	12/12/2008	11:28	131.0	91.7	210	7.1	6.0	18.8	4.52	0.81	-116	11.2	9.0	350
IW101-06B	12/12/2008	12:30	101.0	91.7	280	8.0	5.9	19.0	5.79	0.89	-72	17.2	5.6	450
IW101-06C	12/12/2008	13:40	101.0	91.7	250	7.2	6.2	19.7	3.25	1.11	-75	19.2	2.2	350
IW101-07A	12/10/2008	15:27	131.0	92.1	220	5.6	6.0	16.5	4.39	0.90	-100	16.4	6.6	325
IW101-07B	12/11/2008	9:35	113.0	91.7	80	5.0	6.0	13.0	5.83	0.75	-40	19.0	5.4	300
IW101-07C	12/11/2008	11:00	100.0	91.6	220	10.0	6.2	17.6	12.70	0.00	-69	9.3	5.6	350
IW101-08A	12/11/2008	16:30	131.0	91.3	140	7.7	6.3	17.1	10.00	0.00	-146	19.8	2.2	275
IW101-08B	12/12/2008	9:25	115.0	91.7	210	12.2	6.2	19.1	3.40	0.84	-115	11.7	5.2	225
IW101-08C	12/12/2008	10:25	99.0	92.2	150	6.9	6 4	19.5	33.80	0.72	-66	19.7	7.2	400
IW101-09A	12/11/2008	12:45	132.0	91.5	150	9.1	6.3	17.1	0.78	1.11	-26	15.6	0.6	100
IW101-09B	12/11/2008	14:00	116.0	91.4	290	7.4	6.5	17.8	33.90	0.00	-99	19.7	4.4	575
IW101-09C	12/11/2008	15:05	101.0	91.5	220	6.2	6.5	18.6	11.90	0.41	-89	18.5	4.2	300
IW21-01A	12/15/2008	8:25	102.0	92.6	120	4.1	5.8	12.1	9.20	1.00	-73	17.0	5.0	1005
IW21-01B	12/15/2008	11:16	94.0	92.6	160	18 8	5.6	15.0	6.21	1.81	-87	38.5	6.4	1075
IW21-02A	12/15/2008	15:05	105.0	92.9	110	12.9	5.5	11.7	4.86	1.98	-17	28.1	5.8	785
IW21-02B	12/16/2008	9:50	95.0	92.8	100	12.8	5.8	11.8	6.47	3.52	-52	40.1	5.0	1000
IW21-03A	12/16/2008	11:20	104.0	91.2	120	3.1	6.6	14.1	1.23	5.43	-47	0.6	7.0	OR
IW21-03B	12/16/2008	14:05	96.0	90.9	120	14.8	6.4	15.7	9.65	2.35	-41	35.0	6.8	1250
IW21-04A	12/16/2008	10:30	90.5	91.1	140	22.2	6.4	15.2	16.70	0.00	-168	33.4	5.2	300
IW21-04B	12/16/2008	11:47	94.0	91.4	190	12.0	6.4	17.0	12.50	0.00	-96	11.5	8.2	300
IW21-05A	12/16/2008	13:10	106.0	90.7	220	11.3	6.0	16.1	2.27	0.19	-126	9.2	6.6	350
IW21-05B	12/16/2008	15:35	95.0	90.7	320	23.8	6.5	17.2	10.90	0.00	-160	19.8	7.2	350
IW85-01	12/15/2008	12:25	96.0	93.9	40	3.1	7.1	8.0	16.70	0.00	-228	48.3	4.6	1300
IW85-02	12/12/2008	16:00	98.0	95.4	64	11.7	7.2	19.8	15.35	0.00	-163	49.6	8.8	1200
IW85-05	12/15/2008	9:00	101.0	95.6	80	3.6	6.4	16.5	4.79	1.73	-24	13.6	3 2	240
IW85-06	12/12/2008	12:50	103.0	97.1	70	7.7	7.1	16.8	17.23	0.00	-168	39.8	4.6	750
IW92-01	12/16/2008	12:00	89.0	86.3	50	3.7	6.5	16.9	5.09	0.92	-42	3.7	7.6	1300
IW92-02	12/16/2008	9:20	90.0	84.4	80	5.4	6.5	14.1	1.30	0.62	-22	7.0	6.8	650
IW92-03	12/15/2008	16:00	92.0	91.1	80	6.2	6.3	14.2	4.54	0.00	-75	50.0	5.0	200
IW92-04	12/17/2008	10:50	92.0	92.2	38	2.0	6.6	12.7	8.16	0.00	-54	115.0	5.7	400
IW92-05	12/17/2008	9:05	92.0	92.2	40	5.7	7.1	10.8	17.73	0.37	-170	37.3	5.0	2150
IW92-06	12/17/2008	12:46	93.0	91.6	40	4.6	7.2	12.2	20.02	0.08	-140	43.2	nr	nr
IW92-07	12/17/2008	15:12	95.0	93.6	90	11.2	6.5	15.9	20.00	0.00	-102	83.1	5.6	550
IW92-08	12/17/2008	11:35	95.0	94.2	100	3.9	6.4	11.6	20.60	0.13	-71	343.0	9.2	525

TABLE 5
FINAL FIELD MEASUREMENTS, EBT-8 SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Date	Time Sampled	Sample Depth ft (btoc)	Depth to Water ft (btoc)	Purge Rate mL/min	Volume Purged Liters	pH	Temp °C	Specific Conductivity mS/cm	Dissolved Oxygen mg/L	Oxidation Reduction Potential mV	Turbidity NTUs	Ferrous Iron mg/L	Carbon Dioxide mg/L
DR1-3	12/11/2008	11:10	121.6	91.7	55	3 5	6.6	13.6	0.48	10.45	-51	18.2	8.6	95
DR2-1	12/12/2008	9:40	92.3	88.6	72	3.1	6.5	13.5	0.25	4.31	63	19.8	0.6	105
DR2-5	12/17/2008	8:33	98.6	95.8	140	4.2	6.2	17.8	0.24	7.86	139	0.0	0.2	75
IW-01	12/10/2008	11:50	97.8	95.2	40	3 6	6.5	14.8	2.46	2.80	-54	17.4	7.0	500
MW-21	12/11/2008	13:39	99.2	92.4	100	3.0	6.3	15.3	0.29	8.32	68	1.0	0.0	70
MW-85	12/17/2008	14:34	105.1	98.8	90	3 3	6.2	16.6	0.25	4.17	-60	0.0	0.4	75
MW101B	12/10/2008	9:55	133.0	90.5	250	9.5	6.3	16.8	0.74	2.89	-173	2.0	2.6	100
MW101T	12/10/2008	8:50	115.0	90.5	230	9.8	6.4	12.1	0.64	5.47	-212	8.7	6.6	125
MW-115	12/12/2008	14:20	94.9	90.7	150	3.1	6.2	16.7	0.37	4.22	-55	0.0	7.0	120
PMW101-01A	12/8/2008	8:28	129.6	90.1	112	5.6	6.8	16.0	4.22	2.30	-17	4.5	4.6	1200
PMW101-01B	12/8/2008	9:25	108.9	90.3	160	3.3	6.5	17.1	0.53	3.07	-93	0.0	4.0	250
PMW101-02A	12/8/2008	11:10	128.0	90.9	75	3.0	6.7	15.3	0.60	2.45	-84	0.0	3.6	345
PMW101-02B	12/8/2008	12:10	108.3	91.1	120	3.0	6.8	18.0	0.49	2.25	-101	0.0	4.6	200
PMW101-03A	12/8/2008	13:18	130.1	91.1	100	3.5	7.3	16.9	0.66	2.67	-100	0.0	4.2	135
PMW101-03B	12/8/2008	14:47	110.1	91.1	70	3.2	7.0	17.9	0.61	6.27	-82	5.0	4.8	255
PMW101-04A	12/8/2008	15:48	128.8	90.3	120	3.6	7.4	17.7	0.58	2.51	-122	10.2	7.0	175
PMW101-04B	12/10/2008	8:20	109.5	91.2	160	3.3	6.3	15.0	0.40	2.08	-40	0.5	6.2	90
PMW101-05A	12/10/2008	9:35	115.7	91.0	120	5.4	6.5	15.5	0.62	1.74	-74	5.7	5.4	180
PMW101-05B	12/10/2008	10:29	98.2	91.3	160	4.8	6.3	15.9	0.31	1.66	-36	3.3	5.2	140
PMW101-06A	12/10/2008	11:35	130.8	91.6	100	3 2	6.5	15.2	0.46	1.90	-61	0.0	4.0	185
PMW101-06B	12/10/2008	12:47	110.2	91.6	100	3.1	6.7	14.6	0.53	1.45	-73	0.1	4.0	215
PMW101-07A	12/10/2008	14:28	128.7	91.6	45	3.0	6.6	12.2	0.46	2.09	-42	0.0	4.0	120
PMW101-07B	12/10/2008	15:44	108.7	91.7	130	3.3	6.7	15.1	0.26	2.37	-14	0.0	0.0	40
PMW101-08A	12/11/2008	8:25	108.9	92.0	80	3.8	5.6	13.3	1.28	5.55	-5	19.9	6.6	230
PMW101-08B	12/11/2008	9:17	108.9	92.1	150	3.0	6.0	15.8	9.36	5.13	-94	12.6	4.6	365
PMW21-01	12/11/2008	14:43	100.9	92.2	120	4.3	5.6	15.6	2.42	13.73	-32	19.9	9.0	235
PMW21-02	12/12/2008	10:07	102.1	91.8	105	3.2	5.8	15.5	1.14	4.79	-25	13.7	6.4	250
PMW21-03	12/12/2008	11:26	101.2	91.2	70	3.3	6.2	15.2	0.34	3.55	-57	0.0	3.2	120
PMW21-04	12/12/2008	13:32	100.2	91.0	100	3.6	5.5	16.5	4.07	5.55	-33	19.7	7.6	630
PMW21-05	12/11/2008	12:29	105.1	88.7	70	3.1	6.4	13.0	0.29	10.45	41	11.4	0.2	200
PMW85-01	12/8/2008	8:20	100.7	97.3	82	3.1	7.2	17.0	0.72	4.39	-100	1.2	5.2	260
PMW85-04	12/8/2008	10:10	100.0	97.7	50	3.1	7.3	16.2	1.94	5.72	-98	19.7	6.6	355
PMW85-05	12/8/2008	13:05	101.0	97.0	100	9.3	6.8	19.1	3.37	1.14	-387	23.2	8.0	400
PMW92-01	12/11/2008	12:50	99.0	93.8	74	8.7	7.2	16.0	20.43	0.00	-337	96.7	8.0	1350
PMW92-02	12/11/2008	10:10	100.7	94.1	84	3.1	8.2	17.7	2.66	2.96	-115	11.7	6.0	255
PMW92-03	12/11/2008	8:40	98.6	93.5	92	5.2	7.1	16.5	0.49	1.62	54	4.3	0.4	250
PMW92-04	12/10/2008	14:40	98.5	98.0	78	9.8	7.1	17.7	0.47	0.73	-39	0.3	6.0	200
PMW92-05	12/10/2008	9:20	96.7	93.7	32	5.8	6.5	11.6	1.11	1.77	-80	17.3	1.0	75
PMW92-06	12/8/2008	14:25	98.9	95.2	72	3.0	7.4	19.3	0.64	3.26	-120	9.4	6.4	400

TABLE 6
FINAL FIELD MEASUREMENTS, EBT-9 SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Date	Time Sampled	Sample Depth ft (btoc)	Depth to Water ft (btoc)	Purge Rate mL/min	Volume Purged Liters	pH	Temp °C	Specific Conductivity mS/cm	Dissolved Oxygen mg/L	Oxidation Reduction Potential mV	Turbidity NTUs	Ferrous Iron mg/L	Carbon Dioxide mg/L
IW101-01A	3/9/2009	09:40	129.0	90.1	160	15.2	6.5	19.0	8.86	0.00	-151	0.0	4.2	645
IW101-01B	3/9/2009	11:05	120.0	90.0	200	10.0	6.5	19.8	9.00	0.00	-165	0.0	4.4	460
IW101-01C	3/9/2009	13:16	99.0	89.9	300	22.9	6 4	20.5	21.70	1.18	-73	0.2	4.2	495
IW101-02A	3/9/2009	15:25	131.0	90.1	160	9.8	6.2	22.4	1.78	0.80	-204	0.0	2.6	225
IW101-02B	3/10/2009	09:05	117.0	90.2	100	3.7	6.1	20 2	0.22	0.00	-199	0.0	4.4	95
IW101-02C	3/10/2009	10:42	100 0	90.5	100	8.9	6 2	20 6	2.81	0.00	-178	0.0	3.0	320
IW101-03A	3/10/2009	12:40	133.0	90.9	100	5.1	6.0	22.0	4.85	0.00	-109	1.2	4.4	585
IW101-03B	3/10/2009	15:00	117.0	90.9	100	6.0	6.2	21.8	5.89	0.00	-91	16.6	4.4	400
IW101-03C	3/10/2009	16:30	101.0	90.7	140	5.4	6.1	21.7	7.57	0.00	-51	17.9	3.6	865
IW101-04A	3/12/2009	12:55	131.0	91.4	200	7.7	6.5	16.1	9.00	0.00	-162	17.3	3.6	750
IW101-04B	3/12/2009	14:00	115.0	91.0	220	8.3	6.3	16.8	8 55	0.00	-160	9.2	4.2	700
IW101-04C	3/12/2009	14:50	99.0	91.0	220	5.2	6.2	16.7	9.00	0.00	-126	13.6	2.2	540
IW101-05A	3/12/2009	16:25	129.0	91.1	180	10.4	6.4	17.5	9.00	0.00	-163	5.0	2.2	700
IW101-05B	3/13/2009	09:17	115.0	90.6	280	16.6	5.9	17.6	3.40	0.00	-192	0.0	3.4	295
IW101-05C	3/13/2009	11:05	98.0	90.4	240	17.3	5.9	18.3	13.80	0.94	-68	6.4	4.4	430
IW101-06A	3/13/2009	12:25	131.0	91.2	220	11.4	6.0	17.6	20.40	0.00	-98	1.4	3.6	800
IW101-06B	3/13/2009	13:45	101.0	91.2	220	11.6	5.9	17.6	16.40	0.00	-75	4.8	4.2	830
IW101-06C	3/13/2009	15:25	101.0	91.0	240	14.9	6.3	18.5	35.40	0.10	-43	6.9	3.8	720
IW101-07A	3/11/2009	12:55	131.0	92 2	180	13.0	6.0	17.9	0.91	0.46	-125	15.0	4.0	330
IW101-07B	3/11/2009	13:50	113.0	92.1	280	8.6	6.2	18.2	9.00	0.00	-154	5.1	3.8	340
IW101-07C	3/11/2009	15:00	100.0	92.0	200	7.4	6 3	17.6	9.00	0.00	-101	1.8	4.6	320
IW101-08A	3/16/2009	09:40	131.0	91.3	200	19.4	6.3	18.6	2.61	8.95	-66	16.3	3.6	320
IW101-08B	3/16/2009	11:35	115.0	91.5	240	14.2	6.0	19.1	9.00	0.00	-98	13.6	2.6	650
IW101-08C	3/16/2009	13:55	99.0	92.0	280	30.6	6.6	19.5	99.90	0.00	-85	36.5	3.8	360
IW101-09A	3/11/2009	16:10	132.0	92.1	128	8.3	6.5	18.0	0.43	1.58	-225	9.6	0.6	295
IW101-09B	3/12/2009	19:45	116.0	91.8	220	25.5	6.6	16.2	9.00	0.44	-106	18.6	4.2	650
IW101-09C	3/12/2009	11:20	101.0	91.9	200	9.5	6.5	16.6	9.00	0.00	-91	2.9	4.2	600
IW21-01A	3/16/2009	15:40	102.0	92.4	190	15.0	6.2	17.9	99.90	2.05	-60	14.0	3.6	445
IW21-01B	3/17/2009	09:10	94.0	92.3	200	14.0	5.9	17.4	12.30	0.00	-84	19.4	2.6	840
IW21-02A	3/16/2009	8:55	105.0	92.4	150	3.7	5.2	16.8	3.29	0.00	41	9.2	2.6	OR
IW21-02B	3/16/2009	11:45	95.0	92.5	180	20.0	6.0	16.4	11.35	0.36	-121	14.4	2.0	OR
IW21-03A	3/16/2009	13:45	104.0	91.1	170	7.5	5.8	17.7	1.77	0.00	-17	0.2	2.4	OR
IW21-03B	3/16/2009	16:23	96.0	90.8	150	18.1	5.7	17.8	7.84	0.00	-23	27.9	2.4	OR
IW21-04A	3/17/2009	8:40	90.5	91.0	175	6.1	6.1	16.9	7.81	0.00	-11	0.0	1.6	OR
IW21-04B	3/17/2009	10:40	94.0	91.1	200	12.8	5.9	18.3	1.49	0.00	-33	19.2	1.2	OR
IW21-05A	3/17/2009	11:55	106.0	90.5	280	25.2	5.8	19.3	3.00	2.36	-129	67.0	4.4	475
IW21-05B	3/17/2009	13:45	95.0	90.6	230	16.9	6.3	19.7	30.90	0.21	-80	13.6	3.4	570
IW85-01	3/13/2009	13:05	96.0	93.8	60	7.4	5.9	16.4	29.64	0.42	-345	48.3	2.4	1900
IW85-02	3/13/2009	10:06	98.0	95.1	70	9.2	6.2	17.3	30.99	0.33	-305	56.4	3.0	210
IW85-05	3/13/2009	12:37	101.0	95.4	80	8.1	6.3	15.6	27.94	0.00	-147	5.2	2.8	OR
IW85-06	3/13/2009	15:50	103.0	96.7	80	10 0	6.7	16.0	15.43	0.00	-91	152.0	2.4	OR
IW92-01	3/11/2009	12:21	89.0	86.6	27	3.0	6.4	13.0	7.94	0.10	-16	11.7	2.5	1100
IW92-02	3/11/2009	10:00	90.0	86.7	110	3 9	6.0	16.2	2.78	2.37	24	14 0	2.6	80
IW92-03	3/10/2009	14:55	92.0	91.1	27	3.9	5.7	25.4	30.38	0.00	-282	427.0	2.0	1400
IW92-04	3/11/2009	7:50	92.0	91.5	44	2.6	6.4	22.7	27.00	0.00	-340	85.3	2.0	1200
IW92-05	3/9/2009	14:10	92.0	91.3	50	2.7	6.4	27.2	38.91	0.00	-343	91.9	3.3	1420
IW92-06	3/9/2009	14:45	93.0	90.9	30	5.7	6.3	24.3	30.44	0.36	-337	81.0	1.5	1200
IW92-07	3/9/2009	9:30	95.0	93.5	100	8.0	6.5	20.0	26.94	0.66	-253	168.0	2.6	900
IW92-08	3/12/2009	12:21	95.0	94.2	45	4.0	7.2	6.4	15.63	0.00	-82	25.5	1.6	1000

TABLE 6
FINAL FIELD MEASUREMENTS, EBT-9 SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Date	Time Sampled	Sample Depth ft (btoc)	Depth to Water ft (btoc)	Purge Rate mL/min	Volume Purged Liters	pH	Temp °C	Specific Conductivity mS/cm	Dissolved Oxygen mg/L	Oxidation Reduction Potential mV	Turbidity NTUs	Ferrous Iron mg/L	Carbon Dioxide mg/L
DR1-3	3/12/2009	8:27	121.6	92.0	120	4.8	6.0	13.5	0.50	0.33	-17	0.0	2.8	115
DR2-1	3/12/2009	9:27	92.3	87.8	30	4.4	5 6	12.8	0 29	3.99	89	15.3	0.3	100
DR2-5	3/13/2009	14:36	98 6	95.7	64	4.8	5.5	17.6	0.21	2.84	0	0.1	0 0	35
IW-01	3/16/2009	9.45	97.8	95.2	80	6.0	6 2	17.1	13.01	0.40	-143	99.0	3.0	1300
MW-21	3/13/2009	9:25	99.2	92.5	180	3.7	5.9	15.4	0.24	1.91	125	0.0	0.0	155
MW-85	3/17/2009	14:20	105.1	98.7	140	5.3	5.3	22.1	0.29	2.29	74	20.0	1.2	120
MW101B	3/11/2009	11:05	133.0	90.8	260	15.9	6.2	17.3	2.03	1.09	-145	2.3	4.0	80
MW101T	3/11/2009	09:40	115.0	90.7	260	19.8	6.2	14.2	0.13	2.55	-126	1.2	3.4	85
MW-115	3/12/2009	15:15	94.9	90.5	225	9.0	6.0	16.0	0.48	0.08	-35	0.0	2.2	135
PMW101-01A	3/9/2009	16:05	129.6	90.0	144	7.4	7.1	20.6	4.43	0.00	-50	0.0	2.6	450
PMW101-01B	3/10/2009	8:55	108.9	90.1	120	9.4	6.5	19.5	0.63	0.00	-103	0.0	2.8	250
PMW101-02A	3/9/2009	13:00	128.0	90.9	140	4.2	6.8	21.4	1.22	0.00	-117	0.0	4.8	165
PMW101-02B	3/9/2009	14:33	108.3	91.0	176	4.9	6.5	20.6	0.52	0.00	-64	0.0	3.0	250
PMW101-03A	3/9/2009	9:05	130.1	91.0	70	3.9	7.0	16.9	0.72	0.44	-37	0.0	2.8	135
PMW101-03B	3/9/2009	11:00	110.1	91.2	70	3.4	6.7	18.3	0.63	0.00	-56	0.0	3.0	215
PMW101-04A	3/10/2009	10:17	128 8	90.7	120	5.6	6.7	20.2	0.58	0.96	-90	0.0	2.8	150
PMW101-04B	3/10/2009	12:00	109.5	90.9	152	11.5	6.3	19.7	0.45	0.23	-97	0.0	2.8	235
PMW101-05A	3/10/2009	13:45	115.7	90.6	100	4.7	6.5	20.9	0.57	0.00	-105	0.0	2.6	245
PMW101-05B	3/10/2009	15:15	98.2	91.0	180	13.0	6.4	19.9	0.45	0.23	-82	0.0	2.4	250
PMW101-06A	3/10/2009	16:10	130.8	91.2	160	4.0	6.3	20.4	0.41	0.76	-70	0.0	2.6	240
PMW101-06B	3/11/2009	9:00	110.2	91.7	130	8.0	6.7	15.7	0.50	0.00	-66	0.0	2.2	220
PMW101-07A	3/11/2009	10:05	128.7	91.7	120	4.0	6.6	15.5	0.51	1.03	-51	1.7	2.4	160
PMW101-07B	3/11/2009	11:35	108.7	91.9	185	11.1	6.2	16.9	0.22	0.95	41	1.0	0.2	150
PMW101-08A	3/11/2009	14:00	108.9	92.5	45	4.4	6.0	12.2	1.24	0.19	-70	0.0	2.4	300
PMW101-08B	3/11/2009	15:30	108.9	92.5	170	6.0	6.4	17.3	8.01	0.64	-49	0.0	2.0	815
PMW21-01	3/12/2009	16:15	100.9	92.4	200	6.9	5.5	15.4	3.00	0.00	0	0.0	1.4	400
PMW21-02	3/12/2009	11:55	102.1	91.4	170	8.5	5.3	14.6	3.16	0.00	31	0.0	0.8	OR
PMW21-03	3/12/2009	13:05	101.2	90.8	130	4.0	5.9	14.5	0.58	0.15	-9	0.0	104.0	105
PMW21-04	3/12/2009	14:12	100.2	90.8	190	7 6	6.0	15.3	3.28	0.00	-15	0.0	1.8	350
PMW21-05	3/12/2009	9:55	105.1	89.1	130	6.0	5.7	15.5	0.26	4.39	135	0.0	0.0	100
PMW85-01	3/13/2009	16:00	100.7	97.0	52	3.5	6.2	16.9	0.49	0.84	-44	4.2	2.8	145
PMW85-04	3/17/2009	12:55	100.0	97.7	50	3.2	6.7	21.8	2.18	0.00	-144	4.3	2.6	500
PMW85-05	3/17/2009	14:27	101.0	96.5	80	4.6	5.7	22.7	2.31	0.00	-18	5.8	2.2	OR
PMW92-01	3/16/2009	12:40	99.0	93.8	74	9.0	6.2	18.9	38.31	0.28	-350	165.0	3.2	2000
PMW92-02	3/16/2009	13:50	100.7	94.3	110	3.1	6.7	19.5	3.57	0.29	-131	5.8	3.5	700
PMW92-03	3/16/2009	15:10	98.6	93.7	78	3.2	6.4	19.5	0.72	1.00	-35	1.3	0.8	350
PMW92-04	3/17/2009	8:10	98.5	94.7	70	3.3	6.2	17.6	0.59	0.98	-18	5.1	3.4	180
PMW92-05	3/17/2009	10:40	96.7	TOP	40	5.8	5.4	19.5	2.54	1.89	-116	23.1	3.4	1400
PMW92-06	3/12/2009	14:44	98.9	95.2	52	3.8	6.4	13.8	0.45	0.06	-39	7.3	3.0	55

TABLE 7
WATER LEVEL MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Aquifer	Top Of Casing Elevation (ft, msl)	Top of Screen Elevation (ft, msl)	EBT-5 - 12/7/07 Depth to Water (ft, btoc)	EBT-5 - 12/7/07 Groundwater Elevation (ft, msl)	EBT-6 - 3/7/2008 Depth to Water (ft, btoc)	EBT-6 - 3/7/2008 Groundwater Elevation (ft, msl)	EBT-7 - 6/6/2008 Depth to Water (ft, btoc)	EBT-7 - 6/6/2008 Groundwater Elevation (ft, msl)	EBT-8 - 12/5/2008 Depth to Water (ft, btoc)	EBT-8 - 12/5/2008 Groundwater Elevation (ft, msl)	EBT-9 - 3/6/2009 Depth to Water (ft, btoc)	EBT-9 - 3/6/2009 Groundwater Elevation (ft, msl)
IW21-01A	Fluvial	294.34	195.63	92.07	202.27	92.20	202.14	92.64	201.70	92.65	201.69	92.31	202 03
IW21-01B	Fluvial	294.61	204.72	92.16	202.45	92.38	202.23	92.59	202.02	92.58	202 03	92.41	202.20
IW21-02A	Fluvial	294.62	194.43	92.23	202.39	92.44	202.18	92.40	202.22	92.83	201.79	92.47	202.15
IW21-02B	Fluvial	294.65	202.96	92.33	202.32	92.54	202.11	92.42	202.23	92.84	201.81	92.60	202.05
IW21-03A	Fluvial	292.81	193.10	91.01	201.80	91.23	201.58	91.31	201.50	91.54	201.27	91.15	201.66
IW21-03B	Fluvial	292.50	202.68	90.72	201.78	90.97	201.53	91.03	201.47	91.30	201.20	90.88	201.62
IW21-04A	Fluvial	292.69	192.77	90.93	201.76	91.05	201 64	91.26	201.43	91.55	201.14	91.08	201.61
IW21-04B	Fluvial	292.79	203.06	91 04	201.75	91.14	201.65	91 34	201 45	91.53	201.26	91.17	201.62
IW21-05A	Fluvial	291.78	191.01	90.51	201.27	90.55	201.23	90 80	200 98	91.03	200.75	90.55	201.23
IW21-05B	Fluvial	291.82	201.87	90.51	201.31	90.55	201.27	90 75	201.07	90.77	201.05	90.56	201.26
IW85-01	Fluvial	304.79	216.53	95.45	209.34	94.45	210.34	94.43	210 36	93.99	210.80	93.92	210.87
IW85-02	Fluvial	304.93	213.73	95.90	209.03	96 10	208.83	96.02	208.91	95.16	209.77	95.20	209.73
IW85-05	Fluvial	304.73	212.33	96.50	208.23	96.70	208.03	96.42	208.31	95.81	208.92	95.78	208.95
IW85-06	Fluvial	304.81	209.31	96.91	207.90	96.98	207.83	96.98	207.83	96.89	207.92	96.71	208.10
IW92-01	Fluvial	304.51	224.16	87.15	217.36	86.60	217.91	86.83	217.68	86.49	218.02	86.45	218.06
IW92-02	Fluvial	304.05	224.53	88.52	215.53	88.33	215.72	86.35	217.70	95.13	208.92	83.80	220.25
IW92-03	Fluvial	304.20	220.73	91.80	212.40	91.70	212.50	91.61	212.59	91.15	213.05	91.13	213.07
IW92-04	Fluvial	303.80	220.55	92.38	211.42	91.89	211.91	91.97	211.83	91.65	212.15	91.53	212.27
IW92-05	Fluvial	303 99	220.48	91.91	212.08	91.39	212.60	91.03	212.96	91.33	212.66	91.24	212.75
IW92-06	Fluvial	304.07	219.67	92.20	211.87	91.90	212.17	91.81	212.26	90.91	213.16	90.74	213.33
IW92-07	Fluvial	303.78	216.00	93.88	209.90	94.15	209.63	94.01	209.77	93.54	210.24	93.38	210.40
IW92-08	Fluvial	304.55	219.25	93.31	211.24	94.00	210.55	94.22	210.33	94.20	210.35	93.98	210.57
IW101-01A	Fluvial	290.76	168.68	89.90	200.86	89.89	200.87	90.09	200.67	90.72	200.04	89.88	200.88
IW101-01B	Fluvial	290.70	183.64	89.79	200.91	89.85	200.85	89.99	200.71	90.58	200.12	90.02	200.68
IW101-01C	Fluvial	290.66	198.82	89.85	200.81	89.89	200.77	90.04	200.62	90.43	200.23	89.87	200.79
IW101-02A	Fluvial	291.12	167.14	90.11	201.01	90.13	200.99	90.28	200.84	90.58	200.54	89.95	201.17
IW101-02B	Fluvial	291.14	181.08	90.19	200.95	90.34	200 80	90.42	200.72	90.78	200.36	89.21	201.93
IW101-02C	Fluvial	291.53	197.81	90 60	200.93	90.65	200.88	90.83	200.70	91.14	200.39	90.66	200.87
IW101-03A	Fluvial	291.94	166.78	90.93	201.01	90.94	201.00	91.10	200.84	91.47	200.47	91.04	200.90
IW101-03B	Fluvial	291.91	182.55	90.85	201.06	90.90	201.01	91.08	200.83	91.50	200.41	91.11	200.80
IW101-03C	Fluvial	292.04	198.45	90.90	201.14	90.96	201.08	91.14	200.90	91.43	200.61	91.22	200.82
IW101-04A	Fluvial	291.72	168.31	90.88	200.84	91.13	200.59	91.21	200.51	91.67	200.05	91.24	200.48
IW101-04B	Fluvial	291.59	184.58	90.79	200.80	90.91	200.68	90.98	200.61	91.54	200.05	91.03	200.56
IW101-04C	Fluvial	291.47	201.78	90.73	200.74	90.86	200.61	90.93	200.54	91.38	200.09	90.81	200.66
IW101-05A	Fluvial	291.52	170.08	90.71	200.81	90.76	200.76	90.92	200.60	91.51	200.01	91.18	200.34
IW101-05B	Fluvial	291.41	183.63	90.45	200.96	90.52	200.89	90.70	200.71	91.10	200.31	90.58	200 83
IW101-05C	Fluvial	291.27	202.89	90.40	200.87	90.48	200.79	90.63	200.64	91.13	200.14	90.49	200.78

TABLE 7
WATER LEVEL MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

				EBT-5 - 12/7/07		EBT-6 - 3/7/2008		EBT-7 - 6/6/2008		EBT-8 - 12/5/2008		EBT-9 - 3/6/2009	
Well ID	Aquifer	Top Of Casing Elevation (ft, msl)	Top of Screen Elevation (ft, msl)	Depth to Water (ft, btoc)	Groundwater Elevation (ft, msl)	Depth to Water (ft, btoc)	Groundwater Elevation (ft, msl)	Depth to Water (ft, btoc)	Groundwater Elevation (ft, msl)	Depth to Water (ft, btoc)	Groundwater Elevation (ft, msl)	Depth to Water (ft, btoc)	Groundwater Elevation (ft, msl)
IW101-06A	Fluvial	292.16	168.54	91.13	201.03	91.26	200.90	91.29	200.87	91.70	200.46	91.32	200.84
IW101-06B	Fluvial	292.19	183.67	91.15	201.04	91.30	200.89	91.36	200.83	91.73	200.46	91.29	200.90
IW101-06C	Fluvial	292.18	198.09	91.16	201.02	91.21	200.97	91.34	200.84	91.60	200.58	91.42	200.76
IW101-07A	Fluvial	292.83	169.83	91.74	201.09	91.81	201.02	91.98	200.85	92.28	200.55	91.71	201.12
IW101-07B	Fluvial	292.81	186.22	91.75	201.06	91.78	201 03	91.96	200.85	92.36	200.45	92.05	200.76
IW101-07C	Fluvial	292.78	199.48	91.70	201.08	91.76	201 02	91.96	200.82	92.23	200.55	91.82	200.96
IW101-08A	Fluvial	292.28	167.16	91.20	201.08	91.31	200 97	91.41	200.87	91.74	200.54	91.32	200.96
IW101-08B	Fluvial	292.20	184.53	91.28	200.92	91.39	200.81	91.50	200.70	91.79	200.41	91.32	200 88
IW101-08C	Fluvial	292.73	199.75	91.75	200.98	91.86	200.87	90.92	201.81	91.97	200.76	91.87	200 86
IW101-09A	Fluvial	292.59	167.54	91.60	200.99	91.64	200.95	91.78	200.81	92.11	200.48	91.62	200.97
IW101-09B	Fluvial	292.51	182.56	91.49	201.02	91.51	201.00	91.72	200.79	92.16	200.35	91.63	200 88
IW101-09C	Fluvial	292.59	197.71	91.49	201.10	91.48	201.11	91.69	200.90	92.04	200.55	91.60	200.99
PMW21-01	Fluvial	294.73	206.34	92.23	202.50	92.25	202.48	92.40	202.33	92.69	202.04	92.30	202.43
PMW21-02	Fluvial	292.98	201.72	91.24	201.74	91.42	201.56	91.48	201.50	91.72	201.26	91.33	201.65
PMW21-03	Fluvial	292.11	201 80	90.70	201.41	90.76	201.35	90.89	201.22	91.11	201.00	90 67	201.44
PMW21-04	Fluvial	291.87	202.88	90.60	201.27	90.64	201.23	90.72	201.15	91.07	200.80	90.59	201.28
PMW21-05	Fluvial	288.53	194.28	88.77	199.76	88.75	199.78	88.91	199.62	89.29	199.24	88.76	199.77
PMW85-01	Fluvial	305.08	211.88	97.65	207.43	97.89	207.19	97.66	207.42	97.32	207.76	96.97	208.11
PMW85-04	Fluvial	305.18	213.45	97.91	207.27	98.04	207.14	97.89	207.29	97.89	207.29	97.62	207.56
PMW85-05	Fluvial	305.12	211.96	96.93	208.19	97.10	208 02	96.89	208.23	96.79	208.33	96.55	208.57
PMW92-01	Fluvial	304 23	211.63	94.43	209.80	94 62	209.61	94.10	210.13	93.77	210.46	93.67	210.56
PMW92-02	Fluvial	304.17	209.40	94.35	209 82	94.40	209.77	94.44	209.73	94.35	209.82	94.30	209.87
PMW92-03	Fluvial	303.91	211.42	93.71	210 20	93.89	210.02	93.71	210.20	93.50	210 41	93 28	210.63
PMW92-04	Fluvial	303.93	212.72	94.76	209.17	94.90	209.03	94.78	209.15	94.75	209.18	94 49	209.44
PMW92-05	Fluvial	304.07	215.74	94.29	209.78	93.64	210.43	93.95	210.12	93.64	210.43	93 64	210.43
PMW92-06	Fluvial	304.65	213.02	95.53	209.12	95.75	208.90	95.58	209.07	95.35	209.30	95 00	209.65
PMW101-01A	Fluvial	290.78	169.95	89.90	200.88	89.97	200.81	90.01	200.77	90.43	200.35	89.99	200.79
PMW101-01B	Fluvial	290.86	192.79	90.24	200.62	90.24	200.62	90.35	200.51	90.64	200.22	90.11	200.75
PMW101-02A	Fluvial	291.47	174.35	90.87	200.60	90.91	200.56	90.94	200.53	91.28	200.19	90.79	200.68
PMW101-02B	Fluvial	291.60	194.17	91.09	200.51	91.09	200.51	91.16	200.44	91.48	200.12	91.02	200.58
PMW101-03A	Fluvial	291.61	172.42	91.17	200.44	91.16	200.45	91.26	200.35	91.56	200.05	91.11	200.50
PMW101-03B	Fluvial	291.55	192.24	91.20	200.35	91.18	200.37	91.25	200.30	91.58	199.97	91.06	200.49
PMW101-04A	Fluvial	291.07	173.13	90.49	200.58	90.49	200.58	90.59	200.48	90.93	200.14	90.44	200.63
PMW101-04B	Fluvial	291.47	192.91	91.09	200.38	91.04	200.43	91.16	200.31	91.46	200.01	91.01	200.46
PMW101-05A	Fluvial	291.43	186.61	90.80	200.63	90.78	200.65	90.86	200.57	91.15	200.28	90.71	200.72
PMW101-05B	Fluvial	291.68	206.83	91.13	200.55	91.12	200.56	91.22	200.46	91.49	200.19	91.06	200.62
PMW101-06A	Fluvial	292.13	172.12	91.39	200.74	91.39	200.74	91.47	200.66	91.74	200.39	91.30	200.83

TABLE 7
WATER LEVEL MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

				EBT-5 - 12/7/07		EBT-6 - 3/7/2008		EBT-7 - 6/6/2008		EBT-8 - 12/5/2008		EBT-9 - 3/6/2009	
Well ID	Aquifer	Top Of Casing Elevation (ft, msl)	Top of Screen Elevation (ft, msl)	Depth to Water (ft, btoc)	Groundwater Elevation (ft, msl)	Depth to Water (ft, btoc)	Groundwater Elevation (ft, msl)	Depth to Water (ft, btoc)	Groundwater Elevation (ft, msl)	Depth to Water (ft, btoc)	Groundwater Elevation (ft, msl)	Depth to Water (ft, btoc)	Groundwater Elevation (ft, msl)
PMW101-06B	Fluvial	292.17	192.92	91.44	200 73	91.45	200.72	91.54	200 63	91.80	200.37	91.36	200.81
PMW101-07A	Fluvial	292.20	174.27	91.41	200.79	91.41	200.79	91.50	200.70	91.77	200.43	91.32	200.88
PMW101-07B	Fluvial	292.36	194.37	91.56	200.80	91.57	200.79	91.69	200.67	91.33	201.03	91.49	200.87
PMW101-08A	Fluvial	293.01	173.26	92.15	200.86	92.57	200.44	92.26	200.75	92.49	200.52	92.02	200.99
PMW101-08B	Fluvial	293.03	194.96	92.11	200.92	92.17	200.86	92.23	200.80	92.63	200.40	92.10	200.93
DR1-3	Fluvial	290.93	181.26	91.87	199.06	91.78	199.15	91.82	199.11	92.27	198.66	91.69	199.24
DR1-4	Fluvial	292.78	186.50	92.00	200.78	92.00	200.78	92.10	200.68	92.42	200.36	91.93	200.85
DR1-7	Fluvial	289.15	180.86	90.43	198.72	90 28	198.87	90.35	198.80	90.82	198.33	90.21	198.94
DR1-8	Fluvial	290.02	197.37	89 08	200.94	89.11	200.91	89.21	200.81	89.59	200.43	89.06	200.96
DR2-1	Fluvial	304.90	231.00	88.06	216.84	88.11	216.79	88.15	216.75	87.75	217.15	87.50	217.40
DR2-5	Fluvial	305.44	220.44	92.29	213.15	96.42	209.02	96.16	209.28	95.90	209.54	95.69	209.75
DR2-6	Fluvial	304.70	210.10	101.34	203.36	101.46	203.24	100.36	204.34	101.57	203.13	101.19	203.51
IW-01	Fluvial	304.03	215.03	95.41	208.62	95.62	208.41	95.43	208.60	95.27	208.76	95.10	208.93
MW-21	Fluvial	295.00	202.90	91.51	203.49	92.58	202.42	92.73	202.27	92.90	202.10	92.58	202.42
MW-22	Fluvial	298.04	202.64	95.39	202.65	95.43	202.61	95.60	202.44	95.80	202.24	95.41	202.63
MW-23	Fluvial	298.99	197.79	97.70	201.29	97.74	201.25	97.80	201.19	98.21	200.78	97.61	201.38
MW-26	Fluvial	303 69	206 09	99.47	204.22	99 61	204.08	99.42	204.27	99 61	204.08	99.30	204.39
MW-50	Fluvial	298.82	183.82	85.71	213.11	85 68	213.14	85.46	213.36	85 68	213 14	85.39	213.43
MW-64	Fluvial	304.21	202.21	107.34	196.87	107.00	197.21	106.83	197.38	107.37	196 84	106.70	197 51
MW-85	Fluvial	304.13	208.23	98.74	205.39	98.91	205.22	98.97	205.16	98.84	205.29	98.55	205.58
MW-88	Fluvial	305.15	223.15	79.80	225.35	80.05	225.10	79.85	225.30	79.68	225 47	79.32	225.83
MW-92	Fluvial	304.41	211.41	95.05	209.36	95.22	209.19	95 20	209.21	95.16	209.25	94.87	209.54
MW-93	Fluvial	294 08	202.08	100.50	193.58	100.10	193.98	99.72	194.36	100.30	193.78	99.75	194.33
MW-96	Fluvial	289.02	213.52	81.84	207.18	81.91	207.11	81.70	207.32	81.92	207.10	81.62	207.40
MW-97	Fluvial	297.44	199.94	97.95	199.49	97.95	199.49	98.00	199.44	98.50	198.94	97.79	199.65
MW-98	Fluvial	294.43	157.43	98.40	196.03	98.10	196.33	98.00	196.43	98.65	195.78	97.89	196.54
MW-102B	Fluvial	311.40	190.90	107.91	203.49	108.12	203.28	108.28	203.12	108.70	202.70	108.11	203.29
MW-115	Fluvial	291 67	202.17	90.29	201.38	90.35	201.32	90.46	201.21	90.72	200.95	90 31	201.36
MW-197A	Fluvial	291.26	129.30	94.51	196.75	94.15	197.11	94.29	196.97	94.96	196.30	94.13	197.13
MW-197B	Fluvial	291.03	196.88	94.43	196.60	94.00	197.03	94.19	196.84	94.86	196.17	94.03	197.00
MW-198	Fluvial	291.50	201.47	95.23	196.27	95.03	196.47	95.00	196.50	95.72	195.78	94.86	196.64
MW-199A	Intermediate	301.53	155 45	110.55	190.98	110.05	191.48	109.55	191.98	110 54	190.99	109.41	192.12
MW-199B	Fluvial	301.73	197.12	106.29	195.44	106.03	195.70	107.86	193.87	106 60	195.13	105.71	196 02
MW-202A	Intermediate	299 23	122.73	124.80	174.43	122.85	176.38	122.63	176 60	123.75	175.48	122.20	177.03
MW-202B	Intermediate	299.51	180.42	124.01	175.50	122.85	176.66	121.92	177.59	123 33	176.18	122.24	177.27
MW-217	Fluvial	304.18	202.39	–	–	107.10	197.08	106.90	197.28	107.31	196.87	106.83	197.35

TABLE 8
GEOCHEMICAL ANALYTICAL RESULTS, TTA-1, MW-21 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

EBT Quarter 9		Sample	IW21-01A	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B	IW21-04A	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115
		Date	3/16/2009	3/17/2009	3/16/2009	3/16/2009	3/16/2009	3/16/2009	3/17/2009	3/17/2009	3/17/2009	3/17/2009	3/13/2009	3/12/2009
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	1180	1470	823	1700	280	1980	1280	240	427	1650	6 36	25.9
Butyric Acid	830-MBA	mg/L	750	1970	369	781	125	384	899	207	319	787	<1	<1
Lactic Acid	830-MBA	mg/L	689	24 5	1.39	3210	7 36	172	<10	0.76 J	898	84	<1	<1
Propionic Acid	830-MBA	mg/L	3970	4150	1380	4100	761	5290	4290	814	1280	4370	<10	52.1
Pyruvic Acid	830-MBA	mg/L	<0.1	<1	<0.1	<0 1	<0.1	<0 1	<1	<0 1	<0.1	<1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	3070	4860	1400	4670	567	3930	3550	718	1330	4850	1 55	36 4

EBT Quarter 8		Sample	IW21-01A	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B	IW21-04A	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115
		Date	12/15/2008	12/15/2008	12/15/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/11/2008	12/12/2008
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	1630	1200	960	1730	105	1520	1610	1520	379	960	5 19	23 1
Butyric Acid	830-MBA	mg/L	1150	1330	759	522	52.6	3130	1500	545	348	2130	<1	<1
Lactic Acid	830-MBA	mg/L	1810	326	1100	453	2 38	9.25	219	90 8	29	493	<1	6.51
Propionic Acid	830-MBA	mg/L	3940	2950	2000	2410	231	3390	4380	2710	639	2640	<10	39 8
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0 1	<0.1	<0 1	<0.1	<0 1	<0.1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	5290	4430	2640	2760	209	3380	4530	2710	856	3650	1.09	30 7

EBT Quarter 7		Sample	IW21-01A	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B	IW21-04A	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115
		Date	6/17/2008	6/17/2008	6/17/2008	6/18/2008	6/18/2008	6/18/2008	6/18/2008	6/18/2008	6/17/2008	6/17/2008	6/16/2008	6/13/2008
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	288	118	6.91	11.7	2.11	287	132	124	986	58 3	2.99	<1
Butyric Acid	830-MBA	mg/L	70.3	16.5	<1	<1	<1	40 6	6.91	6 22	162	9.34	<1	<1
Lactic Acid	830-MBA	mg/L	1.52	0 692 J	<1	<1	<1	0 744 J	<1	<1	500	0.692 J	0.795 J	0.789 J
Propionic Acid	830-MBA	mg/L	477	285	<10	11 3	<10	394	230	258	1680	84 6	<10	<10
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0 1	<0 1	<0.1	<0.1	3.18	<0 1	<0 1	<0 1
Total Organic Carbon	9060	mg/L	402	187	9 46	16 2	5.89	317	180	200	1750	77.2	2	3 23

EBT Quarter 6		Sample	IW21-01A	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B	IW21-04A	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115
		Date	3/17/2008	3/17/2008	3/17/2008	3/17/2008	3/17/2008	3/17/2008	3/18/2008	3/18/2008	3/18/2008	3/18/2008	3/17/2008	3/14/2008
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	420	28.2	14.3	18 3	0.644 J	214	34 9	27	258	82.1	<1	<1
Butyric Acid	830-MBA	mg/L	72	1.51	<1	0.75 J	<1	26.5	0.99 J	<1	32	3 34	<1	<1
Lactic Acid	830-MBA	mg/L	10.1	1.07	<1	<1	<1	22.8	<1	<1	0 626 J	<1	<1	<1
Propionic Acid	830-MBA	mg/L	723	58.6	5 1 J	22.3	<10	289	47.8	9 23 J	369	90.7	<10	<10
Pyruvic Acid	830-MBA	mg/L	0.0571 J	<0.1	<0.1	<0 1	<0.1	0.406	<0 1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	693 J	87.6 J	16 2 J	29 9 J	5.6 J	404 J	47.4	31 8 J	352 J	98.2 J	3 45	3 14

EBT Quarter 5		Sample	IW21-01A	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B	IW21-04A	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115
		Date	12/17/2007	12/17/2007	12/17/2007	12/17/2007	12/17/2007	12/17/2007	12/14/2007	12/17/2007	12/14/2007	12/14/2007	12/18/2007	12/18/2007
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	288	236	0.985 J	11.9	<1	137	550	5 02	330	68.8	<1	<1
Butyric Acid	830-MBA	mg/L	66.9	9 69	<1	<1	<1	22 5	19.8	<1	121	3.85	<1	<1
Lactic Acid	830-MBA	mg/L	44.8	1 42	<1	1.34	2.2	2.17	3.99	<1	17 9	1.67	<1	<1
Propionic Acid	830-MBA	mg/L	460	429	<10	6.9 J	<10	188	1030	<10	610	71.4	<10	<10
Pyruvic Acid	830-MBA	mg/L	1 23	<0.1	<0.1	<0.1	<0 1	<0.1	0.068 J	<0.1	1.86	<0.1	<0 1	<0.1
Total Organic Carbon	9060	mg/L	441	519	1.26	9.01	1.78	157	1010	7.16	2020	68.7	<1	<5

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–. Not Sampled

TABLE 8
GEOCHEMICAL ANALYTICAL RESULTS, TTA-1, MW-21 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

EBT Quarter 9		Sample	PMW21-01	PMW21-02	PMW21-03	PMW21-04	PMW21-05
		Date	3/12/2009	3/12/2009	3/12/2009	3/12/2009	3/12/2009
Parameter	Method	units					
Acetic Acid	830-MBA	mg/L	363	800	39 9	445	12
Butyric Acid	830-MBA	mg/L	153	477	<1	653	<1
Lactic Acid	830-MBA	mg/L	1580	700	<1	5.11	<1
Propionic Acid	830-MBA	mg/L	719	1220	35 6	1120	<10
Pyruvic Acid	830-MBA	mg/L	<0.1	<0 1	<0 1	<0 1	<0 1
Total Organic Carbon	9060	mg/L	1320	1540	34.8	1180	2.49

EBT Quarter 8		Sample	PMW21-01	PMW21-02	PMW21-03	PMW21-04	PMW21-05
		Date	12/11/2008	12/12/2008	12/12/2008	12/12/2008	12/11/2008
Parameter	Method	units					
Acetic Acid	830-MBA	mg/L	275	224	17 9	739	12 6
Butyric Acid	830-MBA	mg/L	150	84.8	<1	374	<1
Lactic Acid	830-MBA	mg/L	1500	272	<1	2010	<1
Propionic Acid	830-MBA	mg/L	312	226	13.2	785	<10
Pyruvic Acid	830-MBA	mg/L	<0 1	<0.1	<0.1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	957	427	13.7	1870	1

EBT Quarter 7		Sample	PMW21-01	PMW21-02	PMW21-03	PMW21-04	PMW21-05
		Date	6/16/2008	6/16/2008	6/13/2008	6/13/2008	6/16/2008
Parameter	Method	units					
Acetic Acid	830-MBA	mg/L	3.48	11.3	<1	<1	3.47
Butyric Acid	830-MBA	mg/L	<1	<1	<1	<1	<1
Lactic Acid	830-MBA	mg/L	0.934 J	4.28	1 01	1.59	0 923 J
Propionic Acid	830-MBA	mg/L	<10	17.9	<10	<10	<10
Pyruvic Acid	830-MBA	mg/L	<0.1	<0 1	<0 1	<0 1	<0 1
Total Organic Carbon	9060	mg/L	6 77	13 1	0 948 J	6 93	1.99

EBT Quarter 6		Sample	PMW21-01	PMW21-02	PMW21-03	PMW21-04	PMW21-05
		Date	3/14/2008	3/17/2008	3/17/2008	3/17/2008	3/14/2008
Parameter	Method	units					
Acetic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1
Butyric Acid	830-MBA	mg/L	<1	<1	<1	<1	<1
Lactic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	<10	<10	<10	<10	<10
Pyruvic Acid	830-MBA	mg/L	<0 1	<0.1	<0.1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	5.23	2.49	2.43	1 97	2.02

EBT Quarter 5		Sample	PMW21-01	PMW21-02	PMW21-03	PMW21-04	PMW21-05
		Date	12/18/2007	12/18/2007	12/18/2007	12/18/2007	12/18/2007
Parameter	Method	units					
Acetic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1
Butyric Acid	830-MBA	mg/L	<1	<1	<1	<1	<1
Lactic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	<10	<10	<10	<10	<10
Pyruvic Acid	830-MBA	mg/L	<0 1	<0.1	<0.1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	<1	0.701 J	<1	<1	<1

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TABLE 8
GEOCHEMICAL ANALYTICAL RESULTS, TTA-1, MW-21 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

EBT Quarter 9		Sample	IW21-01A	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B	IW21-04A	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115
		Date	3/16/2009	3/17/2009	3/16/2009	3/16/2009	3/16/2009	3/16/2009	3/17/2009	3/17/2009	3/17/2009	3/17/2009	3/13/2009	3/12/2009
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	440000 J	870000 J	490000 J	480000 J	330000 J	380000 J	480000 J	290000 J	400000 J	340000 J	100000 J	<500000
Ethane	RSK175\5021	ug/L	<130	<130	<130	<130	<50	<130	<130	<130	<130	<130	<5	<250
Ethene	RSK175\5021	ug/L	<130	<130	<130	<130	<50	<130	<130	<130	<130	<130	<5	<250
Methane	RSK175\5021	ug/L	2100	2400	1200	2100	4300	4300	6800	6800	3400	6700	<5	9100

EBT Quarter 8		Sample	IW21-01A	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B	IW21-04A	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115
		Date	12/15/2008	12/15/2008	12/15/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/11/2008	12/12/2008
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	680000	700000	770000	490000	71000 J	560000	730000	650000	670000	270000 J	110000 J	88000
Ethane	RSK175\5021	ug/L	<100	<100	<5	<100	<50	<100	<100	<100	<100	<100	<5	<25
Ethene	RSK175\5021	ug/L	<100	<100	<5	<100	<50	<100	<100	<100	<100	<100	<5	<25
Methane	RSK175\5021	ug/L	4800	2100	470	1500	960	9200	9700	10000	5100	3300	2.8 J	7700

EBT Quarter 7		Sample	IW21-01A	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B	IW21-04A	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115
		Date	6/17/2008	6/17/2008	6/17/2008	6/18/2008	6/18/2008	6/18/2008	6/18/2008	6/18/2008	6/17/2008	6/17/2008	6/16/2008	6/13/2008
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	180000 J	20000 B	37000 B	110000 R	140000 R	200000 R	160000 R	99000 R	440000 J	88000 B	110000 J	120000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	11000	5000	160	580	2100	14000 J	7600 J	2300	12000	13000	13 B	4700

EBT Quarter 6		Sample	IW21-01A	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B	IW21-04A	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115
		Date	3/17/2008	3/17/2008	3/17/2008	3/17/2008	3/17/2008	3/17/2008	3/18/2008	3/18/2008	3/18/2008	3/18/2008	3/17/2008	3/14/2008
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	220000 J	140000	110000	100000	120000 J	180000 J	100000 J	240000 J	130000 J	140000 J	81000	120000
Ethane	RSK175\5021	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ethene	RSK175\5021	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methane	RSK175\5021	ug/L	7200	1100	59	260	210	6200	3500	12000	10000	11000	960	11

EBT Quarter 5		Sample	IW21-01A	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B	IW21-04A	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115
		Date	12/17/2007	12/17/2007	12/17/2007	12/17/2007	12/17/2007	12/17/2007	12/14/2007	12/17/2007	12/14/2007	12/14/2007	12/18/2007	12/18/2007
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	170000 J	200000 J	120000 J	87000 J	100000 J	140000 J	180000 J	110000 J	430000 J	150000 J	73000 J	34000 J
Ethane	RSK175\5021	ug/L	<13	<13	<13	<13	<13	<13	<50	<13	<50	<13	<13	<13
Ethene	RSK175\5021	ug/L	<13	<13	<13	<13	<13	<13	<50	<13	<50	<13	<13	<13
Methane	RSK175\5021	ug/L	1900	3400	22	91	230	3200	5700	9300	3500	5000	12 J	3800

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TABLE 8
GEOCHEMICAL ANALYTICAL RESULTS, TTA-1, MW-21 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

EBT Quarter 9		Sample Date	PMW21-01 3/12/2009	PMW21-02 3/12/2009	PMW21-03 3/12/2009	PMW21-04 3/12/2009	PMW21-05 3/12/2009
Parameter	Method	units					
Carbon Dioxide	RSK175\5021	ug/L	320000 J	510000 J	<500000	260000 J	83000 J
Ethane	RSK175\5021	ug/L	<50	<250	<250	<100	<5
Ethene	RSK175\5021	ug/L	<50	<250	<250	<100	<5
Methane	RSK175\5021	ug/L	1000	4300	11000	3700	<5

EBT Quarter 8		Sample Date	PMW21-01 12/11/2008	PMW21-02 12/12/2008	PMW21-03 12/12/2008	PMW21-04 12/12/2008	PMW21-05 12/11/2008
Parameter	Method	units					
Carbon Dioxide	RSK175\5021	ug/L	350000	390000 J	72000 J	410000	40000 J
Ethane	RSK175\5021	ug/L	<25	<50	<10	<25	<5
Ethene	RSK175\5021	ug/L	<25	<50	<10	<25	<5
Methane	RSK175\5021	ug/L	<25	1000	7100	310	1.9 J

EBT Quarter 7		Sample Date	PMW21-01 6/16/2008	PMW21-02 6/16/2008	PMW21-03 6/13/2008	PMW21-04 6/13/2008	PMW21-05 6/16/2008
Parameter	Method	units					
Carbon Dioxide	RSK175\5021	ug/L	110000 J	110000 J	94000 J	150000 J	68000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	31	18 B	660	17	260

EBT Quarter 6		Sample Date	PMW21-01 3/14/2008	PMW21-02 3/17/2008	PMW21-03 3/17/2008	PMW21-04 3/17/2008	PMW21-05 3/14/2008
Parameter	Method	units					
Carbon Dioxide	RSK175\5021	ug/L	120000	110000 J	84000	100000	85000
Ethane	RSK175\5021	ug/L	<10	<10	<10	<10	<10
Ethene	RSK175\5021	ug/L	<10	<10	<10	<10	<10
Methane	RSK175\5021	ug/L	9.5 J	8.3 B	210	<10	12

EBT Quarter 5		Sample Date	PMW21-01 12/18/2007	PMW21-02 12/18/2007	PMW21-03 12/18/2007	PMW21-04 12/18/2007	PMW21-05 12/18/2007
Parameter	Method	units					
Carbon Dioxide	RSK175\5021	ug/L	100000 J	60000 J	49000 J	67000 J	68000
Ethane	RSK175\5021	ug/L	<13	<13	<13	<13	<13
Ethene	RSK175\5021	ug/L	<13	<13	<13	<13	<13
Methane	RSK175\5021	ug/L	10 J	14	48	12 J	120

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TABLE 9
GEOCHEMICAL ANALYTICAL RESULTS, TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

EBT Quarter 9		Sample	IW101-01A	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-03A	IW101-03B	IW101-03C	IW101-04A	IW101-04B	IW101-04C
		Date	3/9/2009	3/9/2009	3/9/2009	3/9/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/12/2009	3/12/2009	3/12/2009
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	939	1430	1310	148	58	1000	926	900	2260	841	2370	2120
Butyric Acid	830-MBA	mg/L	239	191	759	21.5	3.12	281	71.1	143	666	1800	241	1080
Lactic Acid	830-MBA	mg/L	<1	1740	876	<1	<1	<10	<1	<10	840	7770	1150	3470
Propionic Acid	830-MBA	mg/L	3150	3020	3950	397	92.3	2680	2290	2250	6240	4820	4460	6360
Pyruvic Acid	830-MBA	mg/L	<0 1	<0.1	<0.1	<0 1	<0 1	<1	<0.1	<1	<0 1	<0.1	<0 1	<0 1
Total Organic Carbon	9060	mg/L	2080	3200	3900	280	73	2200	1540	1850	4900	7380	42100	6440

EBT Quarter 8		Sample	IW101-01A	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-03A	IW101-03B	IW101-03C	IW101-04A	IW101-04B	IW101-04C
		Date	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/10/2008	12/10/2008	12/10/2008	12/15/2008	12/15/2008	12/15/2008
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	1380	1080	1850	319	696	1360	593	1500	1220	835	1350	1610
Butyric Acid	830-MBA	mg/L	1380	388	630	78.1	194	443	39 1	322	454	2010	183	1400
Lactic Acid	830-MBA	mg/L	2990	3240	2040	72 5	2960	25 5	<1	<1	4.47	6610	57 3 J	2640
Propionic Acid	830-MBA	mg/L	3870	2220	3990	704	1580	2380	917	2370	2200	3580	2420	4010
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0 1	<0 1	<0.1	<0.1	<0 1	<0.1	<0.1	31 6
Total Organic Carbon	9060	mg/L	5350	3600	4330	615	4290	2610	802	2070	2060	7470	2050	5020

EBT Quarter 7		Sample	IW101-01A	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-03A	IW101-03B	IW101-03C	IW101-04A	IW101-04B	IW101-04C
		Date	6/9/2008	6/9/2008	6/9/2008	6/9/2008	6/10/2008	6/10/2008	6/10/2008	6/11/2008	6/11/2008	6/13/2008	6/13/2008	6/13/2008
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	600	2.41	50 7	78 9	79.6	144	166	168	272	447	0 724 J	<1
Butyric Acid	830-MBA	mg/L	25.5	<1	2.77	1.66	<1	10.7	3 28	16.2	26.1	34.3	<1	<1
Lactic Acid	830-MBA	mg/L	325	1.03	1.18	629	2 98	5 02	1.57	2.96	3	1690	0.73 J	1.02
Propionic Acid	830-MBA	mg/L	705	6 54 J	40.8	108	<10	149	286	242	314	696	10 5	19 2
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0 1	<0.1	<0.1	0 657	<0.1	<0.1	<0.1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	1130 J	8.97 J	62 3 J	320 J	6 03	230	314	232 J	311 J	1320	4 88	17 4

EBT Quarter 6		Sample	IW101-01A	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-03A	IW101-03B	IW101-03C	IW101-04A	IW101-04B	IW101-04C
		Date	3/10/2008	3/10/2008	3/10/2008	3/10/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008	3/12/2008	3/12/2008	3/13/2008
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	456	20.7	42 1	156	<1	109	226	14.5	220	823	3 96	13.3
Butyric Acid	830-MBA	mg/L	29.2	<1	2 66	19.3	<1	9.41	9 68	0 881 J	33 7	40.9	<1	<1
Lactic Acid	830-MBA	mg/L	39.1	<1	<1	2.34	<1	<1	2.32	<1	0 502 J	4580	12.1 J	<1
Propionic Acid	830-MBA	mg/L	483	23.1	37.6	336	<10	113	220	12 8	312	1160	12 8	30.5
Pyruvic Acid	830-MBA	mg/L	0 614	<0 1	<0.1	0 103	<0 1	<0 1	1 36	<0.1	<0 1	41.1	0 109	<0.1
Total Organic Carbon	9060	mg/L	500	21 7	41	263	1.99	115	235	16 7	276	2510 J	9 39 J	23.4

EBT Quarter 5		Sample	IW101-01A	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-03A	IW101-03B	IW101-03C	IW101-04A	IW101-04B	IW101-04C
		Date	12/10/2007	12/10/2007	12/10/2007	12/10/2007	12/10/2007	12/11/2007	12/11/2007	12/11/2007	12/12/2007	12/12/2007	12/12/2007	12/12/2007
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	675	10.8	42 6	164	21 2	98.7	163	3.21	127	662	3.81	15.7
Butyric Acid	830-MBA	mg/L	48.1	<1	2.74	8 4	<1	8.28	9 61	0.813 J	19.4	48.8	<1	0.808 J
Lactic Acid	830-MBA	mg/L	976	1.28	1 33	376	<1	1 99 B	1.55 B	<1	3 53	2190	<1	1.35
Propionic Acid	830-MBA	mg/L	954	7.71 J	26	306	12.7	86 8	175	<10	168	1120	10 6	47 8
Pyruvic Acid	830-MBA	mg/L	1 61	<0.1	<0.1	1.5	<0.1	<0.1	0.111	<0.1	<0 1	8.92	<0.1	<0.1
Total Organic Carbon	9060	mg/L	1020	8.19	28.7	357	15 2	84.4	179	2 92	149	1370	9.97	30.9

<: Not detected above Reporting Limit (RL)
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–: Not Sampled

TABLE 9
GEOCHEMICAL ANALYTICAL RESULTS, TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

EBT Quarter 9		Sample	IW101-05A	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B	IW101-07C	IW101-08A	IW101-08B	IW101-08C
		Date	3/12/2009	3/13/2009	3/13/2009	3/13/2009	3/13/2009	3/13/2009	3/11/2009	3/11/2009	3/11/2009	3/16/2009	3/16/2009	3/16/2009
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	256	561	1080	1250	1000	1100	748	2080	1940	292	761	1000
Butyric Acid	830-MBA	mg/L	1500	97.5	432	205	353	805	32.6	862	495	24.4	331	2060
Lactic Acid	830-MBA	mg/L	9350	98	47 2	1430	208	138	<1	13400	376	<10	<1	1030
Propionic Acid	830-MBA	mg/L	2500	1460	2870	3070	2850	3600	1980	5280	5270	649	1880	4650
Pyruvic Acid	830-MBA	mg/L	<0.1	<0 1	<0 1	<0 1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0 1	<0.1
Total Organic Carbon	9060	mg/L	9470	1030	2300	3030	2270	3680	997	8530	4690	477	1400	5290

EBT Quarter 8		Sample	IW101-05A	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B	IW101-07C	IW101-08A	IW101-08B	IW101-08C
		Date	12/12/2008	12/12/2008	12/15/2008	12/12/2008	12/12/2008	12/12/2008	12/10/2008	12/11/2008	12/11/2008	12/11/2008	12/12/2008	12/12/2008
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	458	413	668	1040	675	586	1110	1270	1270	554	400	1660
Butyric Acid	830-MBA	mg/L	1540	149	412	71 7	385	154	84.1	253	519	746	84 9	1000
Lactic Acid	830-MBA	mg/L	4840	238	<1	617	220	<1	<1	<1	25.2	2630	1.76	175
Propionic Acid	830-MBA	mg/L	2280	774	1160	1530	1410	1190	1960	2340	2510	1650	689	4090
Pyruvic Acid	830-MBA	mg/L	<0 1	<0 1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0 1
Total Organic Carbon	9060	mg/L	4960	854	1170	1530	1490	1090	1580	2230	2390	2830	632	4080

EBT Quarter 7		Sample	IW101-05A	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B	IW101-07C	IW101-08A	IW101-08B	IW101-08C
		Date	6/13/2008	6/16/2008	6/16/2008	6/16/2008	6/16/2008	6/16/2008	6/11/2008	6/11/2008	6/12/2008	6/16/2008	6/17/2008	6/17/2008
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	584	2.93	10 2	226	35.5	76.8	51.3	28 2	87.8	10.2	3 8	248
Butyric Acid	830-MBA	mg/L	29 1	<1	1.32	5 22	<1	7 18	1 1	1 24	10.7	<1	<1	21 6
Lactic Acid	830-MBA	mg/L	1010	0.857 J	0.678 J	0 985 J	0 693 J	0.949 J	2 47	2 29	0 684 J	0 788 J	0 549 J	1.5
Propionic Acid	830-MBA	mg/L	1200	<10	66.3	432	35 3	87.1	80 6	51	137	<10	<10	377
Pyruvic Acid	830-MBA	mg/L	13 5	<0.1	<0 1	<0 1	<0.1	<0.1	<0.1	<0.1	<0.1	<0 1	<0 1	<0 1
Total Organic Carbon	9060	mg/L	1350	3.23	76.1	329	39	91 2	77.9	50 7	142	9 25	14.7	305

EBT Quarter 6		Sample	IW101-05A	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B	IW101-07C	IW101-08A	IW101-08B	IW101-08C
		Date	3/13/2008	3/13/2008	3/13/2008	3/14/2008	3/14/2008	3/14/2008	3/11/2008	3/11/2008	3/12/2008	3/14/2008	3/14/2008	3/14/2008
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	857	<1	17.5	150	30.1	77 6	43 7	56.7	96 4	20 2	4 64	280
Butyric Acid	830-MBA	mg/L	26 8	<1	0 91 J	3 3	<1	9.54	<1	1.55	17.1	<1	<1	41 1
Lactic Acid	830-MBA	mg/L	52.3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0 788 J
Propionic Acid	830-MBA	mg/L	2100	<10	42.8	303	29 1	82 1	54.5	69 3	178	12.1	<10	315
Pyruvic Acid	830-MBA	mg/L	4 47	<0.1	<0 1	0.56	<0 1	<0.1	<0.1	<0.1	<0.1	<0 1	<0 1	<0.1
Total Organic Carbon	9060	mg/L	1660	<1	40.3	284	34	88 5	48 2	61 7	151 J	24 9	10 4	137

EBT Quarter 5		Sample	IW101-05A	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B	IW101-07C	IW101-08A	IW101-08B	IW101-08C
		Date	12/10/2007	12/10/2007	12/10/2007	12/11/2007	12/11/2007	12/11/2007	12/11/2007	12/12/2007	12/12/2007	12/13/2007	12/12/2007	12/13/2007
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	622	<1	21.5	135	5.76	72 7	44.9	38	178	45.3	8.73	222
Butyric Acid	830-MBA	mg/L	13	<1	2 05	3 81	<1	12.2	0 822 J	1 18	79.1	<1	<1	41 4
Lactic Acid	830-MBA	mg/L	469	<1	<1	26.4	<1	<1	<1	1 44	1 5	<1	<1	2.26
Propionic Acid	830-MBA	mg/L	1360	<10	46 2	281	<10	69.2	39.8	41.1	280	47 4	10 2	256
Pyruvic Acid	830-MBA	mg/L	53	<0.1	<0.1	11.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	1020	<1	29 6	214	3 94	74.2	39	31 9	230	39 3	9 7	257

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TABLE 9
GEOCHEMICAL ANALYTICAL RESULTS, TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

EBT Quarter 9		Sample	IW101-09A	IW101-09B	IW101-09C	MW-101B	MW-101T	DR1-3	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02B	PMW101-03A	PMW101-03B
		Date	3/11/2009	3/12/2009	3/12/2009	3/11/2009	3/11/2009	3/12/2009	3/9/2009	3/10/2009	3/9/2009	3/9/2009	3/9/2009	3/9/2009
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	130	1920	1260	<1	<1	11.2	273	2	75 1	<1	<1	<1
Butyric Acid	830-MBA	mg/L	7 69	1500	2360	<1	<1	<1	<1	1 12	<1	<1	<1	<1
Lactic Acid	830-MBA	mg/L	<1	12	814	<1	<1	<1	<1	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	243	4960	4920	<10	<10	<10	657	46.1	36 8	<10	<10	<10
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0 1	<0.1	<0 1	<0.1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	194	5120	6910	4.88	4 47	5 35	476	71 8	59 6	3.23	4.73	5 25

EBT Quarter 8		Sample	IW101-09A	IW101-09B	IW101-09C	MW-101B	MW-101T	DR1-3	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02B	PMW101-03A	PMW101-03B
		Date	12/11/2008	12/11/2008	12/11/2008	12/10/2008	12/10/2008	12/11/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	<1	2360	1280	<1	61 2	16.6	230	40 5 J	<1	<1	<1	<1
Butyric Acid	830-MBA	mg/L	<1	2290	1610	<1	<1	<1	26.8	12.3	<1	<1	<1	<1
Lactic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	50 1	397	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	9.54 J	4610	3500	14 6	134	<10	760	63.4	14.1	<10	<10	<10
Pyruvic Acid	830-MBA	mg/L	<0 1	<0.1	<0 1	<0.1	<0.1	<0 1	<0.1	<0.1	<0 1	<0 1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	13.4	5760	9030	16 6	107	1.78	705	61.6	12.9	7.9	1.25 JF	10.3

EBT Quarter 7		Sample	IW101-09A	IW101-09B	IW101-09C	MW-101B	MW-101T	DR1-3	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02B	PMW101-03A	PMW101-03B
		Date	6/12/2008	6/12/2008	6/12/2008	6/10/2008	6/10/2008	6/13/2008	6/9/2008	6/9/2008	6/10/2008	6/9/2008	6/10/2008	6/10/2008
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	24 1 J	735	495	<1	<1	<1	76.3	27.3	1.54	1.69	1.23	34 9
Butyric Acid	830-MBA	mg/L	<1	135	57.2	<1	<1	<1	3 71	1.57	<1	<1	<1	<1
Lactic Acid	830-MBA	mg/L	3 45	7.92	1 67	1.16	1 04	0.728 J	<1	<1	<1	<1	0.904 J	1.06
Propionic Acid	830-MBA	mg/L	<10	1040	496	<10	<10	<10	199	89	<10	<10	<10	7.96 J
Pyruvic Acid	830-MBA	mg/L	<0 1	<0 1	<0 1	<0.1	<0 1	<0.1	<0 1	<0 1	0.233	<0.1	<0 1	<0 1
Total Organic Carbon	9060	mg/L	14	1180	711	2.32 B	1.43 B	3.86	173 J	59.1 J	3.55 B	7.83 J	7 32	27.3

EBT Quarter 6		Sample	IW101-09A	IW101-09B	IW101-09C	MW-101B	MW-101T	DR1-3	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02B	PMW101-03A	PMW101-03B
		Date	3/12/2008	3/12/2008	3/12/2008	3/14/2008	3/14/2008	3/14/2008	3/10/2008	3/10/2008	3/10/2008	3/10/2008	3/11/2008	3/11/2008
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	20 1	1030	505	2.46	<1	<1	76.3	50	11.3	9.71	4.43	33 3
Butyric Acid	830-MBA	mg/L	<1	160	67.6	<1	<1	<1	<1	6.06	<1	<1	<1	<1
Lactic Acid	830-MBA	mg/L	7.9	121	3 2	<1	<1	<1	<1	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	<10	1260	561	<10	<10	<10	766	198	<10	<10	<10	24.1
Pyruvic Acid	830-MBA	mg/L	<0.1	4 35	<0.1	<0.1	<0 1	<0.1	<0 1	<0 1	<0 1	<0.1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	15.5 J	1170 J	58.5 J	4 91	1.78	8.73	401	151	11.7	9 47	6.12	32

EBT Quarter 5		Sample	IW101-09A	IW101-09B	IW101-09C	MW-101B	MW-101T	DR1-3	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02B	PMW101-03A	PMW101-03B
		Date	12/13/2007	12/13/2007	12/14/2007	12/11/2007	12/11/2007	12/13/2007	12/13/2007	12/13/2007	12/14/2007	12/14/2007	12/13/2007	12/13/2007
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	14.3	703	247	<1	<1	<1	353	2 06	28 3	51.2	<1	17.7
Butyric Acid	830-MBA	mg/L	<1	184	77.4	<1	<1	<1	15.9	<1	0.783 J	1.35	<1	<1
Lactic Acid	830-MBA	mg/L	2.26	1 74	1 36	<1	<1	<1	1.84	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	<10	975	319	<10	<10	<10	1130	18	38 7	43 2	<10	41.7
Pyruvic Acid	830-MBA	mg/L	<0 1	<0 1	<0.1	<0.1	<0.1	<0.1	<0.1	<0 1	<0.1	<0.1	<0 1	<0.1
Total Organic Carbon	9060	mg/L	7.19	1040	528	<1	<1	<1	673	8.77	32.1	79 5	<1	26.6

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TABLE 9
GEOCHEMICAL ANALYTICAL RESULTS, TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

EBT Quarter 9		Sample	PMW101-04A	PMW101-04B	PMW101-05A	PMW101-05B	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A	PMW101-08B
		Date	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/11/2009	3/11/2009	3/11/2009	3/11/2009	3/11/2009
Parameter	Method	units										
Acetic Acid	830-MBA	mg/L	<1	<1	<1	0.976 J	<1	<1	<1	<1	271	824
Butyric Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	98.4	635
Lactic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	0.95 J	7920
Propionic Acid	830-MBA	mg/L	<10	<10	<10	<10	<10	<10	<10	<10	360	2150
Pyruvic Acid	830-MBA	mg/L	<0 1	<0 1	<0.1	<0.1	<0 1	<0.1	<0 1	<0.1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	5.33	7 94	3 12	8.53	4.07	6.12	5.17	3 04 B	356	4290

EBT Quarter 8		Sample	PMW101-04A	PMW101-04B	PMW101-05A	PMW101-05B	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A	PMW101-08B
		Date	12/8/2008	12/10/2008	12/10/2008	12/10/2008	12/10/2008	12/10/2008	12/10/2008	12/10/2008	12/11/2008	12/11/2008
Parameter	Method	units										
Acetic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	345	884
Butyric Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	137	641
Lactic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	2.51	7400
Propionic Acid	830-MBA	mg/L	<10	<10	<10	<10	<10	<10	<10	<10	333	1500
Pyruvic Acid	830-MBA	mg/L	<0 1	<0 1	<0.1	<0 1	<0 1	<0 1	<0 1	<0.1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	5 67	3 62	1 8 JF	4.94	3 07	5.33	3.8	2.7	429	4360

EBT Quarter 7		Sample	PMW101-04A	PMW101-04B	PMW101-05A	PMW101-05B	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A	PMW101-08B
		Date	6/11/2008	6/10/2008	6/11/2008	6/11/2008	6/12/2008	6/11/2008	6/12/2008	6/12/2008	6/12/2008	6/13/2008
Parameter	Method	units										
Acetic Acid	830-MBA	mg/L	<1	<1	<1	80	<1	<1	<1	<1	21	56.7
Butyric Acid	830-MBA	mg/L	<1	<1	<1	0 658 J	<1	<1	<1	<1	<1	2.57
Lactic Acid	830-MBA	mg/L	2.16	0 963 J	2 3	2 86	0.758 J	2 47	0 748 J	0 755 J	0 742 J	0.932 J
Propionic Acid	830-MBA	mg/L	<10	<10	<10	<10	<10	<10	<10	<10	14.7	75 5
Pyruvic Acid	830-MBA	mg/L	<0.1	<0 1	<0.1	<0 1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	2 36	2 36 B	3.46	43 3	2 53	9.47	3 46	1.42	17.5	71

EBT Quarter 6		Sample	PMW101-04A	PMW101-04B	PMW101-05A	PMW101-05B	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A	PMW101-08B
		Date	3/11/2008	3/11/2008	3/12/2008	3/12/2008	3/12/2008	3/12/2008	3/13/2008	3/13/2008	3/13/2008	3/13/2008
Parameter	Method	units										
Acetic Acid	830-MBA	mg/L	75 3	7.33	<1	48 8	<1	12.1	<1	<1	<1	<1
Butyric Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lactic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	12.3	<10	<10	25 9	<10	<10	<10	<10	<10	<10
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0 1	<0 1	<0.1	<0 1	<0 1	<0 1	<0 1	<0 1
Total Organic Carbon	9060	mg/L	40.8	8.75	5.22 J	41 5 J	1 61 J	11.6 J	7.01	1.31	3.47	0 945 J

EBT Quarter 5		Sample	PMW101-04A	PMW101-04B	PMW101-05A	PMW101-05B	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A	PMW101-08B
		Date	12/14/2007	12/14/2007	12/18/2007	12/18/2007	12/17/2007	12/14/2007	12/17/2007	12/18/2007	12/17/2007	12/17/2007
Parameter	Method	units										
Acetic Acid	830-MBA	mg/L	96 4	37.4	<1	43 6	<1	7 62	<1	<1	<1	<1
Butyric Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lactic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	41.5	23	<10	53.5	<10	<10	<10	<10	<10	<10
Pyruvic Acid	830-MBA	mg/L	<0 1	<0 1	<0.1	<0.1	<0 1	<0.1	<0 1	<0.1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	59.5	30.4	<1	42.8	0.67 J	5 71	1.11	0.598 J	<1	<1

<. Not detected above Reporting Limit (RL)
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– Not Sampled

TABLE 9
GEOCHEMICAL ANALYTICAL RESULTS, TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

EBT Quarter 9		Sample	IW101-01A	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-03A	IW101-03B	IW101-03C	IW101-04A	IW101-04B	IW101-04C
		Date	3/9/2009	3/9/2009	3/9/2009	3/9/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/12/2009	3/12/2009	3/12/2009
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	610000 J	580000 J	520000 J	270000 J	69000 J	330000 J	220000 J	460000 J	830000 J	520000 J	460000 J	510000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<250	<250	<250
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<250	<250	<250
Methane	RSK175\5021	ug/L	14000	18000	4700	15000	3900	7300	3700	6700	4600	5100	11000	3700

EBT Quarter 8		Sample	IW101-01A	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-03A	IW101-03B	IW101-03C	IW101-04A	IW101-04B	IW101-04C
		Date	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/10/2008	12/10/2008	12/10/2008	12/15/2008	12/15/2008	12/15/2008
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	<500000	400000 J	<500000	190000 J	390000 J	470000 J	180000 J	450000 J	530000 J	410000	200000	380000
Ethane	RSK175\5021	ug/L	<250	<250	<250	<250	<100	<250	<250	<250	<250	<100	<100	<100
Ethene	RSK175\5021	ug/L	<250	<250	<250	<250	<100	<250	<250	<250	<250	<100	<100	<100
Methane	RSK175\5021	ug/L	6200	9700	4900	13000	4100	11000	9200	5700	7200	4700	4500 J	3200

EBT Quarter 7		Sample	IW101-01A	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-03A	IW101-03B	IW101-03C	IW101-04A	IW101-04B	IW101-04C
		Date	6/9/2008	6/9/2008	6/9/2008	6/9/2008	6/10/2008	6/10/2008	6/10/2008	6/11/2008	6/11/2008	6/13/2008	6/13/2008	6/13/2008
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	390000 J	98000 J	130000 J	170000 J	26000 B	790000 J	250000 J	190000 J	150000 J	350000 J	55000 J	32000 J
Ethane	RSK175\5021	ug/L	<5	<0 5	<5	<5	<0.5	<5	<5	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<0 5	<5	<5	<0 5	<5	<5	<5	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	17000	13000	2000	14000	56	26000	15000	4500	7700	17000 J	16000 J	15000 J

EBT Quarter 6		Sample	IW101-01A	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-03A	IW101-03B	IW101-03C	IW101-04A	IW101-04B	IW101-04C
		Date	3/10/2008	3/10/2008	3/10/2008	3/10/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008	3/12/2008	3/12/2008	3/13/2008
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	330000	48000 J	110000	63000	120000	100000	170000	71000	190000	330000	100000	47000 J
Ethane	RSK175\5021	ug/L	<100	<50	<50	<50	<5	<5	<5	<5	<5	<5	<5	<25
Ethene	RSK175\5021	ug/L	<100	<50	<50	<50	<5	<5	<5	<5	<5	<5	<5	<25
Methane	RSK175\5021	ug/L	3100	10000	1200	14000	140	8000	14000	320	8700	8800	11000	6000

EBT Quarter 5		Sample	IW101-01A	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-03A	IW101-03B	IW101-03C	IW101-04A	IW101-04B	IW101-04C
		Date	12/10/2007	12/10/2007	12/10/2007	12/10/2007	12/10/2007	12/11/2007	12/11/2007	12/11/2007	12/12/2007	12/12/2007	12/12/2007	12/12/2007
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	310000 J	92000 J	72000 J	74000 J	76000 J	97000 J	78000 J	59000 J	130000 J	420000 J	110000 J	24000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<25	<25	<5	<13	<50	<25	<25
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<25	<25	<5	<13	<50	<25	<25
Methane	RSK175\5021	ug/L	18000	4700	1000	15000	47	7800	7600	91	3800	25000	14000	11000

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TABLE 9
GEOCHEMICAL ANALYTICAL RESULTS, TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

EBT Quarter 9		Sample	IW101-05A	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B	IW101-07C	IW101-08A	IW101-08B	IW101-08C
		Date	3/12/2009	3/13/2009	3/13/2009	3/13/2009	3/13/2009	3/13/2009	3/11/2009	3/11/2009	3/11/2009	3/16/2009	3/16/2009	3/16/2009
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	390000 J	330000 J	540000 J	500000 J	450000 J	360000 J	210000 J	690000 J	680000 J	350000 J	360000 J	310000 J
Ethane	RSK175\5021	ug/L	<250	<50	<130	<130	<130	<130	<5	<5	<5	<25	<130	<130
Ethene	RSK175\5021	ug/L	<250	<50	<130	<130	<130	<130	<5	<5	<5	<25	<130	<130
Methane	RSK175\5021	ug/L	4400	4500	5000	7200	4000	4800	5600	5600	4400	2700	13000	8800

EBT Quarter 8		Sample	IW101-05A	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B	IW101-07C	IW101-08A	IW101-08B	IW101-08C
		Date	12/12/2008	12/12/2008	12/15/2008	12/12/2008	12/12/2008	12/12/2008	12/10/2008	12/11/2008	12/11/2008	12/11/2008	12/12/2008	12/12/2008
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	750000	450000	230000	680000 J	400000 J	220000 J	450000 J	620000 J	650000 J	740000 J	320000 J	480000 J
Ethane	RSK175\5021	ug/L	<50	<50	<100	<50	<50	<100	<250	<250	<250	<250	<50	<50
Ethene	RSK175\5021	ug/L	<50	<50	<100	<50	<50	<100	<250	<250	<250	<250	<50	<50
Methane	RSK175\5021	ug/L	3900	4600	2700	11000	3200	8300	12000	13000	9900 J	16000	11000	3500

EBT Quarter 7		Sample	IW101-05A	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B	IW101-07C	IW101-08A	IW101-08B	IW101-08C
		Date	6/13/2008	6/16/2008	6/16/2008	6/16/2008	6/16/2008	6/16/2008	6/11/2008	6/11/2008	6/12/2008	6/16/2008	6/17/2008	6/17/2008
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	430000 J	100000 J	160000 J	210000 J	130000 J	100000 J	120000 J	74000 J	120000 J	120000 J	38000 B	46000 B
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	12000 J	140	5400	8300	510	8600	4100	6500	11000	4700 J	27000	16000

EBT Quarter 6		Sample	IW101-05A	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B	IW101-07C	IW101-08A	IW101-08B	IW101-08C
		Date	3/13/2008	3/13/2008	3/13/2008	3/14/2008	3/14/2008	3/14/2008	3/11/2008	3/11/2008	3/12/2008	3/14/2008	3/14/2008	3/14/2008
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	330000 J	120000 J	120000 J	160000	130000	110000	68000	75000	130000	130000	110000	140000
Ethane	RSK175\5021	ug/L	<10	<10	<10	<10	<10	<10	<5	<5	<5	<10	<10	<25
Ethene	RSK175\5021	ug/L	<10	<10	<10	<10	<10	<10	<5	<5	<5	<10	<10	<25
Methane	RSK175\5021	ug/L	9000	270	3500	4600	210	5400	4000	4900	8700	4300	17000	12000

EBT Quarter 5		Sample	IW101-05A	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B	IW101-07C	IW101-08A	IW101-08B	IW101-08C
		Date	12/10/2007	12/10/2007	12/10/2007	12/11/2007	12/11/2007	12/11/2007	12/11/2007	12/12/2007	12/12/2007	12/13/2007	12/12/2007	12/13/2007
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	83000	96000 J	99000 J	110000 J	81000 J	97000 J	83000 J	63000 J	94000 J	100000	33000 J	110000
Ethane	RSK175\5021	ug/L	<5	<5	<5	<13	<5	<13	<5	<10	<25	<13	<50	<13
Ethene	RSK175\5021	ug/L	<5	<5	<5	<13	<5	<13	<5	<10	<25	<13	<50	<13
Methane	RSK175\5021	ug/L	470	1200	4400	2100	78	2900	870	2100	5300	2300	7400	5200

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TABLE 9
GEOCHEMICAL ANALYTICAL RESULTS, TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

EBT Quarter 9		Sample	IW101-09A	IW101-09B	IW101-09C	MW-101B	MW-101T	DR1-3	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02B	PMW101-03A	PMW101-03B
		Date	3/11/2009	3/12/2009	3/12/2009	3/11/2009	3/11/2009	3/12/2009	3/9/2009	3/10/2009	3/9/2009	3/9/2009	3/9/2009	3/9/2009
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	100000 J	600000 J	570000 J	160000 J	170000 J	<500000	180000 J	130000 J	180000 J	120000 J	68000 J	150000 J
Ethane	RSK175\5021	ug/L	<5	<250	<250	<5	<5	<250	<5	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<250	<250	<5	<5	<250	<5	<5	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	6800	5800	3200	10000	5900	6900	23000	8900	16000	6100	12000	15000

EBT Quarter 8		Sample	IW101-09A	IW101-09B	IW101-09C	MW-101B	MW-101T	DR1-3	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02B	PMW101-03A	PMW101-03B
		Date	12/11/2008	12/11/2008	12/11/2008	12/10/2008	12/10/2008	12/11/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	99000 J	1400000 J	820000 J	<500000	<500000	62000 J	<500000	<500000	<1000000	<500000	<1000000	<500000
Ethane	RSK175\5021	ug/L	<50	<250	<250	<250	<250	<10	<250	<250	<500	<250	<500	<250
Ethene	RSK175\5021	ug/L	<50	<250	<250	<250	<250	<10	<250	<250	<500	<250	<500	<250
Methane	RSK175\5021	ug/L	1300	15000	11000	10000	16000	7200	11000	8500 J	14000	8100	16000	2300

EBT Quarter 7		Sample	IW101-09A	IW101-09B	IW101-09C	MW-101B	MW-101T	DR1-3	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02B	PMW101-03A	PMW101-03B
		Date	6/12/2008	6/12/2008	6/12/2008	6/10/2008	6/10/2008	6/13/2008	6/9/2008	6/9/2008	6/10/2008	6/9/2008	6/10/2008	6/10/2008
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	170000 J	160000 J	260000 J	110000 J	140000 J	91000 J	400000 J	180000 J	150000 J	120000 J	69000 J	130000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	200	11000 J	14000	4100	450	6900 J	36000	17000	23000	17000	11000	22000

EBT Quarter 6		Sample	IW101-09A	IW101-09B	IW101-09C	MW-101B	MW-101T	DR1-3	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02B	PMW101-03A	PMW101-03B
		Date	3/12/2008	3/12/2008	3/12/2008	3/14/2008	3/14/2008	3/14/2008	3/10/2008	3/10/2008	3/10/2008	3/10/2008	3/11/2008	3/11/2008
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	87000 J	380000 J	230000 J	120000	120000	370000	280000	120000	56000	56000	68000	68000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<10	<10	<10	<100	<50	<50	<50	<25	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<10	<10	<10	<100	<50	<50	<50	<25	<5
Methane	RSK175\5021	ug/L	150	8000	17000	3600	950	6100	25000	13000	11000	10000	310	20000

EBT Quarter 5		Sample	IW101-09A	IW101-09B	IW101-09C	MW-101B	MW-101T	DR1-3	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02B	PMW101-03A	PMW101-03B
		Date	12/13/2007	12/13/2007	12/14/2007	12/11/2007	12/11/2007	12/13/2007	12/13/2007	12/13/2007	12/14/2007	12/14/2007	12/13/2007	12/13/2007
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	110000 J	260000	120000 J	44000 J	72000 J	93000 J	160000	89000		120000 J	96000	35000 J
Ethane	RSK175\5021	ug/L	<13	<13	<13	<5	<5	<13	<25	<13	<13	<13	<13	<13
Ethene	RSK175\5021	ug/L	<13	<13	<13	<5	<5	<13	<25	<13	<13	<13	<13	<13
Methane	RSK175\5021	ug/L	71	7000	5000	450	36	6800	19000	4300		8700	28	14000

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TABLE 9
GEOCHEMICAL ANALYTICAL RESULTS, TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

EBT Quarter 9		Sample	PMW101-04A	PMW101-04B	PMW101-05A	PMW101-05B	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A	PMW101-08B
		Date	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/11/2009	3/11/2009	3/11/2009	3/11/2009	3/11/2009
Parameter	Method	units										
Carbon Dioxide	RSK175\5021	ug/L	82000 J	120000 J	130000 J	140000 J	64000 J	100000 J	100000 J	100000 J	140000 J	300000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	1.4 J
Methane	RSK175\5021	ug/L	4000	11000	11000	11000	3900	9600	4100	7600	4000	7900

EBT Quarter 8		Sample	PMW101-04A	PMW101-04B	PMW101-05A	PMW101-05B	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A	PMW101-08B
		Date	12/8/2008	12/10/2008	12/10/2008	12/10/2008	12/10/2008	12/10/2008	12/10/2008	12/10/2008	12/11/2008	12/11/2008
Parameter	Method	units										
Carbon Dioxide	RSK175\5021	ug/L	<500000	<500000	<500000	<500000	<500000	<500000	<500000	<500000	420000	540000
Ethane	RSK175\5021	ug/L	<250	<250	<250	<250	<250	<250	<250	<250	<50	<100
Ethene	RSK175\5021	ug/L	<250	<250	<250	<250	<250	<250	<250	<250	<50	<100
Methane	RSK175\5021	ug/L	9300	16000	22000	16000	9000	17000	6000 J	9100	4700	8800

EBT Quarter 7		Sample	PMW101-04A	PMW101-04B	PMW101-05A	PMW101-05B	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A	PMW101-08B
		Date	6/11/2008	6/10/2008	6/11/2008	6/11/2008	6/12/2008	6/11/2008	6/12/2008	6/12/2008	6/12/2008	6/13/2008
Parameter	Method	units										
Carbon Dioxide	RSK175\5021	ug/L	26000 B	140000 J	240000 J	150000 J	160000 J	160000 J	150000 J	91000 J	170000 J	29000 B
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	300	15000	14000	13000	3600	5400	2600	3800	3700	6900

EBT Quarter 6		Sample	PMW101-04A	PMW101-04B	PMW101-05A	PMW101-05B	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A	PMW101-08B
		Date	3/11/2008	3/11/2008	3/12/2008	3/12/2008	3/12/2008	3/12/2008	3/13/2008	3/13/2008	3/13/2008	3/13/2008
Parameter	Method	units										
Carbon Dioxide	RSK175\5021	ug/L	51000 J	43000 J	95000	74000 J	54000	92000	130000 J	70000 J	130000 J	60000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<10	<10	<10	<10
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<10	<10	<10	<10
Methane	RSK175\5021	ug/L	2200	10000	9900	6900	4000	4600	1600	890	3400	1300

EBT Quarter 5		Sample	PMW101-04A	PMW101-04B	PMW101-05A	PMW101-05B	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A	PMW101-08B
		Date	12/14/2007	12/14/2007	12/18/2007	12/18/2007	12/17/2007	12/14/2007	12/17/2007	12/18/2007	12/17/2007	12/17/2007
Parameter	Method	units										
Carbon Dioxide	RSK175\5021	ug/L	34000 J	32000 J	68000	31000	96000	110000 J	66000	16000	89000	20000
Ethane	RSK175\5021	ug/L	<13	<50	<13	<13	<13	<13	<13	<13	<13	<13
Ethene	RSK175\5021	ug/L	<13	<50	<13	<13	<13	<13	<13	<13	<13	<13
Methane	RSK175\5021	ug/L	3800	7600	4500	3300	430	4500	590	1700	660	1700

<: Not detected above Reporting Limit (RL)
J. Estimated result based on QC data or reported below RL
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–: Not Sampled

TABLE 10
GEOCHEMICAL ANALYTICAL RESULTS, TTA-2
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

EBT Quarter 9		Sample Date	IW85-01 3/13/2009	IW85-02 3/13/2009	IW85-05 3/13/2009	IW85-06 3/13/2009	IW92-01 3/11/2009	IW92-02 3/11/2009	IW92-03 3/10/2009	IW92-04 3/11/2009	IW92-05 3/10/2009	IW92-06 3/9/2009	IW92-07 3/9/2009	IW92-08 3/12/2009	DR2-1 3/12/2009
Parameter	Method	units													
Acetic Acid	830-MBA	mg/L	2410	3810	1880	3680	1570	571	882	2190	2370	1750	2220	3450	6.71
Butyric Acid	830-MBA	mg/L	1750	1220	1110	476	1070	134	519	4050	1000	1540	1470	1760	<1
Lactic Acid	830-MBA	mg/L	35100	33400	36500	98 5	931	6 74	49300	54600	76200	48500	35900	3110	<1
Propionic Acid	830-MBA	mg/L	8730	12100	6570	10100	4230	1650	2090	8550	6680	4610	6430	9800	<10
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0 1	<0 1	<0.1	<1	<0 1	<10	<0.1	<0 1	<0.1	<0 1
Total Organic Carbon	9060	mg/L	23800	17900	20200	8300	4310	934	26300	21400	34100	28600	30100	9340	2 54

EBT Quarter 8		Sample Date	IW85-01 12/15/2008	IW85-02 12/12/2008	IW85-05 12/15/2008	IW85-06 12/12/2008	IW92-01 12/16/2008	IW92-02 12/16/2008	IW92-03 12/15/2008	IW92-04 12/17/2008	IW92-05 12/17/2008	IW92-06 12/17/2008	IW92-07 12/17/2008	IW92-08 12/17/2008	DR2-1 12/12/2008
Parameter	Method	units													
Acetic Acid	830-MBA	mg/L	1110 B	2560	963	2720	888	151	663	1050	4110	2410	2070	1490	9.22
Butyric Acid	830-MBA	mg/L	4490	1870	731	1150	936	51 1	941	1030	<1	<1	2080	1550	<1
Lactic Acid	830-MBA	mg/L	17800	5820	290	7750	56.3	1.7	1580	3 27	267	818	430	42	3 49
Propionic Acid	830-MBA	mg/L	4730	5320	2650	6690	1870	302	1510	2520	9440	9350	4510	3670	<10
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0 1	<0 1	<0.1	<0.1	<0 1	<0.1	<0 1	<0.1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	13600	9350	258	7620	2080	292	2190	3620	10400	11900	7670	5260	3.12

EBT Quarter 7		Sample Date	IW85-01 6/18/2008	IW85-02 6/17/2008	IW85-05 6/17/2008	IW85-06 6/17/2008	IW92-01 6/9/2008	IW92-02 6/10/2008	IW92-03 6/10/2008	IW92-04 6/11/2008	IW92-05 6/11/2008	IW92-06 6/13/2008	IW92-07 6/13/2008	IW92-08 6/17/2008	DR2-1 6/9/2008
Parameter	Method	units													
Acetic Acid	830-MBA	mg/L	481	563	224	1020	253	115	1010	1070	3440	2140	974	2970	<1
Butyric Acid	830-MBA	mg/L	312	84 1	51	247	36.6	8 4	198	225	134	174	242	693	<1
Lactic Acid	830-MBA	mg/L	12.9	1 16	1 65	0 644 J	163	4.04	1510	116	4090	29.1	114	2.26	0 855 J
Propionic Acid	830-MBA	mg/L	1120	1020	470	1420	299	120	2140	2240	5750	3340	1560	6710	<10
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<0.1	<1	<0.1	<0.1	0.663	<0.1
Total Organic Carbon	9060	mg/L	985	870	388	1410	435 J	189	3260	5930 J	5860	4570	1530	5530	10 3 J

EBT Quarter 6		Sample Date	IW85-01 3/18/2008	IW85-02 3/18/2008	IW85-05 3/19/2008	IW85-06 3/19/2008	IW92-01 3/13/2008	IW92-02 3/14/2008	IW92-03 3/14/2008	IW92-04 3/17/2008	IW92-05 3/17/2008	IW92-06 3/19/2008	IW92-07 3/18/2008	IW92-08 3/19/2008	DR2-1 3/10/2008
Parameter	Method	units													
Acetic Acid	830-MBA	mg/L	114	241	87	383	97 8	135	385	1630	1620	--	593	3450	<1
Butyric Acid	830-MBA	mg/L	70.9	56.3	8 68	148	8.57	60 9	187	754	172	--	218	786	<1
Lactic Acid	830-MBA	mg/L	5 31	6 31	15.1	1 33	2.16	369	1620	2900	3080	--	8.34	51	<1
Propionic Acid	830-MBA	mg/L	250	455	137	707	105	203	786	3610	2920	--	792	8200	<10
Pyruvic Acid	830-MBA	mg/L	<0 1	<0.1	0 076 J	0 147	<0 1	2.16	19.1	33.2	22 4	--	0.114	0.825	<0.1
Total Organic Carbon	9060	mg/L	252	436	149 J	772 J	130	305	1270 J	4350 J	3230 J	8010 J	747	7640 J	20.9

EBT Quarter 5		Sample Date	IW85-01 12/18/2007	IW85-02 12/18/2007	IW85-05 12/19/2007	IW85-06 12/19/2007	IW92-01 12/13/2007	IW92-02 12/14/2007	IW92-03 12/14/2007	IW92-04	IW92-05 12/18/2007	IW92-06 12/17/2007	IW92-07 12/17/2007	IW92-08 12/18/2007	DR2-1 12/10/2007
Parameter	Method	units													
Acetic Acid	830-MBA	mg/L	80	399	15.7	106	156	97	137	--	--	4570	727	1240	<1
Butyric Acid	830-MBA	mg/L	45	154	0.824 J	9.2	15.3	25 1	79 9	--	--	1290	500	345	<1
Lactic Acid	830-MBA	mg/L	63 2	14	7.13	4 33	75.9	5.59	1050	--	--	40.8	11.4	7 26	<1
Propionic Acid	830-MBA	mg/L	150	754	8.63 J	157	183	121	273	--	--	4930	1390	2510	<10
Pyruvic Acid	830-MBA	mg/L	1 77	0 344	<0 1	<0 1	<0.1	<0.1	6 26	--	--	6.53	3.38	0.762	<0.1
Total Organic Carbon	9060	mg/L	166	768	14.9	125	197	275	212	--	5240 J	5350	1560	2280 J	6 42

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TABLE 10
GEOCHEMICAL ANALYTICAL RESULTS, TTA-2
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

EBT Quarter 9		Sample	DR2-5	IW-01	MW-85	PMW85-01	PMW85-04	PMW85-05	PMW92-01	PMW92-02	PMW92-03	PMW92-04	PMW92-05	PMW92-06
		Date	3/13/2009	3/16/2009	3/17/2009	3/13/2009	3/17/2009	3/17/2009	3/16/2009	3/16/2009	3/16/2009	3/17/2009	3/17/2009	3/12/2009
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	13 8	1970	6.87	37 7	417	276	2280	21 2	<1	2 63	461	25
Butyric Acid	830-MBA	mg/L	<1	1780	<1	<1	<1	171	1920	<1	<1	<1	519	<1
Lactic Acid	830-MBA	mg/L	<1	2600	<1	1.77	<1	516	59900	<1	<1	<1	16 4	<1
Propionic Acid	830-MBA	mg/L	<10	6280	<10	33.7	274	670	5770	134	<10	<10	1130	5.58 J
Pyruvic Acid	830-MBA	mg/L	<0.1	<0 1	<0 1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	2.22	8640	9.06	27 6	348	785	39500	101	5 49	4 07	1070	9 77

EBT Quarter 8		Sample	DR2-5	IW-01	MW-85	PMW85-01	PMW85-04	PMW85-05	PMW92-01	PMW92-02	PMW92-03	PMW92-04	PMW92-05	PMW92-06
		Date	12/17/2008	12/10/2008	12/17/2008	12/8/2008	12/8/2008	12/8/2008	12/11/2008	12/11/2008	12/11/2008	12/10/2008	12/10/2008	12/8/2008
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	5 53	374	11.7	84.2	717	274	1590	25.7	11	<1	45.4	73.2
Butyric Acid	830-MBA	mg/L	<1	773	<1	7 87	20 6	258	3020	<1	<1	<1	18 3	10.2
Lactic Acid	830-MBA	mg/L	<1	6 18	<1	<1	<1	2160	23000	8 53	4 6	<1	1240	<1
Propionic Acid	830-MBA	mg/L	<10	1130	<10	145	81 1	686	4020	92 8	<10	<10	23.9	54 6
Pyruvic Acid	830-MBA	mg/L	<0.1	<0 1	<0 1	<0 1	<0 1	<0 1	<0.1	<0 1	0.31	<0 1	<0 1	<0 1
Total Organic Carbon	9060	mg/L	<4	52.6	2.96	217	378	1380	12200	60	3.09	3.79	459	71.3

EBT Quarter 7		Sample	DR2-5	IW-01	MW-85	PMW85-01	PMW85-04	PMW85-05	PMW92-01	PMW92-02	PMW92-03	PMW92-04	PMW92-05	PMW92-06
		Date	6/18/2008	6/16/2008	6/16/2008	6/18/2008	6/18/2008	6/18/2008	6/9/2008	6/10/2008	6/11/2008	6/12/2008	6/12/2008	6/16/2008
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	<1	80 1	77 4	32 5	676	20	1120	31 3	<1	27 9	<1	620
Butyric Acid	830-MBA	mg/L	<1	14 7	<1	0.866 J	547	8.25	1760	<1	<1	<1	<1	57.3
Lactic Acid	830-MBA	mg/L	<1	0.737 J	0.91 J	<1	<1	7.64	15800	1 74	2.31	0.877 J	1.34	0.575 J
Propionic Acid	830-MBA	mg/L	<10	126	49 6	22 1	965	36 9	1470	<10	<10	<10	<10	661
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0 1	<0 1	<0.1	<0 1	<0 1	<0 1	<0.1	<0.1
Total Organic Carbon	9060	mg/L	1 13	121	62 8	18 2	1080	41	9010 J	43.3	3 95	12.5	2.33	647

EBT Quarter 6		Sample	DR2-5	IW-01	MW-85	PMW85-01	PMW85-04	PMW85-05	PMW92-01	PMW92-02	PMW92-03	PMW92-04	PMW92-05	PMW92-06
		Date	3/12/2008	3/13/2008	3/12/2008	3/13/2008	3/12/2008	3/12/2008	3/10/2008	3/10/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	<1	<1	198	97 4	152	<1	<1	39 4	<1	41	<1	415
Butyric Acid	830-MBA	mg/L	<1	<1	7 22	2.5	9.81	<1	<1	<1	<1	<1	<1	23.7
Lactic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	<10	<10	217	98.4	202	<10	<10	<10	<10	9.23 J	<10	436
Pyruvic Acid	830-MBA	mg/L	<0 1	<0.1	<0.1	<0.1	<0 1	<0.1	<0 1	<0 1	<0 1	<0 1	<0 1	<0.1
Total Organic Carbon	9060	mg/L	1 33 J	1 73 J	201 J	105	174 J	1.15 J	2.88	31.5	5.04	24.3	2.63	425

EBT Quarter 5		Sample	DR2-5	IW-01	MW-85	PMW85-01	PMW85-04	PMW85-05	PMW92-01	PMW92-02	PMW92-03	PMW92-04	PMW92-05	PMW92-06
		Date	12/10/2007	12/11/2007	12/10/2007	12/10/2007	12/11/2007	12/11/2007	12/13/2007	12/12/2007	12/12/2007	12/12/2007	12/12/2007	12/11/2007
Parameter	Method	units												
Acetic Acid	830-MBA	mg/L	<1	<1	195	<1	718	<1	<1	358	<1	45.9	<1	214
Butyric Acid	830-MBA	mg/L	<1	<1	5.21	<1	67.6	<1	<1	7.41	<1	0.803 J	<1	10.1
Lactic Acid	830-MBA	mg/L	<1	1 23 B	1.35	<1	124	<1	<1	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	<10	<10	239	<10	1320	<10	<10	185	<10	33 7	<10	270
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	0.0743 J	<0 1	1 08	<0 1	<0 1	<0 1	<0 1	<0.1	<0 1	<0 1
Total Organic Carbon	9060	mg/L	<1	<1	180	5 2	941	<1	<1	339	<1	39 4	<1	233

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TABLE 10
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YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

EBT Quarter 9		Sample	IW85-01	IW85-02	IW85-05	IW85-06	IW92-01	IW92-02	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-08	DR2-1
		Date	3/13/2009	3/13/2009	3/13/2009	3/13/2009	3/11/2009	3/11/2009	3/10/2009	3/11/2009	3/10/2009	3/9/2009	3/9/2009	3/12/2009	3/12/2009
Parameter	Method	units													
Carbon Dioxide	RSK175\5021	ug/L	700000 J	850000 J	680000 J	390000 J	700000 J	490000 J	190000 J	570000 J	170000 J	400000 J	680000 J	490000 J	<500000
Ethane	RSK175\5021	ug/L	<130	<130	<130	<130	<5	<5	<5	<5	<5	<5	<5	<250	<250
Ethene	RSK175\5021	ug/L	<130	<130	<130	<130	<5	<5	<5	<5	<5	<5	<5	<250	<250
Methane	RSK175\5021	ug/L	2000	5000	2000	4200	2700	2900	410	2000	770	2600	3500	1700	3900

EBT Quarter 8		Sample	IW85-01	IW85-02	IW85-05	IW85-06	IW92-01	IW92-02	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-08	DR2-1
		Date	12/15/2008	12/12/2008	12/15/2008	12/12/2008	12/16/2008	12/16/2008	12/15/2008	12/17/2008	12/17/2008	12/17/2008	12/17/2008	12/17/2008	12/12/2008
Parameter	Method	units													
Carbon Dioxide	RSK175\5021	ug/L	630000	530000 J	680000	670000	490000 J	220000 J	590000	330000 J	580000 J	610000 J	460000 J	660000 J	79000
Ethane	RSK175\5021	ug/L	<100	<50	<100	<250	<100	<100	<100	<100	<100	<100	<100	<100	<10
Ethene	RSK175\5021	ug/L	<100	<50	<100	<250	<100	<100	<100	<100	<100	<100	<100	<100	<10
Methane	RSK175\5021	ug/L	1700	4600	4200	5200	2900	3000	2600	5100	5600	4300	3000	3000	2800

EBT Quarter 7		Sample	IW85-01	IW85-02	IW85-05	IW85-06	IW92-01	IW92-02	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-08	DR2-1
		Date	6/18/2008	6/17/2008	6/17/2008	6/17/2008	6/9/2008	6/10/2008	6/10/2008	6/11/2008	6/11/2008	6/13/2008	6/13/2008	6/17/2008	6/9/2008
Parameter	Method	units													
Carbon Dioxide	RSK175\5021	ug/L	330000 R	390000 J	190000 J	390000 J	96000 J	160000 J	600000 J	510000 J	690000 J	500000 J	390000 J	390000 J	140000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	9000 J	16000	5700	11000	8100	4900	7900	4500	10000 J	6900 B	12000 J	2500	12000

EBT Quarter 6		Sample	IW85-01	IW85-02	IW85-05	IW85-06	IW92-01	IW92-02	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-08	DR2-1
		Date	3/18/2008	3/18/2008	3/19/2008	3/19/2008	3/13/2008	3/14/2008	3/14/2008	3/17/2008	3/17/2008	3/19/2008	3/18/2008	3/19/2008	3/10/2008
Parameter	Method	units													
Carbon Dioxide	RSK175\5021	ug/L	110000 J	200000 J	160000 J	120000 J	33000 J	88000	150000	340000 J	430000 J	560000 J	300000 J	170000 J	160000
Ethane	RSK175\5021	ug/L	<10	<10	<10	<10	<5	<10	<10	<10	<10	<10	<10	<1	<50
Ethene	RSK175\5021	ug/L	<10	<10	<10	<10	<5	<10	<10	<10	<10	<10	<10	0.55 J	<50
Methane	RSK175\5021	ug/L	4400	9100	280	3400	560	2100	2300	2300	4600	7500	9500	220	9900

EBT Quarter 5		Sample	IW85-01	IW85-02	IW85-05	IW85-06	IW92-01	IW92-02	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-08	DR2-1
		Date	12/18/2007	12/18/2007	12/19/2007	12/19/2007	12/13/2007	12/14/2007	12/14/2007		12/18/2007	12/17/2007	12/17/2007	12/18/2007	12/10/2007
Parameter	Method	units													
Carbon Dioxide	RSK175\5021	ug/L	58000 J	340000	83000 B	110000	150000 J	130000 J	230000 J	--	210000	560000 J	330000 J	140000	51000 J
Ethane	RSK175\5021	ug/L	<13	<13	<13	<13	<13	<13	<50	--	<13	<50	<50	<13	<5
Ethene	RSK175\5021	ug/L	<13	<13	<13	<13	<13	<13	<50	--	<13	<50	<50	<13	<5
Methane	RSK175\5021	ug/L	980	8400	16	1100	1600	1600	3400	--	2200	8500	4800	5700	7300

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YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

EBT Quarter 9		Sample Date	DR2-5 3/13/2009	IW-01 3/16/2009	MW-85 3/17/2009	PMW85-01 3/13/2009	PMW85-04 3/17/2009	PMW85-05 3/17/2009	PMW92-01 3/16/2009	PMW92-02 3/16/2009	PMW92-03 3/16/2009	PMW92-04 3/17/2009	PMW92-05 3/17/2009	PMW92-06 3/12/2009
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	84000 J	740000 J	<250000	93000 J	160000 J	520000 J	850000 J	150000 J	63000 J	<250000	520000 J	<500000
Ethane	RSK175\5021	ug/L	<5	<130	<130	<5	<130	<130	<130	<130	<130	<130	<130	<250
Ethene	RSK175\5021	ug/L	<5	<130	<130	<5	<130	<130	<130	<130	<130	<130	<130	<250
Methane	RSK175\5021	ug/L	12	8300	2800	69	6900	3200	2800	9800	3800	4200	5000	4900

EBT Quarter 8		Sample Date	DR2-5 12/17/2008	IW-01 12/10/2008	MW-85 12/17/2008	PMW85-01 12/8/2008	PMW85-04 12/8/2008	PMW85-05 12/8/2008	PMW92-01 12/11/2008	PMW92-02 12/11/2008	PMW92-03 12/11/2008	PMW92-04 12/10/2008	PMW92-05 12/10/2008	PMW92-06 12/8/2008
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	23000 J	550000	64000 J	76000	150000 J	110000	660000	<500000	120000 J	<500000	<500000	<500000
Ethane	RSK175\5021	ug/L	<5	<250	<5	<5	<250	<25	<50	<250	<100	<250	<250	<250
Ethene	RSK175\5021	ug/L	<5	<250	<5	<5	<250	<25	<50	<250	<100	<250	<250	<250
Methane	RSK175\5021	ug/L	<5	9100	4600	21	11000	450	2000	11000	6900	4800	1000	5200

EBT Quarter 7		Sample Date	DR2-5 6/18/2008	IW-01 6/16/2008	MW-85 6/16/2008	PMW85-01 6/18/2008	PMW85-04 6/18/2008	PMW85-05 6/18/2008	PMW92-01 6/9/2008	PMW92-02 6/10/2008	PMW92-03 6/11/2008	PMW92-04 6/12/2008	PMW92-05 6/12/2008	PMW92-06 6/16/2008
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	27000 J	300000 J	110000 J	38000 J	160000 R	89000 R	720000 J	60000 B	550000 J	88000 J	130000 J	250000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	23	9900 J	3700 J	260	16000 J	37	200	16000	20000	2600	10 B	9200

EBT Quarter 6		Sample Date	DR2-5 3/12/2008	IW-01 3/13/2008	MW-85 3/12/2008	PMW85-01 3/13/2008	PMW85-04 3/12/2008	PMW85-05 3/12/2008	PMW92-01 3/10/2008	PMW92-02 3/10/2008	PMW92-03 3/11/2008	PMW92-04 3/11/2008	PMW92-05 3/11/2008	PMW92-06 3/11/2008
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	38000 J	330000 J	140000 J	76000 J	110000 J	94000 J	32000	140000	35000	110000	80000	150000
Ethane	RSK175\5021	ug/L	<5	<10	<10	<10	<25	<5	<5	<50	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<10	<10	<10	<25	<5	<5	<50	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	4 J	8700	1100	340	4700	5 5	5 1	14000	3900	2000	3 J	1900

EBT Quarter 5		Sample Date	DR2-5 12/10/2007	IW-01 12/11/2007	MW-85 12/10/2007	PMW85-01 12/10/2007	PMW85-04 12/11/2007	PMW85-05 12/11/2007	PMW92-01 12/13/2007	PMW92-02 12/12/2007	PMW92-03 12/12/2007	PMW92-04 12/12/2007	PMW92-05 12/12/2007	PMW92-06 12/11/2007
Parameter	Method	units												
Carbon Dioxide	RSK175\5021	ug/L	43000 J	410000 J	110000 J	35000 J	350000	78000 J	75000 J	220000 J	100000 J	67000 J	42000 J	130000
Ethane	RSK175\5021	ug/L	<5	<25	<5	<5	<25	<5	<13	<13	<13	<13	<13	<25
Ethene	RSK175\5021	ug/L	<5	<25	<5	<5	<25	<5	<13	<13	<13	<13	<13	<25
Methane	RSK175\5021	ug/L	12	5400	370	8.3	700	4 B	18	12000	1200	580	13	910

< Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data
R: Rejected
–: Not Sampled
NR Not Reported

TABLE 11
MEAN CONCENTRATIONS OF GEOCHEMICAL PARAMETERS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

TTA-1, MW-21 Area
Injection Wells

Parameter	units	Baseline	EBT-5	EBT-6	EBT-7	EBT-8	EBT-9
Total Organic Carbon	mg/L	4	423	177	244	2593	2537
Acetic Acid	mg/L	0	162.8	109.7	156.1	988.6	972.2
Butyric Acid	mg/L	0	24.4	13.7	24.0	928.9	605.7
Lactic Acid	mg/L	0	7.5	3.5	39.3	639.6	567.1
Propionic Acid	mg/L	0	279.5	161.5	264.4	2047.2	2574.2
Pyruvic Acid	mg/L	0	0.3	0.0	0.2	0	0
Carbon Dioxide	ug/L	92200	168700	148000	141846	555833	430000
Ethane	ug/L	0	0	0	0	0	0
Ethene	ug/L	0	0	0	0	0	0
Methane	ug/L	8	3234	5153	5216	3726	3777

Performance Monitoring Wells

Parameter	units	Baseline	EBT-5	EBT-6	EBT-7	EBT-8	EBT-9
Total Organic Carbon	mg/L	3.6	0.1	3.0	2.0	11.6	18.8
Acetic Acid	mg/L	0	0	0	1.6	14.7	21.0
Butyric Acid	mg/L	0	0	0	0	0	0
Lactic Acid	mg/L	0	0	0	0.9	1.6	0
Propionic Acid	mg/L	0	0	0	0	13.3	21.9
Pyruvic Acid	mg/L	0	0	0	0	0	0
Carbon Dioxide	ug/L	92429	64429	100000	98000	77500	91500
Ethane	ug/L	0	0	0	0	0	0
Ethene	ug/L	0	0	0	0	0	0
Methane	ug/L	103	574	170	1408	7400	5025

TABLE 11
MEAN CONCENTRATIONS OF GEOCHEMICAL PARAMETERS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

TTA-1, MW-101 Area
Injection Wells

Parameter	units	Baseline	EBT-5	EBT-6	EBT-7	EBT-8	EBT-9
Total Organic Carbon	mg/L	4	251	289	291	2921	4689
Acetic Acid	mg/L	0	160.9	195.3	162.3	991.9	1061.2
Butyric Acid	mg/L	0	20.8	17.5	13.5	606.8	596.4
Lactic Acid	mg/L	0	150.3	178.6	127.6	1268.6	2026.8
Propionic Acid	mg/L	0	245.9	287.0	230.0	2130.2	3048.3
Pyruvic Acid	mg/L	0	2.9	2.0	0.5	1.1	0.0
Carbon Dioxide	ug/L	76370	114111	148111	174759	476630	422724
Ethane	ug/L	0	0	0	0	0	0
Ethene	ug/L	0	0	0	0	0	0
Methane	ug/L	7	5720	6826	9907	7737	6738

Performance Monitoring Wells

Parameter	units	Baseline	EBT-5	EBT-6	EBT-7	EBT-8	EBT-9
Total Organic Carbon	mg/L	2.8	50.6	39.4	20.8	56.2	39.9
Acetic Acid	mg/L	0	33.5	17.4	13.1	20.5	21.3
Butyric Acid	mg/L	0	0.9	0.3	0.3	2.3	0.1
Lactic Acid	mg/L	0	0.1	0	1.1	26.3	0
Propionic Acid	mg/L	0	73.1	54.0	17.4	58.0	43.5
Pyruvic Acid	mg/L	0	0	0	0	0	0
Carbon Dioxide	ug/L	92842	70632	108263	147471	62000	124625
Ethane	ug/L	0	0	0	0	0	0
Ethene	ug/L	0	0	0	0	0	0
Methane	ug/L	11	3900	7092	11479	11618	9765

TABLE 11
MEAN CONCENTRATIONS OF GEOCHEMICAL PARAMETERS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

TTA-2
Injection Wells

Parameter	units	Baseline	EBT-5	EBT-6	EBT-7	EBT-8	EBT-9
Total Organic Carbon	mg/L	4	1472	2099	2508	5521	17205
Acetic Acid	mg/L	0	753	794	968	1404	1986
Butyric Acid	mg/L	0	246	225	262	1181	1281
Lactic Acid	mg/L	1	128.0	733	1366	3829	27292
Propionic Acid	mg/L	0	1048	1651	1739	3651	5962
Pyruvic Acid	mg/L	0	1.9	7.1	0	0	0
Carbon Dioxide	ug/L	35818	212818	241909	367188	518000	558750
Ethane	ug/L	0	0	0	0	0	0
Ethene	ug/L	0.1	0	0.1	0	0	0
Methane	ug/L	6	3481	4205	6783	3609	3068

Performance Monitoring Wells

Parameter	units	Baseline	EBT-5	EBT-6	EBT-7	EBT-8	EBT-9
Total Organic Carbon	mg/L	7	134	77	209	82	57
Acetic Acid	mg/L	0	117.8	72.5	162.8	104.2	59.0
Butyric Acid	mg/L	0	7.0	3.3	67.2	4.3	0.0
Lactic Acid	mg/L	0	9.7	0	0.8	1.8	0.2
Propionic Acid	mg/L	0	157.5	74	188.6	41.5	49.7
Pyruvic Acid	mg/L	0	0.1	0	0	0	0
Carbon Dioxide	ug/L	88909	131615	115000	158111	85333	110000
Ethane	ug/L	0	0	0	0	0	0
Ethene	ug/L	0	0	0	0	0	0
Methane	ug/L	424	2193	3581	8865	5790	4042

TABLE 12
VOC ANALYTICAL RESULTS SUMMARY, EBT-5 – TTA-1, MW-21 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW21-01A	IW21-01A DUP	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B	IW21-04A	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115	PMW21-01
	Lab ID	L0712497-03	L0712497-13	L0712497-04	L0712497-05	L0712497-08	L0712497-09	L0712497-10	L0712444-09	L0712497-11	L0712444-10	L0712444-12	L0712562-15	L0712562-16	L0712562-11
	Date	12/17/2007	12/17/2007	12/17/2007	12/17/2007	12/17/2007	12/17/2007	12/17/2007	12/14/2007	12/17/2007	12/14/2007	12/14/2007	12/18/2007	12/18/2007	12/18/2007
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
	Units														
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	0 145 J	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.137 J	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	88.2	80.1	59.3	6.68	38.6	7.84	13.5	37.3	5.41	25.6	20.2	2.12	2.49	2 17
Tetrachloroethene	ug/L	30.9	29.9	0 714 J	156	67.1	89.4	36.6	19.2	4.62	12.4	26.6	176	9.81	130
trans-1,2-Dichloroethene	ug/L	0.254 J	0.266 J	0.307 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	21.7	17.9	0.396 J	26	6.64	29.6	15.8	9.47	3.55	6.95	9.68	32.5	1.35	39.5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	0.306 J	0.339 J	<0.5	<0.5	<0.5	0.407 J	<0.5	0.366 J	0.291 J
Acetone	ug/L	9 18 J	13.5	116	<10	<10	<10	3.23 J	14.1	<10	50.5	3.21 J	<10	<10	<10
Carbon disulfide	ug/L	<1	1.14	<1	<1	<1	<1	0.962 J	0.725 J	<1	1.1	<1	<1	<1	<1
MEK (2-Butanone)	ug/L	59.4	79.3	357	<10	2.87 J	<10	12.2	454	<10	468	32	<10	<10	<10
Methyl t-butyl ether (MTBE)	ug/L	42 1	44.5	8.88	39.6	77.5	60.4	40.3	15	1.86 J	22.2	31 8	90.5	3 47 J	33.6
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.16	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE 12
VOC ANALYTICAL RESULTS SUMMARY, EBT-5 – TTA-1, MW-21 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	PMW21-02	PMW21-03	PMW21-03 DUP	PMW21-04	PMW21-05
	Lab ID	L0712562-12	L0712562-13	L0712562-10	L0712562-14	L0712562-01
	Date	12/18/2007	12/18/2007	12/18/2007	12/18/2007	12/18/2007
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
Analyte	Units					
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	0.626 J	0.403 J	0.465 J	1.83	0.527 J
Tetrachloroethene	ug/L	32.6	28.5	28.9	93.4	50.3
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	0.259 J	<1
Trichloroethene	ug/L	17	9.84	10.1	49	18.2
Vinyl chloride	ug/L	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	0.315 J	0.519	0.451 J	<0.5	<0.5
Acetone	ug/L	<10	<10	<10	<10	<10
Carbon disulfide	ug/L	<1	<1	<1	<1	<1
MEK (2-Butanone)	ug/L	<10	<10	<10	<10	<10
Methyl t-butyl ether (MTBE)	ug/L	27.1	12	12.2	85.2	<5
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE 13
VOC ANALYTICAL RESULTS SUMMARY, EBT-5 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW101-01A	IW101-01A DUP	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02B DUP	IW101-02C	IW101-03A	IW101-03B	IW101-03C	IW101-04A	IW101-04B	IW101-04C
	Lab ID	L0712280-08	L0712280-06	L0712280-09	L0712280-10	L0712280-11	L0712280-12	L0712280-07	L0712314-02	L0712314-03	L0712314-04	L0712375-01	L0712375-02	L0712375-03	L0712375-04
	Date	12/10/2007	12/10/2007	12/10/2007	12/10/2007	12/10/2007	12/10/2007	12/10/2007	12/11/2007	12/11/2007	12/11/2007	12/12/2007	12/12/2007	12/12/2007	12/12/2007
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units														
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	0.144 J	<0.3	0.194 J	0.176 J	<0.3	<0.3	<0.3	0.133 J	<0.3	<0.3	0.152 J
cis-1,2-Dichloroethene	ug/L	18.6	20.6	27.6	21.3	64.7	20.6	21.1	58.2	16.6	0.828 J	63.6	32	46.5	232
Tetrachloroethene	ug/L	1.46	1.41	1.37	96.8	11.4	102	99.1	49.9	13.3	88.4	25.8	0.39 J	2.87	2.89
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	0.288 J	<1	<1	<1	<1	<1	<1	<1	<1	0.511 J
Trichloroethene	ug/L	2.95	3.16	0.804 J	7.02	5.5	4.01	4.34	12.3	4.15	0.609 J	47.4	0.37 J	2.04	13.3
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.536	<0.5	<0.5	2.13
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.691 J	<1	<1	3.56
Acetone	ug/L	3.85 J	3.31 J	<10	<10	<10	<10	<10	<10	<10	<10	<10	45	<10	<10
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.392 J
MEK (2-Butanone)	ug/L	79.1	80	2.94 J	<10	110	<10	<10	56 B	15.1 B	<10	3.3 J	123	37.5	29

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE 13
VOC ANALYTICAL RESULTS SUMMARY, EBT-5 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	MW101-05A	MW101-05B	MW101-05C	MW101-05C DUP	MW101-06A	MW101-06B	MW101-06C	MW101-07A	MW101-07B	MW101-07C	MW101-08A	MW101-08A DUP	MW101-08B	MW101-08C
	Lab ID	L0712280-03	L0712280-04	L0712280-05	L0712280-01	L0712314-14	L0712314-15	L0712314-16	L0712314-17	L0712375-06	L0712375-07	L0712431-13	L0712431-12	L0712375-08	L0712431-18
	Date	12/10/2007	12/10/2007	12/10/2007	12/10/2007	12/11/2007	12/11/2007	12/11/2007	12/11/2007	12/12/2007	12/12/2007	12/13/2007	12/13/2007	12/12/2007	12/13/2007
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units														
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2
Chloroform	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.164 J	<0.3	<0.3	0.196 J	<0.3	<0.3	<0.3	<0.6
cis-1,2-Dichloroethene	ug/L	39.7	28.6	70.7	66.8	3.33	1.11	115	14.2	109	255	21.2	21.2	71.5	250
Tetrachloroethene	ug/L	10.5	76.9	44	45.9	22.4	50.8	10.4	8.59	2.11	24.2	1.31	1.39	0.728 J	2.12
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	0.254 J	<1	<1	0.594 J	<1	<1	<1	<2
Trichloroethene	ug/L	1.03	2.48	5.62	5.75	2.29	7.91	29.2	10.9	6.97	100	1.12	1.12	0.671 J	7.66
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.693	<0.5	0.573	2.4	<0.5	<0.5	<0.5	1.06
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	1.05	<1	0.632 J	3.26	<1	<1	<1	1.76 J
Acetone	ug/L	14.9	<10	<10	<10	<10	20 B	4.23 B	9.61 B	<10	2.79 J	5.42 J	4.98 J	<10	6.35 J
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.487	<0.4	<0.4	<0.4	0.446 J
MEK (2-Butanone)	ug/L	113	<10	26.6	33.3	11.2 B	7.84 B	45.8 B	20.2 B	28.7	48.3	51.5	53.5	10.7	136

<. Not detected above Reporting Limit (RL)
J· Estimated result based on QC data or reported below RL
B· Estimated result possibly biased high or false positive based on blank data

TABLE 13
VOC ANALYTICAL RESULTS SUMMARY, EBT-5 -- TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW101-09A	IW101-09B	IW101-09C	DR1-3	MW-101B	MW-101T	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02A DUP	PMW101-02B	PMW101-03A	PMW101-03B	PMW101-03B DUP
	Lab ID	L0712431-14	L0712431-17	L0712444-13	L0712431-11	L0712314-08	L0712314-07	L0712431-02	L0712431-05	L0712444-02	L0712444-01	L0712444-03	L0712431-06	L0712431-07	L0712431-01
	Date	12/13/2007	12/13/2007	12/14/2007	12/13/2007	12/11/2007	12/11/2007	12/13/2007	12/13/2007	12/14/2007	12/14/2007	12/14/2007	12/13/2007	12/13/2007	12/13/2007
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units														
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	0.316 J	166	206	22.6	5.26	0.578 J	13.3	54.9	58.7	63.4	101	38	87.6	88.3
Tetrachloroethene	ug/L	0.416 J	1.74	13.4	0.904 J	120	125	1.35	23.4	13.9	10.3	<1	24.9	13.8	15.5
trans-1,2-Dichloroethene	ug/L	<1	0.29 J	<1	<1	<1	<1	<1	0.264 J	<1	<1	0.326 J	0.322 J	<1	<1
Trichloroethene	ug/L	0.268 J	4.95	46.5	0.303 J	0.843 J	0.305 J	0.284 J	1.53	1.34	0.993 J	<1	0.325 J	1.57	2
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	0.686 JF	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	0.314 J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	<1	0.631 J	1.3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	17.7	45	38.4	<10	<10	<10	36.9	<10	<10	<10	3.34 J	<10	<10	<10
Benzene	ug/L	<0.4	0.233 J	0.356 J	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
MEK (2-Butanone)	ug/L	<10	542	299	<10	<10	<10	196	<10	7.62 J	9.18 J	30.9	<10	<10	<10

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE 13
VOC ANALYTICAL RESULTS SUMMARY, EBT-5 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	PMW101-04A	PMW101-04B	PMW101-05A	PMW101-05B	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A	PMW101-08B
	Lab ID	L0712444-04	L0712444-05	L0712562-03	L0712562-04	L0712497-14	L0712444-06	L0712497-15	L0712562-05	L0712497-16	L0712497-17
	Date	12/14/2007	12/14/2007	12/18/2007	12/18/2007	12/17/2007	12/14/2007	12/17/2007	12/18/2007	12/17/2007	12/17/2007
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units										
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	0.258 J	<0.3	<0.3	<0.3	<0 3	<0.3	0.167 J
cis-1,2-Dichloroethene	ug/L	72.6	48.1	92.6	89.8	0.364 J	40.5	0.42 J	1.61	<1	4.86
Tetrachloroethene	ug/L	5.89	29.3	0.84 J	26.8	7.19	2.63	0.271 J	21.6	9.86	39.8
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	0.294 J	2.91	0.425 J	116	<1	1.04	<1	46.3	0.29 J	132
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	0.727	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	<1	<1	<1	1.77	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	<10	<10	<10	<10	3 15 J	<10	<10	<10	<10
Benzene	ug/L	<0.4	<0.4	<0.4	0.249 J	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
MEK (2-Butanone)	ug/L	10.1	<10	<10	17.3	<10	11.1	<10	<10	<10	<10

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE 14
VOC ANALYTICAL RESULTS SUMMARY, EBT-5 – TTA-2
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW85-01	IW85-02	IW85-05	IW85-06	IW92-01	IW92-02	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-08	DR2-1	DR2-5
	Lab ID	L0712562-09	L0712562-02	L0712601-05	L0712601-03	L0712431-09	L0712444-14	L0712444-15	L0712601-02	L0712562-07	L0712497-01	L0712497-02	L0712562-08	L0712280-16	L0712280-17
	Date	12/18/2007	12/18/2007	12/19/2007	12/19/2007	12/13/2007	12/14/2007	12/14/2007	12/19/2007	12/18/2007	12/17/2007	12/17/2007	12/18/2007	12/10/2007	12/10/2007
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units														
Carbon tetrachloride	ug/L	43.4	14.3	59.8	0.665 J	1.28	0.295 J	<1	<1	<1	<1	3.82	<1	15.5	138
Chloroform	ug/L	58	29.5	87.4	6.6	11.9	12.7	7.84	0.588	0.765	0.603	5.81	26.4	11.3	43.6
cis-1,2-Dichloroethene	ug/L	56.3	40.7	36.3	94.2	130	123	107	98.4	39.4	51	76.7	134	7.71	33.7
Tetrachloroethene	ug/L	23.4	10	31.2	2.7	29	3.18	7.48	2.55	8.29	21.7	20.1	6.44	192	57.3
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	0.297 J	<1	<1	<1	<1	<1	<1	0.341 J	<1	<1
Trichloroethene	ug/L	10.3	5.08	10.1	0.709 J	9.47	0.872 J	1.94	0.626 J	3.24	5.65	2.93	3.62	5.72	18.9
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.576
1,2,3-Trichloropropane	ug/L	43.7	54.2	16	58.3	<1	<1	<1	<1	<1	<1	<1	70.3	<1	27.6
1,2-Dichloroethane	ug/L	0.518	0.672	0.584	0.517	<0.5	0.335 J	<0.5	<0.5	<0.5	<0.5	<0.5	1.79	<0.5	0.452 J
1,2-Dichloropropane	ug/L	0.354 J	0.644 J	0.241 J	0.381 J	<1	0.255 J	<1	<1	<1	0.23 J	0.256 J	1.32	<1	<1
Acetone	ug/L	15.1	51.8	6.44 B	21.1 B	10.7	28.6	63.7	95.6 B	181	109	53.5	79	<10	<10
Carbon disulfide	ug/L	1.02	1.26	1.04	<1	0.815 J	0.576 J	1.82	7.68	0.985 J	<1	0.744 J	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	1.45	<1	<1	<1	<1	<1	<1	<1
MEK (2-Butanone)	ug/L	9.89 J	54.6	2.97 B	27.3 B	30.4	12.2	46.4	102	154	241	53	217	<10	<10
Methylene chloride	ug/L	<1	5.46	<1	<1	<1	2.61	2.94	0.314 B	1.49	5.97	0.75 J	1.29	<1	<1
Toluene	ug/L	0.291 J	<1	<1	0.306 B	<1	<1	0.534 J	<1	10.2	<1	0.299 J	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE 14
VOC ANALYTICAL RESULTS SUMMARY, EBT-5 – TTA-2
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID / Lab ID / Date / Area	Units	IW-01 L0712314-13 12/11/2007 TTA-2	MW-85 L0712280-15 12/10/2007 TTA-2	MW-85 DUP L0712280-13 12/10/2007 TTA-2	PMW85-01 L0712280-14 12/10/2007 TTA-2	PMW85-04 L0712314-11 12/11/2007 TTA-2	PMW85-05 L0712314-12 12/11/2007 TTA-2	PMW92-01 L0712431-10 12/13/2007 TTA-2	PMW92-02 L0712375-09 12/12/2007 TTA-2	PMW92-03 L0712375-10 12/12/2007 TTA-2	PMW92-04 L0712375-11 12/12/2007 TTA-2	PMW92-05 L0712375-12 12/12/2007 TTA-2	PMW92-06 L0712314-10 12/11/2007 TTA-2
Carbon tetrachloride		ug/L	16.1	34 3	33.7	72.9	<1	158	6.86	<1	0.969 J	1.51	51.6	1.53
Chloroform		ug/L	8.36	51.5	57	41	61.7	64.6	8.46	<0.3	3 12	5.3	22.6	78.7
cis-1,2-Dichloroethene		ug/L	76.6	51	55.3	12.2	92.3	83.8	38.3	123	159	160	27.3	150
Tetrachloroethene		ug/L	70.9	21	20.2	30.7	4.03	127	79.5	<1	30.9	12.1	178	6.76
trans-1,2-Dichloroethene		ug/L	<1	<1	0.921 J	<1	<1	1.74	<1	<1	<1	<1	<1	<1
Trichloroethene		ug/L	8.6	9.15	8.68	10.1	2 75	39.3	2.82	<1	6 91	1.64	15.6	2.31
Vinyl chloride		ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane		ug/L	<0 5	0.287 J	0 169 J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-Trichloropropane		ug/L	1 1	40.6	44.1	9 92	69.6	140	<1	<1	<1	<1	1.29	101
1,2-Dichloroethane		ug/L	0.468 J	0.596	0.657	0.428 J	0.751	1.18	<0.5	<0.5	<0.5	<0.5	0.474 J	1.32
1,2-Dichloropropane		ug/L	0.405 J	0.212 J	<1	<1	0.366 J	0.783 J	<1	<1	<1	<1	0.379 J	0.828 J
Acetone		ug/L	6.02 B	10.5	10.3	<10	38.8 B	<10	<10	57.5	<10	8 J	<10	24 1 B
Carbon disulfide		ug/L	<1	<1	<1	<1	<1	0.559 J	<1	<1	<1	<1	<1	<1
Ethylbenzene		ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
MEK (2-Butanone)		ug/L	<10	8.63 J	7.94 J	<10	26.2 B	<10	<10	49.3	<10	<10	<10	17.7 B
Methylene chloride		ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene		ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J. Estimated result based on QC data or reported below RL
B. Estimated result possibly biased high or false positive based on blank data

TABLE 15
VOC ANALYTICAL RESULTS SUMMARY, EBT-6 – TTA-1, MW-21 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW21-01A	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B	IW21-04A	IW21-04A DUP	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115	PMW21-01
	Lab ID	L08030333-06	L08030333-07	L08030333-08	L08030333-09	L08030333-10	L08030333-11	L08030387-07	L08030387-14	L08030387-08	L08030387-09	L08030387-10	L08030298-16	L08030333-05	L08030298-14
	Date	3/17/2008	3/17/2008	3/17/2008	3/17/2008	3/17/2008	3/17/2008	3/18/2008	3/18/2008	3/18/2008	3/18/2008	3/18/2008	3/14/2008	3/17/2008	3/14/2008
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
	Units														
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	0.129 J	<0.3	0.144 J	<0.3	<0.3	<0.3	<0 3	<0.3	<0.3	0 184 J	<0.3	0 164 J
cis-1,2-Dichloroethene	ug/L	80.2	9.37	14.3	49.8	9.52	10.1	62.2	61.9	15.4	30.9	19.5	1.83	0.583 J	2.55
Tetrachloroethene	ug/L	20.7	1.46	151	76.3	133	31.4	10.5	10.5	1.49	9.84	16.9	173	8.94	193
trans-1,2-Dichloroethene	ug/L	0.283 J	<1	<1	<1	<1	<1	0.391 J	0.4 J	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	13.1	2.43	23.2	6.94	42.6	19.6	5 77	5.72	2 76	7.09	9.07	28.9	1.04	54.2
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	2.01	0.732 J	0.866 J	<1	<1	1.51	<1	<1	<1	<1	<1	<1	<1	<1
MEK (2-Butanone)	ug/L	64.9	6.69 J	<10	<10	<10	70.7	25.4	22.8	5.11 J	176	39.4	<10	<10	<10
Methyl t-butyl ether (MTBE)	ug/L	41.4	1.83 J	42.4	65.5	56	34.1	17.7	17 1	2.44 J	24 7	27.3	82.5	1.45 J	50.4

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE 15
VOC ANALYTICAL RESULTS SUMMARY, EBT-6 – TTA-1, MW-21 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	PMW21-02	PMW21-03	PMW21-04	PMW21-05	PMW21-05 DUP
	Lab ID	L08030333-02	L08030333-03	L08030333-04	L08030298-15	L08030298-18
	Date	3/17/2008	3/17/2008	3/17/2008	3/14/2008	3/14/2008
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
	Units					
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	0.478 J	0.407 J	1.58	0.29 J	0.311 J
Tetrachloroethene	ug/L	31.1	36.9	93.9	43.2	43.2
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1
Trichloroethene	ug/L	12.6	8.96	47	34.6	34.2
Vinyl chloride	ug/L	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1
MEK (2-Butanone)	ug/L	<10	<10	<10	<10	<10
Methyl t-butyl ether (MTBE)	ug/L	23.3	13.8	89.8	<5	<5

< Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE 16
VOC ANALYTICAL RESULTS SUMMARY, EBT-6 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW101-01A	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-03A	IW101-03B	IW101-03C	IW101-04A	IW101-04A DUP	IW101-04B	IW101-04C	IW101-05A
	Lab ID	L08030185-09	L08030185-10	L08030185-11	L08030185-12	L08030220-07	L08030220-08	L08030220-09	L08030220-10	L08030220-11	L08030240-07	L08030240-15	L08030240-08	L08030269-01	L08030269-02
	Date	3/10/2008	3/10/2008	3/10/2008	3/10/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008	3/12/2008	3/12/2008	3/12/2008	3/13/2008	3/13/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units														
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1
Chloroform	ug/L	<0.3	<0.3	0.179 J	<0.3	0.156 J	0.131 J	<0.3	0.136 J	<0.3	<0.3	<0.3	<0.3	<0.6	<0.3
cis-1,2-Dichloroethene	ug/L	6.77	24.3	21.8	48.5	12.6	53.3	16.1	2.24	89.8	26.1	25	42.3	227	46.8
Tetrachloroethene	ug/L	0.468 J	0.421 J	70.3	1.44	98.4	48.4	17.8	86.2	15.3	0.293 J	0.363 J	2.4	2.09	8.93
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1
Trichloroethene	ug/L	<1	0.408 J	6.66	0.866 J	1.67	11.7	4.26	1.7	31.1	0.447 J	0.437 J	1.76	8.22	1.98
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.666	<0.5	<0.5	<0.5	2.12	<0.5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	0.917 J	<1	<1	<1	3.38	<1
Acetone	ug/L	8.04 J	<10	<10	8.42 J	<10	<10	3.72 J	5.2 J	3.33 J	48	46.5	<10	<20	98.3
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.373 J	<0.4
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.798 J	0.824 J	<1	<2	0.759 J
MEK (2-Butanone)	ug/L	29.8	9.11 J	<10	27.8	<10	43.1	7.66 J	4.18 J	7.1 J	149	148	19.7	12.6 J	235

<: Not detected above Reporting Limit (RL)
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B: Estimated result possibly biased high or false positive based on blank data

TABLE 16
VOC ANALYTICAL RESULTS SUMMARY, EBT-6 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07A DUP	IW101-07B	IW101-07C	IW101-08A	IW101-08B	IW101-08C	IW101-09A	IW101-09B
	Lab ID	L08030269-03	L08030269-04	L08030298-04	L08030298-05	L08030298-06	L08030220-12	L08030220-05	L08030220-13	L08030240-11	L08030298-07	L08030298-08	L08030298-09	L08030240-12	L08030240-13
	Date	3/13/2008	3/13/2008	3/14/2008	3/14/2008	3/14/2008	3/11/2008	3/11/2008	3/11/2008	3/12/2008	3/14/2008	3/14/2008	3/14/2008	3/12/2008	3/12/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	**Units**														
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	0.139 J	0.13 J	<0.3	0.171 J	0.191 J	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.158 J	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	15.2	76.6	5.03	3.41	126	21	22	119	325	22.2	54.5	287	0.498 J	187
Tetrachloroethene	ug/L	80.2	27.2	17.7	50.3	6.02	9.33	10.1	1.44	1.98	1.37	3.85	2.04	0.469 J	1.23
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	0.256 J	<1	<1	0.303 J	0.8 J	<1	<1	0.802 J	<1	0.355 J
Trichloroethene	ug/L	1.89	5.14	2.43	7.32	15.7	9.52	10.2	4.4	7.29	1.04	1.79	8.43	0.344 J	4.03
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.912 J
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	1.29	<1	<1	0.889	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	0.805	<0.5	<0.5	0.65	3.49	<0.5	<0.5	1.47	<0.5	0.252 J
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	0.994 J	<1	<1	0.796 J	4.01	<1	<1	2.07	<1	0.629 J
Acetone	ug/L	<10	<10	3.14 J	18.8	<10	6.84 J	7.42 J	4.65 J	3.03 J	<10	2.82 J	3.67 J	19	166
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	0.166 J	<0.4	<0.4	<0.4	0.509	<0.4	<0.4	0.517	<0.4	0.259 J
Carbon disulfide	ug/L	<1	<1	<1	<1	1.15	<1	<1	<1	<1	0.577 J	<1	1.13	<1	<1
MEK (2-Butanone)	ug/L	<10	35.9	9.71 J	9.68 J	25.9	10.2	9.65 J	25.9	75.6	5.78 J	<10	58.6	<10	280

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE 16
VOC ANALYTICAL RESULTS SUMMARY, EBT-6 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-09C	IW101-09C DUP	DR1-3	MW-101B	MW-101T	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02B	PMW101-03A	PMW101-03A DUP	PMW101-03B	PMW101-04A	PMW101-04B
	Lab ID	L08030240-14	L08030240-06	L08030298-17	L08030298-13	L08030298-12	L08030185-06	L08030185-07	L08030185-13	L08030185-08	L08030220-14	L08030220-15	L08030220-16	L08030220-17	L08030220-18
	Date	3/12/2008	3/12/2008	3/14/2008	3/14/2008	3/14/2008	3/10/2008	3/10/2008	3/10/2008	3/10/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units														
Carbon tetrachloride	ug/L	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.6	<0.3	<0.3	<0.3	0.149 J	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	310	273	17	35.6	10.1	18.2	55.3	48	87.7	36.1	40.3	87.6	81.3	69.3
Tetrachloroethene	ug/L	4.62	5.68	2.12	81.3	113	2.31	14.7	20.3	<1	9.23	9.72	8.59	5.7	5.33
trans-1,2-Dichloroethene	ug/L	0.577 J	0.547 J	<1	<1	<1	<1	<1	<1	0.334 J	<1	<1	<1	<1	<1
Trichloroethene	ug/L	18.2	21.8	1.28	2.17	1.37	0.669 J	0.822 J	3.92	<1	0.278 J	0.309 J	1.08	0.559 J	1.6
Vinyl chloride	ug/L	<2	<1	<1	<1	<1	0.863 J	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<2	1.14	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<1	0.41 J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	1.87 J	1.88	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	6.31 J	5.23 J	<10	<10	<10	25.2	<10	<10	<10	<10	<10	<10	3.31 J	<10
Benzene	ug/L	0.349 J	0.354 J	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Carbon disulfide	ug/L	<2	<1	<1	2.27	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.682 J
MEK (2-Butanone)	ug/L	229	236	<10	<10	<10	141	12.6	4.12 J	13.2	<10	<10	2.75 J	19.9	<10

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TABLE 16
VOC ANALYTICAL RESULTS SUMMARY, EBT-6 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	PMW101-05A	PMW101-05B	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07A DUP	PMW101-07B	PMW101-08A	PMW101-08B
	Lab ID	L08030240-02	L08030240-03	L08030240-04	L08030240-05	L08030269-10	L08030269-08	L08030269-11	L08030269-12	L08030269-13
	Date	3/12/2008	3/12/2008	3/12/2008	3/12/2008	3/13/2008	3/13/2008	3/13/2008	3/13/2008	3/13/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units									
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	0.293 J	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.169 J
cis-1,2-Dichloroethene	ug/L	73.9	76.2	0.917 J	45.8	0.261 J	0.31 J	1.74	<1	3.88
Tetrachloroethene	ug/L	0.718 J	21.8	7.13	3.24	0.435 J	0.428 J	20.6	13.8	34.7
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	0.329 J	85.3	0.252 J	1.72	0.502 J	0.411 J	43	0.39 J	115
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0 5	0.545	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	<1	1.28	<1	<1	<1	<1	<1	<1	0.253 J
Acetone	ug/L	<10	<10	<10	2.5 J	<10	<10	<10	<10	<10
Benzene	ug/L	<0.4	0.196 J	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.142 J
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1
MEK (2-Butanone)	ug/L	<10	13 7	<10	2.87 J	<10	<10	<10	<10	<10

<: Not detected above Reporting Limit (RL)
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B: Estimated result possibly biased high or false positive based on blank data

TABLE 17
VOC ANALYTICAL RESULTS SUMMARY, EBT-6 – TTA-2
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW85-01	IW85-02	IW85-05	IW85-06	IW92-01	IW92-02	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-07 DUP	IW92-08	MW-85
	Lab ID	L08030387-01	L08030387-02	L08030420-02	L08030420-04	L08030269-05	L08030298-02	L08030298-03	L08030333-14	L08030333-15	L08030420-01	L08030387-06	L08030387-03	L08030420-05	L08030240-18
	Date	3/18/2008	3/18/2008	3/19/2008	3/19/2008	3/13/2008	3/14/2008	3/14/2008	3/17/2008	3/17/2008	3/19/2008	3/18/2008	3/18/2008	3/19/2008	3/12/2008
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units														
Carbon tetrachloride	ug/L	31.2	38.6	32.2	27	0.808 J	5.18	<1	<1	<1	<1	2.46	2.53	2.42	22.5
Chloroform	ug/L	79.3	59.2	143	20.5	5.75	10.4	4.03	0.334	2.72	0.992	7.65	7.91	33	38.6
cis-1,2-Dichloroethene	ug/L	59	57.3	54.3	68.8	50.6	37.6	53	56.2	9.86	30.4	104	103	20.5	59.2
Tetrachloroethene	ug/L	40	28.7	45	16.1	7.5	36.3	4.37	3.73	18.9	24.9	6.75	7.3	13.3	14.4
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.439 J	0.504 J	<1	<1
Trichloroethene	ug/L	14.7	10.2	15.3	6.41	2.75	2.73	1.36	0.903 J	1.4	4.17	2.13	2.27	3.25	7
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	47.7	70.7	17.1	78	<1	<1	<1	<1	<1	<1	<1	<1	5.21	40.9
1,2-Dichloroethane	ug/L	0.598	0.704	0.614	0.593	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.256 J	0.259 J	1.29	0.583
1,4-Dichlorobenzene	ug/L	0.183 J	0.146 J	0.166 J	0.208 J	0.446 J	0.504	0.421 J	2.08 B	0.391 B	0.126 J	0.155 J	0.144 J	0.562	<0.5
Acetone	ug/L	4.45 J	8.54 J	7.71 J	24.3	13.2	53.4	129	152	256	22.5	76.9	84.1	475	5.04 J
Carbon disulfide	ug/L	1.9	1.31	1.12	<1	<1	0.57 J	<1	<1	1.29	0.587 J	1.42	1.32	0.609 J	<1
MEK (2-Butanone)	ug/L	4.31 J	14.6	6.38 J	25.1	33.1	24	47.6	109	99.4	44	62.4	74.3	508	15.2
Methylene chloride	ug/L	1.14 B	1.71 B	1.19 B	<1 B	<1	<1	0.539 J	0.396 J	1.22	4.8 B	2.16 B	2.08 B	10.3	<1

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B: Estimated result possibly biased high or false positive based on blank data

TABLE 17
VOC ANALYTICAL RESULTS SUMMARY, EBT-6 – TTA-2
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	DR2-1	DR2-1 DUP	DR2-5	IW-01	PMW85-01	PMW85-04	PMW85-05	PMW92-01	PMW92-02	PMW92-03	PMW92-04	PMW92-05	PMW92-06
	Lab ID	L08030185-04	L08030185-01	L08030240-19	L08030269-07	L08030269-06	L08030240-16	L08030240-17	L08030185-02	L08030185-03	L08030220-01	L08030220-02	L08030220-03	L08030220-04
	Date	3/10/2008	3/10/2008	3/12/2008	3/13/2008	3/13/2008	3/12/2008	3/12/2008	3/10/2008	3/10/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units													
Carbon tetrachloride	ug/L	1.26	0.554 J	114	16.6	24.5	0.407 J	154	8.34	<1	0.586 J	1.85	58.5	<1
Chloroform	ug/L	4.19	1.48	40 9	11.5	36.3	9.37	63.8	7.6	<0.3	0 994	6.6	20.5	22.9
cis-1,2-Dichloroethene	ug/L	86.4	103	32	84 9	79.3	107	87.9	27	87.7	161	135	23.8	179
Tetrachloroethene	ug/L	33.7	17.2	49.5	74.4	16.3	2.85	138	90	<1	30.8	19.8	173	2.01
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	0.438 J	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	12.7	6 73	17.5	9.53	6.59	1.08	38.7	3.9	<1	4 66	2.04	13 9	0.747 J
Vinyl chloride	ug/L	<1	0.321 J	<1	<1	<1	<1	<1	<1	<1	0.262 J	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	32 7	<1	15.8	75.1	152	<1	<1	<1	<1	0.649 J	117
1,2-Dichloroethane	ug/L	<0.5	<0 5	0.474 J	0.498 J	0.365 J	0.528	1.24	<0.5	<0.5	<0.5	<0.5	0.526	1.29
1,4-Dichlorobenzene	ug/L	0.242 J	0.207 J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.26 J	<0.5	<0.5	<0.5	<0.5
Acetone	ug/L	<10	<10	<10	17.2	5.35 J	6.95 J	<10	<10	45.4	<10	<10	<10	21.1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	1.01	<1	<1	<1	<1	<1	<1	<1
MEK (2-Butanone)	ug/L	2.85 J	<10	<10	<10	5.03 J	10	<10	<10	9.69 J	<10	<10	<10	22.1
Methylene chloride	ug/L	<1	<1	<1	1.2	<1	<1	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J. Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE 18
VOC ANALYTICAL RESULTS SUMMARY, EBT-7 – TTA-1, MW-21 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW21-01A	IW21-01A DUP	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B	IW21-04A	IW21-04B	IW21-05A	IW21-05B	IW21-05B DUP	MW-21	MW-115
	Lab ID	L08060495-05	L08060495-19	L08060495-06	L08060495-07	L08060543-01	L08060543-07	L08060543-08	L08060543-09	L08060543-10	L08060495-11	L08060495-17	L08060495-18	L08060454-08	L08060413-07
	Date	6/17/2008	6/17/2008	6/17/2008	6/17/2008	6/18/2008	6/18/2008	6/18/2008	6/18/2008	6/18/2008	6/17/2008	6/17/2008	6/17/2008	6/16/2008	6/13/2008
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
	Units														
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	0.169 J	<0.3	0.156 J	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.157 J	<0.3
cis-1,2-Dichloroethene	ug/L	91.4	98.8	35.2	15.8	82.8	31.6	21.8	72.6	22	38.5	17.8	17.2	2.26	1.56
Tetrachloroethene	ug/L	21.7	19.1	<1	119	68	127	24.2	32.4	2.41	9.74	12.2	12.2	154	8.89
trans-1,2-Dichloroethene	ug/L	0.303 J	1.7	<1	<1	1.65	1.53	<1	0.843 J	<1	<1	1.29	<1	0.252 J	<1
Trichloroethene	ug/L	16.7	14.8	<1	21.6	5.75	42.9	13.8	14.4	2.2	7.78	6.83	6.72	26.1	1.81
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.302 J	<0.5	<0.5	0.301 J	0.416 J	0.371 J	<0.5	0.292 J
Acetone	ug/L	8.07 B	9.17 B	24 B	<10	<10	<10	8.69 J	5.28 J	19.5	46.2	<10	<10	<10	<10
Carbon disulfide	ug/L	3.49 J	1.75	<1	<1	<1	<1	<1	<1	<1	0.863 J	<1	<1	<1	<1
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	4.12	6.81	6.45	<1	<1	<1	<1	<1
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	1.87	2.46	3.38	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	0.829 J	1.38	<1	<1	<1	<1	<1	<1
MEK (2-Butanone)	ug/L	132	118	109	<10	<10	<10	115	93.3	148	880	37.6	37.9	<10	<10
Methyl t-butyl ether (MTBE)	ug/L	59.3	57.6	6.2	44.4	62	60	40.4	33.3	10	37.8	19.6	19.2	66.4 J	2.99 J

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE 18
VOC ANALYTICAL RESULTS SUMMARY, EBT-7 – TTA-1, MW-21 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	PMW21-01	PMW21-02	PMW21-03	PMW21-04	PMW21-05	PMW21-05 DUP
	Lab ID	L08060454-05	L08060454-06	L08060413-05	L08060413-06	L08060454-07	L08060454-15
	Date	6/16/2008	6/16/2008	6/13/2008	6/13/2008	6/16/2008	6/16/2008
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
Analyte	Units						
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0 3	<0.3	0.131 J	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	1.86	0.251 J	0.504 J	2.32	<1	0.26 J
Tetrachloroethene	ug/L	114	11.4	30.8	90.9	36 9	37
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	0.291 J	<1	<1
Trichloroethene	ug/L	32.2	12.8	9.73	55.5	10.3	10.2
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	0.251 J	<0.5	0.511	0.285 J	<0.5	<0.5
Acetone	ug/L	<10	2.69 J	<10	<10	<10	<10
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1
MEK (2-Butanone)	ug/L	<10	<10	<10	<10	<10	<10
Methyl t-butyl ether (MTBE)	ug/L	33.1 J	11.8	18.6 J	122 J	<5	0.551 J

<: Not detected above Reporting Limit (RL)
J Estimated result based on QC data or reported below RL
B. Estimated result possibly biased high or false positive based on blank data

TABLE 19
VOC ANALYTICAL RESULTS SUMMARY, EBT-7 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW101-01A	IW101-01A DUP	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-03A	IW101-03B	IW101-03C	IW101-03C DUP	IW101-04A	IW101-04B	IW101-04C
	Lab ID	L08060250-07	L08060250-08	L08060250-09	L08060250-14	L08060250-13	L08060283-13	L08060283-06	L08060283-07	L08060348-04	L08060348-07	L08060348-01	L08060413-01	L08060413-02	L08060413-03
	Date	6/9/2008	6/9/2008	6/9/2008	6/9/2008	6/9/2008	6/10/2008	6/10/2008	6/10/2008	6/11/2008	6/11/2008	6/11/2008	6/13/2008	6/13/2008	6/13/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units														
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	0.148 J	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	13.8	14	23.1	15.7	46.2	13.2	52.9	15.4	53	86.4	86.2	33.3	44.5	192
Tetrachloroethene	ug/L	<1	0.687 J	1.08	68.2	24	44	30.1	14.2	17.6 J	17.5	17.2	0.54 J	2.05	2.8
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.487 J
Trichloroethene	ug/L	<1	0.68 J	1.04	6.72	5.59	1.78	9.49	4.19	2.94	28.9	28.1	0.731 J	1.59	12.4
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.703	0.773	<0.5	<0.5	1.72
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.748 J	0.758 J	<1	<1	2.89
Acetone	ug/L	37	51.7	<10	<10	<10	<10	<10	<10	<10	<10	<10	12.9 B	2.85 B	<10
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.379 J
Carbon disulfide	ug/L	0.513 J	0.666 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
MEK (2-Butanone)	ug/L	53.7	61	5.81 J	<10	17.7	<10	52.9	<10	23.4 J	9.75 J	10.4	84.4 J	31.3 J	16.6 J
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	0.297 B	0.501 B	0.538 B	<1	<1	0.296 B

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE 19
VOC ANALYTICAL RESULTS SUMMARY, EBT-7 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW101-05A	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B	IW101-07C	IW101-08A	IW101-08B	IW101-08B DUP	IW101-08C	IW101-09A
	Lab ID	L08060413-04	L08060454-09	L08060454-10	L08060454-11	L08060454-12	L08060454-13	L08060348-08	L08060348-09	L08060383-07	L08060454-14	L08060495-14	L08060495-10	L08060495-15	L08060383-08
	Date	6/13/2008	6/16/2008	6/16/2008	6/16/2008	6/16/2008	6/16/2008	6/11/2008	6/11/2008	6/12/2008	6/16/2008	6/17/2008	6/17/2008	6/17/2008	6/12/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<2	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.6	<0.3	<0.3	<0.3	<0.6	<0.3
cis-1,2-Dichloroethene	ug/L	43	8.52	69.7	9.32	15.9	102	25.5	111	307	17.2	73.4	73.6	311	<1
Tetrachloroethene	ug/L	10.1	79.6	27.6	12.3	20.8	5.29	6.13	1.62	<2	2.59	1.29	0.641 J	3.19	0.895 J
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	0.251 J	<1	0.276 J	1.58 J	<1	1.37	<1	2.88	<1
Trichloroethene	ug/L	1.99	1.58	5.46	2.05	4.95	13.3	5.42	4.1	2.58	1.8	1.47	<1	9.03	0.85 J
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<2	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	0.674 J	<1	0.624 J	<2	<1	<1	<1	2.83	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	0.553	<0.5	0.563	2.69	<0.5	<0.5	<0.5	1.34	<0.5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	0.752 J	<1	0.544 J	2.36	<1	<1	<1	1.59 J	<1
Acetone	ug/L	36.5 B	<10	<10	<10	<10	<10	8.19 J	<10	<20	<10	<10	<10	<20	11.4
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.306 J	<0.4	<0.4	<0.4	0.505 B	<0.4
Carbon disulfide	ug/L	1.1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<2	<1
MEK (2-Butanone)	ug/L	90.6	<10	56.1	34.8	10.7	7.79 J	11.8	23.1	93.9	<10	<10	<10	41.3	<10
Methyl t-butyl ether (MTBE)	ug/L	<5	1.8	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<10	<5
Methylene chloride	ug/L	0.261 B	<1	<1	<1	<1	<1	<1	0.451 B	1.15 J	<1	<1	<1	0.542 B	<1

<· Not detected above Reporting Limit (RL)
J. Estimated result based on QC data or reported below RL
B· Estimated result possibly biased high or false positive based on blank data

TABLE 19
VOC ANALYTICAL RESULTS SUMMARY, EBT-7 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW101-09B	IW101-09C	DR1-3	MW-101B	MW-101T	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02A DUP	PMW101-02B	PMW101-03A	PMW101-03B	PMW101-04A	PMW101-04B
	Lab ID	L08060383-11	L08060383-12	L08060413-09	L08060283-09	L08060283-08	L08060250-01	L08060250-04	L08060283-12	L08060283-15	L08060250-05	L08060283-01	L08060283-02	L08060348-17	L08060283-03
	Date	6/12/2008	6/12/2008	6/13/2008	6/10/2008	6/10/2008	6/9/2008	6/9/2008	6/10/2008	6/10/2008	6/9/2008	6/10/2008	6/10/2008	6/11/2008	6/10/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units														
Carbon tetrachloride	ug/L	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.6	<0.3	<0.3	0.137 J	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	150	245	19.5	23.3	3.22	20.3	42.9	37.7	40	96.1	56.5	86.8	42.6	52.2
Tetrachloroethene	ug/L	0.521 J	5.28	2.95	78.9	101	1.84	20.1	24.5	24.7	<1	1.93	3.3	4.64	12.8
trans-1,2-Dichloroethene	ug/L	0.628 J	<2	<1	<1	<1	<1	<1	<1	<1	0.265 J	<1	<1	<1	<1
Trichloroethene	ug/L	2.43	20.4	2.02	4.15	1.09	0.836 J	1.64	5.97	6.19	0.698 J	<1	0.975 J	1.65	4.85
Vinyl chloride	ug/L	1.23	<2	<1	<1	<1	0.469 J	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	1.14 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	0.245 J	1.37 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	27.4	<20	<10	<10	<10	16	<10	<10	<10	4.88 J	<10	<10	<10	<10
Benzene	ug/L	0.191 J	<0.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Carbon disulfide	ug/L	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
MEK (2-Butanone)	ug/L	242	210	<10	<10	<10	104	8.59 J	<10	<10	18.1	5.23 B	5.58 B	<10	<10
Methyl t-butyl ether (MTBE)	ug/L	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

<. Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B. Estimated result possibly biased high or false positive based on blank data

TABLE 19
VOC ANALYTICAL RESULTS SUMMARY, EBT-7 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	PMW101-05A	PMW101-05B	PMW101-05B DUP	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A	PMW101-08A DUP	PMW101-08B
	Lab ID	L08060348-10	L08060348-11	L08060348-02	L08060383-02	L08060348-12	L08060383-03	L08060383-04	L08060383-05	L08060383-01	L08060413-08
	Date	6/11/2008	6/11/2008	6/11/2008	6/12/2008	6/11/2008	6/12/2008	6/12/2008	6/12/2008	6/12/2008	6/13/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units										
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	0.202 J	0.165 J	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.249 J
cis-1,2-Dichloroethene	ug/L	77	70.6	72.6	0.414 J	39.3 J	<1	5.49	3.55	3.88	15.4
Tetrachloroethene	ug/L	0.909 J	16.4	16.2	5.52	1.15 J	0.327 J	14.9	28.8	28	43.2
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	0.998 J	60.7	61.8	<1	1.28 J	0.296 J	34	2.09	2.07	161
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1 J	<1	<1	<1	<1	0.554 J
1,2-Dichloroethane	ug/L	<0.5	0.548	0.583	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	<1	1.03	1.1	<1	<1	<1	<1	<1	<1	0.423 J
Acetone	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.299 J
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
MEK (2-Butanone)	ug/L	<10	17	19.7	<10	<10	<10	<10	<10	<10	<10
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE 20
VOC ANALYTICAL RESULTS SUMMARY, EBT-7 - TTA-2
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW85-01	IW85-02	IW85-05	IW85-06	IW92-01	IW92-02	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-08	DR2-1	DR2-5
	Lab ID	L08060543-04	L08060495-02	L08060495-03	L08060495-04	L08060250-11	L08060283-14	L08060283-10	L08060348-15	L08060348-16	L08060413-11	L08060413-12	L08060495-01	L08060250-10	L08060543-06
	Date	6/18/2008	6/17/2008	6/17/2008	6/17/2008	6/9/2008	6/10/2008	6/10/2008	6/11/2008	6/11/2008	6/13/2008	6/13/2008	6/17/2008	6/9/2008	6/18/2008
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
	Units														
Carbon tetrachloride	ug/L	21.5	9.51	5.6	<1	<1	3.67	<1	<2	<1	<1	0.812 J	<1	2.8	103
Chloroform	ug/L	81.7	42 J	36.4 J	0.641 J	9.1	27.7	3.36	0.604	0.322	<0.3	5.88 J	11.4 J	5.75	37.2
cis-1,2-Dichloroethene	ug/L	54.3	53.3	105	65.6	107	90.5	63.9	45.8	9.95	34.9	67.5 J	35.4	38.1	29.2
Tetrachloroethene	ug/L	27.7	7.28	1.39	0.925 J	3.24	38.6	2.4	3.67	13.3	6.93	15.7 J	8.95	50.7	41.7
trans-1,2-Dichloroethene	ug/L	1.38	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1 J	<1	<1	1.62
Trichloroethene	ug/L	10.7	3.42	0.963 J	<1	2.25	8.63	1.56	2.14	2.53	3.61	3.64 J	4.36	5.36	13.7
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1 J	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1 J	<1	<1	<1
1,2,3-Trichloropropane	ug/L	51.9	62.2	20.5	50.1	<1	<1	<1	<2	<1	<1	<1 J	3.78	<1	36.5
1,2-Dichloroethane	ug/L	0.607	0.583	0.453 J	0.263 J	<0.5	<0.5	<0.5	<1	<0.5	<0.5	0.26 J	1.02	<0.5	0.437 J
1,2-Dichloropropane	ug/L	0.431 J	1.4	0.371 J	0.32 J	<1	<1	<1	<2	<1	<1	0.247 J	1.05	<1	<1
1,3-Dichloropropane	ug/L	<0.4	0.498	<0.4	0.298 J	<0.4	<0.4	<0.4	<0.8	<0.4	<0.4	<0.4 J	<0.4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	0.255 B	0.142 B	0.242 B	0.128 B	<0.5	<0.5	0.171 B	0.865 J	<0.5	0.594	<0.5 J	0.453 B	<0.5	<0.5
Acetone	ug/L	29.3	23.8 B	3.69 B	27.4 B	14.6	9.13 B	82.5 B	479	91.8	40.9 B	35 B	281	5.06 J	<10
Carbon disulfide	ug/L	2.27	1.93 J	2.8 J	<1	<1	<1	0.558 J	<2	<1	<1	0.675 J	1.9	<1	<1
MEK (2-Butanone)	ug/L	30.1	25.9	8.43 J	65.1	103	10.6 B	136	388	65.8	80.8 J	39.7 J	526	<10	<10
Methylene chloride	ug/L	1.82 B	2.13 B	<1	<1	0.392 J	1.54	0.559 J	1.43 B	1.96 B	3.37 B	2.14 B	16.5	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE 20
VOC ANALYTICAL RESULTS SUMMARY, EBT-7 – TTA-2
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW-01	MW-85	PMW85-01	PMW85-04	PMW85-05	PMW92-01	PMW92-02	PMW92-03	PMW92-04	PMW92-05	PMW92-06
	Lab ID	L08060454-04	L08060454-03	L08060543-05	L08060543-02	L08060543-03	L08060250-12	L08060283-11	L08060348-18	L08060383-13	L08060383-14	L08060454-02
	Date	6/16/2008	6/16/2008	6/18/2008	6/18/2008	6/18/2008	6/9/2008	6/10/2008	6/11/2008	6/12/2008	6/12/2008	6/16/2008
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units											
Carbon tetrachloride	ug/L	8.41	47.2	57.3	1.01	143	<1	<1	<1	1.03	62.7	<1
Chloroform	ug/L	10.8	8.03	29.9	6.57	73.6	1.91	<0.3	0.49	3.91	24.7	1.11
cis-1,2-Dichloroethene	ug/L	108	39.1	18.3	107	94.8	19.4	130	159	159	25.2	178
Tetrachloroethene	ug/L	50.8	22	19.3	3.6	126	24.8	<1	27.1	8.75	168	0.785 J
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	1.46	<1	<1	0.254 J	<1	<1	<1	<1
Trichloroethene	ug/L	11.6	10.4	7.68	2.14	34.5	1.53	<1	8.79	2.09	14.3	<1
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	1.27	<1	<1	<1	0.622 J	<1	<1	<1
1,2,3-Trichloropropane	ug/L	0.981 J	17.6	5.53	70.7	175	<1	<1	<1	<1	<1	84.6
1,2-Dichloroethane	ug/L	0.549	0.295 J	0.294 J	0.327 J	1.26	<0.5	<0.5	<0.5	<0.5	0.571	0.659
1,2-Dichloropropane	ug/L	0.413 J	1.74	<1	0.327 J	0.746 J	<1	<1	0.316 J	<1	0.296 J	7.77
1,3-Dichloropropane	ug/L	<0.4	1.04	<0.4	0.278 J	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	4.59
1,4-Dichlorobenzene	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.2 B	<0.5	<0.5	<0.5	<0.5
Acetone	ug/L	26	3.57 J	<10	19.1	<10	17.6	23.8 B	<10	<10	<10	44.7
Carbon disulfide	ug/L	<1	0.502 J	<1	<1	2.5	<1	<1	<1	<1	<1	<1
MEK (2-Butanone)	ug/L	7.93 J	6.75 J	<10	53.9	<10	31.2	18.3 B	<10	<10	<10	90.1 J
Methylene chloride	ug/L	0.491 J	<1	<1	<1	<1	0.324 J	<1	<1	<1	<1	0.251 J

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE 21
VOC ANALYTICAL RESULTS SUMMARY, EBT-8 – TTA-1, MW-21 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW21-01A	IW21-01B	IW21-01B DUP	IW21-02A	IW21-02B	IW21-03A	IW21-03B	IW21-04A	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115
	Lab ID	L08120452-12	L08120452-13	L08120452-15	L08120452-14	L08120478-01	L08120478-02	L08120478-03	L08120478-06	L08120478-07	L08120478-08	L08120478-09	L08120376-15	L08120394-13
	Date	12/15/2008	12/15/2008	12/15/2008	12/15/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/11/2008	12/12/2008
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
	Units													
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<5	<1	<5	<5	<5	<5	<5	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	<0 3	<1.5	<0.3	<1.5	<1.5	<1.5	<1 5	<1.5	0.183 J	<0.3
cis-1,2-Dichloroethene	ug/L	75.2	63 7	66.2	24 1	2.37 J	96.8	16.1	65	22	7.06	9.95	2.44	3.63
Tetrachloroethene	ug/L	4.52	5.72	6.12	62.9	18.6	0 397 J	<5	5.46	<5	<5	3.11 J	192	9.46
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<5	0.585 J	<5	<5	<5	<5	<5	0.274 J	<1
Trichloroethene	ug/L	5.19	2.89	2.96	13.9	2.12 J	<1	<5	3.89 J	1.31 J	<5	1.4 J	20.4	1.74
Vinyl chloride	ug/L	<1	<1	<1	<1	<5	<1	<5	<5	<5	<5	<5	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<2.5	0.569 J	<2.5	<2.5	<2.5	<2.5	<2.5	<0.5	<0.5
Acetone	ug/L	16.6 B	63.9 B	63.5 B	26.9 B	118	8.31 J	212	<50	416	15.5 J	<50	<10	6.17 J
Carbon disulfide	ug/L	6.46	<1	<1	0.564 J	<5	<1	<5 J	<5	<5	8.37	<5	<1	5.58
MEK (2-Butanone)	ug/L	1040	462	459	532	683	79.1	1930 J	679	2050 J	218	965	<10	29.3
Methyl t-butyl ether (MTBE)	ug/L	35.5	23.1 J	22.5 J	39 J	5 J	60.3	7.04 J	31 5	7.01 J	8.77 J	16.1 J	51.9 J	7.75

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B: Estimated result possibly biased high or false positive based on blank data
R: Datum rejected based on QC data

TABLE 21
VOC ANALYTICAL RESULTS SUMMARY, EBT-8 – TTA-1, MW-21 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	MW-115 DUP	PMW21-01	PMW21-01 DUP	PMW21-02	PMW21-03	PMW21-04	PMW21-05
	Lab ID	L08120394-09	L08120376-13	L08120376-11	L08120394-10	L08120394-11	L08120394-12	L08120376-14
	Date	12/12/2008	12/11/2008	12/11/2008	12/12/2008	12/12/2008	12/12/2008	12/11/2008
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
Analyte	Units							
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	3.55	1.78	1.72	1.03	19.2	3.49	0.885 J
Tetrachloroethene	ug/L	9.39	73.3	77.9	48.4	22.2	18.2	40.3
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	1.74	23.9	24.8	20.4	9.79	5.8	10.4
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	0.548	<0.5	0.293 J	<0.5	<0.5	<0.5	<0.5
Acetone	ug/L	3.21 J	80.3 B	79.2 B	20.4	2.74 J	97.3	3.23 B
Carbon disulfide	ug/L	6.31	24.4	29.2	39.1	5.4	12.4	1.16
MEK (2-Butanone)	ug/L	32.5	21.8 B	21.8 B	27	3.06 J	77	<10
Methyl t-butyl ether (MTBE)	ug/L	6.64	41.3 J	41.3 J	42.3	39.4	18	1.73 J

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B: Estimated result possibly biased high or false positive based on blank data
R: Datum rejected based on QC data

TABLE 22
VOC ANALYTICAL RESULTS SUMMARY, EBT-8 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW101-01A	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-02C DUP	IW101-03A	IW101-03B	IW101-03C	IW101-04A	IW101-04B	IW101-04C
	Lab ID	L08120243-02	L08120243-03	L08120243-04	L08120243-05	L08120243-06	L08120243-07	L08120243-01	L08120343-01	L08120343-02	L08120343-03	L08120452-06	L08120452-07	L08120452-10
	Date	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/10/2008	12/10/2008	12/10/2008	12/15/2008	12/15/2008	12/15/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units													
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0 3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	10.1	21.7	75.5	47.9	39.5	92.5	93.8	22 9	41.4	207	23.2	45.2	108
Tetrachloroethene	ug/L	<1	1.88	12.5	4 9	17.9	22	22.5	0.86 J	9.26	11.2	<1	0.522 J	3.45
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.266 J	<1	<1	<1
Trichloroethene	ug/L	<1	0.638 J	22 1	2 79	3.27	40.3	42.7	0.468 J	1.87	54	<1	0.566 J	13.4
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0 5	<0.5	0.313 J	<0.5	<0.5	0 855	0.925	<0.5	<0 5	3.81 J	<0.5	<0.5	1.38
1,2-Dichloropropane	ug/L	<1	<1	0.761 J	<1	<1	1.49	1.44	<1	<1	3.41	<1	<1	1.85
Acetone	ug/L	11.2	9.45	14	16	14 6	17.8	16.9	23.6 J	85.9 J	27.4 J	19 9 B	56.4 B	56.6 B
Benzene	ug/L	<0.4	<0.4	0.133 J	<0.4	<0.4	0.191 J	<0.4	<0.4	<0.4	0.413	<0.4	<0.4	0.255 B
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	0 606 J	0.887 J	<1	<1	0 603 J	<1	<1	7	1.05	2.57	4.98	<1	0.806 J
Chloroethane	ug/L	<1	<1	<1	3.11	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	1.18	<1	<1	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	852	393	475	142	379	481	498	239 J	1460	784	936	1090	1720

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R: Datum rejected based on QC data

TABLE 22
VOC ANALYTICAL RESULTS SUMMARY, EBT-8 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-05A	IW101-05A DUP	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B	IW101-07C	IW101-08A	IW101-08B	IW101-08C
	Lab ID	L08120394-02	L08120394-01	L08120394-03	L08120452-11	L08120394-04	L08120394-05	L08120394-06	L08120343-04	L08120376-03	L08120376-04	L08120376-07	L08120394-07	L08120394-08
	Date	12/12/2008	12/12/2008	12/12/2008	12/15/2008	12/12/2008	12/12/2008	12/12/2008	12/10/2008	12/11/2008	12/11/2008	12/11/2008	12/12/2008	12/12/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units													
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0 3	<0.3	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	31.8	30.8	32.4	127	14	11.5	209	30.3	176	295	37.8	60.5	236
Tetrachloroethene	ug/L	7.41	7 71	24.6	15.2	1.54	17.2	10.6	1.91	2.96	2.52	<1	0.842 J	7.07
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	0 472 J	<1	0.293 J	0.31 J	<1	<1	0.404 J
Trichloroethene	ug/L	1.67	1.54	6 76	31.3	0.872 J	6.47	48.7	2.65	9.86	5.85	<1	2.54	36.2
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	0.974 J	<1	<1	0.798	<1	<1	0.884 J
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.804	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0 5	<0.5	0.561	<0.5	<0.5	1 92	<0.5	1.05	2 49	<0.5	<0.5	2.17
1,2-Dichloropropane	ug/L	<1	<1	<1	1.38	<1	<1	2 91	<1	1.16	3.36	<1	<1	2.32
Acetone	ug/L	<10	<10	<10	20.9 B	<10	<10	<10	26.3 J	<10	54.5 B	13 1 B	6.66 J	37.8
Benzene	ug/L	<0.4	<0.4	<0.4	0.281 B	<0.4	<0.4	0.48	<0.4	0.216 B	0.469 B	<0.4	<0.4	0.501
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1 J	<1	<1	<1
Carbon disulfide	ug/L	0.672 J	0.625 J	<1	16 9	<1	0 515 J	<1	13.1	<1	<1	0.578 J	5.85	0.568 J
Chloroethane	ug/L	<1	<1	3.36	<1	<1	<1	11.9	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	2 77	<1	<1	<1 J	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	7.14	<1	0.38 J	1.53	4.32	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	5.78	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	107	101	78.3	271	95.3	238	457	280	379 B	1260	618	265	307

<: Not detected above Reporting Limit (RL)
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B: Estimated result possibly biased high or false positive based on blank data
R. Datum rejected based on QC data

TABLE 22
VOC ANALYTICAL RESULTS SUMMARY, EBT-8 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW101-09A	IW101-09B	IW101-09C	IW101-09C DUP	DR1-3	MW-101B	MW-101T	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02B	PMW101-03A	PMW101-03A DUP
	Lab ID	L08120376-08	L08120376-09	L08120376-10	L08120376-01	L08120376-18	L08120343-06	L08120343-05	L08120243-09	L08120243-10	L08120243-13	L08120243-14	L08120243-15	L08120243-08
	Date	12/11/2008	12/11/2008	12/11/2008	12/11/2008	12/11/2008	12/10/2008	12/10/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units													
Carbon tetrachloride	ug/L	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.6	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	<1	138	169	194	16.5	29.1	51.2	16.8	60.3 J	31.2	55	73	67.1
Tetrachloroethene	ug/L	0.371 J	0.866 J	3.43	4.11	2.59	47	16.5	2.41	1.72	24	4.03	0.766 J	0.663 J
trans-1,2-Dichloroethene	ug/L	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	0.375 J	<1	1.07
Trichloroethene	ug/L	<1	3.17	13.8	16.3	1.32	0.923 J	1.63	<1	1.84	2.28	5.41	<1	0.273 J
Vinyl chloride	ug/L	<1	2.37	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<2	0.503 J	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<1	0.262 J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	<1	0.469 J	1.07 J	1.25	<1	<1	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	23.1 B	29.4 B	21.4 B	2.7 B	2.98 J	<10 J	20.1	3.78 J	<10	3.73	<10	<10
Benzene	ug/L	<0.4	0.252 B	0.332 B	0.263 B	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<2	<1	<1	<1	<1	<1	1.88	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<2	<1	<1	2.8 B	2.81 B	<1	<1 J	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	0.535 J	<2	<1	<1	<1	<1	<1	5.62	<1	<1	<1	<1
Chloroethane	ug/L	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<4	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	8.33 B	1160	332	254	4.39 B	24.8	41.1	291	40.1 J	7.85 J	4.35 J	<10	<10

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data
R: Datum rejected based on QC data

TABLE 22
VOC ANALYTICAL RESULTS SUMMARY, EBT-6 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID Lab ID Date Area Units	PMW101-03B L08120243-16 12/8/2008 TTA-1 101 ug/L	PMW101-04A L08120243-17 12/8/2008 TTA-1 101 ug/L	PMW101-04B L08120343-08 12/10/2008 TTA-1 101 ug/L	PMW101-05A L08120343-09 12/10/2008 TTA-1 101 ug/L	PMW101-05B L08120343-10 12/10/2008 TTA-1 101 ug/L	PMW101-06A L08120343-11 12/10/2008 TTA-1 101 ug/L	PMW101-06A DUP L08120343-07 12/10/2008 TTA-1 101 ug/L	PMW101-06B L08120343-12 12/10/2008 TTA-1 101 ug/L	PMW101-07A L08120343-13 12/10/2008 TTA-1 101 ug/L	PMW101-07B L08120343-16 12/10/2008 TTA-1 101 ug/L	PMW101-08A L08120376-16 12/11/2008 TTA-1 101 ug/L	PMW101-08B L08120376-17 12/11/2008 TTA-1 101 ug/L	PMW101-08B DUP L08120376-12 12/11/2008 TTA-1 101 ug/L
Carbon tetrachloride		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform		<0.3	<0.3	<0.3	<0.3	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.169 J	0.174 J
cis-1,2-Dichloroethene		60.8	60.7	26	69.6	57.4	3.63	3.43	31.9	<1	1.39	7.16	172	168
Tetrachloroethene		5.75	13.9	37	0.812 J	26.1	0.341 J	0.357 J	<1	0.527 J	13.3	65.4	25.4	24.7
trans-1,2-Dichloroethene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.264 J	<1
Trichloroethene		0.958 J	2.65	5.02	0.422 J	77.8	0.266 J	<1	<1	<1	24.5	9.88	103	102
Vinyl chloride		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.91	1.64
1,2-Dichloroethane		<0.5	<0.5	<0.5	<0.5	0.293 J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.255 J
1,2-Dichloropropane		<1	<1	<1	<1	1.32	<1	<1	<1	<1	<1	<1	1.24	1.24
Acetone		<10	<10	<10 J	<10 J	<10 J	<10 J	<10 J	<10 J	<10 J	<10 J	20.8 B	34.2 B	23.2 B
Benzene		<0.4	<0.4	<0.4	<0.4	0.169 J	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.432 B	0.425 B
Bromobenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane		<1	<1	<1	<1	2.83 B	<1	<1	<1	2.9 B	<1	<1	<1	<1
Carbon disulfide		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	50	1.15	1.37
Chloroethane		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)		3.34 J	<10	<10	<10	5.31 J	3.47 J	3.38 J	6.08 J	<10	<10	169	153	141

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B: Estimated result possibly biased high or false positive based on blank data
R: Datum rejected based on QC data

TABLE 23
VOC ANALYTICAL RESULTS SUMMARY, EBT-8 – TTA-2
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW85-01	IW85-02	IW85-05	IW85-06	IW92-01	IW92-02	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-08	DR2-1
	Lab ID	L08120452-03	L08120394-15	L08120452-04	L08120394-16	L08120478-11	L08120478-12	L08120452-02	L08120512-08	L08120512-04	L08120512-05	L08120512-01	L08120512-02	L08120394-17
	Date	12/15/2008	12/12/2008	12/15/2008	12/12/2008	12/16/2008	12/16/2008	12/15/2008	12/17/2008	12/17/2008	12/17/2008	12/17/2008	12/17/2008	12/12/2008
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
	Units													
Carbon tetrachloride	ug/L	<1	<1	<1	0 908 J	<5	<5	<1	<1	<1	<1	<5	<1	20.4
Chloroform	ug/L	18.6	7.01	37.8	6.23	<1.5	5.68	<0.3	<0.3	<0.3	<0.3	3.27	7.22	9 18
cis-1,2-Dichloroethene	ug/L	21.7	42.8	70.8	36.7	97	139	147	77.3	20.7	7.28	52.3	101	9 14
Tetrachloroethene	ug/L	10.6	3.2	8.34	3.18	<5	<5	0 924 J	2.89	6.56	7.44	4.32 J	3.03	137
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<5	<5	<1	<1	<1	<1	<5	<1	<1
Trichloroethene	ug/L	3 4	2.11	6.23	2.07	<5	<5	<1	0 497 J	0 785 J	0.866 J	<5	0.987 J	5 46
Vinyl chloride	ug/L	<1	<1	<1	<1	<5	<5	<1	0.367 J	<1	<1	<5	<1	<1
1,2,3-Trichloropropane	ug/L	13.6	14	18.7	17.7	<5	<5	<1	<1	<1	<1	<5	60.3	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<2.5	<2.5	0.351 J	<0.5	<0.5	<0.5	<2.5	1.1 J	<0.5
1,2-Dichloropropane	ug/L	0.238 J	1.84	0 302 J	2.83	<5	<5	<1	<1	<1	<1	<5	0.826 J	<1
1,3-Dichloropropane	ug/L	<0 4	0.939	<0.4	2.67	<2	<2	<0 4	<0.4	<0.4	<0.4	<2	<0.4	<0.4
Acetone	ug/L	47.4 B	88.7	34.5 B	40 9	<50	<50 J	28.4 B	159	83	78.4	48.4 B	42.2	4.93 J
Bromomethane	ug/L	<1	<1	<1	<1	<5 J	<5	<1	<1	<1	<1	<5	<1	<1
Carbon disulfide	ug/L	0.753 J	2.02	0.581 J	1.25	3.35 J	<5	2.62	<1	<1 J	<1 J	<5 J	<1 J	<1
MEK (2-Butanone)	ug/L	262	3310	703	2210	920	24 J	346	1920 J	2530 J	1870 J	1080	805 J	<10
Methylene chloride	ug/L	14.6	5.17	8.28	1.93 B	<5	<5	0.876 J	0.579 J	1.73	3.14	<5	4.42	<1

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TABLE 23
VOC ANALYTICAL RESULTS SUMMARY, EBT-8 – TTA-2
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	DR2-5	IW-01	MW-85	PMW85-01	PMW85-04	PMW85-05	PMW92-01	PMW92-02	PMW92-03	PMW92-04	PMW92-05	PMW92-06
	Lab ID	L08120512-03	L08120343-20	L08120512-06	L08120243-20	L08120243-21	L08120243-22	L08120376-20	L08120376-21	L08120376-23	L08120343-18	L08120343-19	L08120243-19
	Date	12/17/2008	12/10/2008	12/17/2008	12/8/2008	12/8/2008	12/8/2008	12/11/2008	12/11/2008	12/11/2008	12/10/2008	12/10/2008	12/8/2008
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units												
Carbon tetrachloride	ug/L	112 J	<1	76.2	0.942 J	0.657 J	44.5 J	<1	<1	<1	1.33	0.849 J	<1
Chloroform	ug/L	37.9	0.34	9.84	78 J	0.802 J	98.7 J	0.387 J	<0.3	0.151 J	2.13	5.73	<0.3
cis-1,2-Dichloroethene	ug/L	34.5	119	7.45	29.8	99.2	127	5.58	99.2	159	152	33.9	193
Tetrachloroethene	ug/L	48.9	2.49	36.4	22.5	0.89 J	71	5.32	<1	33.3	14	55.2	0.67 J
trans-1,2-Dichloroethene	ug/L	1.07	<1	<1	<1	<1	<1	<1	<1	0.339 J	<1	<1	<1
Trichloroethene	ug/L	17	0.353 J	14.4	7.33	<1	26.6	<1	<1	12.7	2.39	3.44	<1
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	31.1	<1	1.42	16.2	65.5	180	<1	<1	<1	<1	<1	33.6
1,2-Dichloroethane	ug/L	0.415 J	0.316 J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.671 J	0.65
1,2-Dichloropropane	ug/L	<1	0.426 J	<1	<1	4.27	0.899 J	<1	<1	0.427 J	0.289 J	0.457 J	20.7
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0.4	<0.4	3.78	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	17.8
Acetone	ug/L	<10	113 J	<10	26.2 J	15 J	62.2 J	75.7 B	14.3 B	<10	<10 J	18.2 J	12.3
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2.82 B	<1
Carbon disulfide	ug/L	<1 J	<1	<1	1.34	1.62	4.8	<1	0.91 J	<1	<1	<1	<1
MEK (2-Butanone)	ug/L	<10	178	<10	34.3	212 J	28.3 J	131	44.3 B	<10	3.12 J	32.1	13.3
Methylene chloride	ug/L	<1	<1	<1	0.412 B	<1	0.637 B	<1	<1	<1	<1	<1	<1

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TABLE 24
VOC ANALYTICAL RESULTS SUMMARY, EBT-9 – TTA-1, MW-21 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW21-01A	IW21-01B	IW21-02A	IW21-02A DUP	IW21-02B	IW21-03A	IW21-03B	IW21-04A	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115
	Lab ID	L09030379-07	L09030418-07	L09030379-01	L09030379-06	L09030379-02	L09030379-03	L09030379-04	L09030418-01	L09030418-04	L09030418-08	L09030418-09	L09030334-01	L09030323-15
	Date	3/16/2009	3/17/2009	3/16/2009	3/16/2009	3/16/2009	3/16/2009	3/16/2009	3/17/2009	3/17/2009	3/17/2009	3/17/2009	3/13/2009	3/12/2009
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
Analyte	Units													
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	104	40.8	38.6	37.3	4.41	134	34	70.8	16.7	12.8	10.6	2.3	7.47
Tetrachloroethene	ug/L	3.41	7.13	111	112	10.7	3.66	0.3 J	8.75	0.383 J	<1	2.09	179	10.8
trans-1,2-Dichloroethene	ug/L	0.388 J	<1	<1	<1	<1	0.624 J	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	2.26	4	17.8	17.8	1.76	4.09	1.32	7.76	0.956 J	0.464 J	1.22	16.6	2.44
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	42.4 B	48.1 J	32 B	38.3 B	48.1 B	6.26 B	61.8 B	21.7	16.7 J	41.5	184	<10	<10
Carbon disulfide	ug/L	1.12	<1	11.6	9.66	1.22	0.787 J	0.598 J	<1	<1	<1	<1	<1	<1
MEK (2-Butanone)	ug/L	1140	1460	545	570 B	925	866 B	4930	1790	792	632	3540	<10	40.2
Methyl t-butyl ether (MTBE)	ug/L	35.6	12.4	24.3	25.4	3.29 J	53.7	20	39.9	2.64 J	11.7	12.3	29.6	10.7
Styrene	ug/L	<1	<1	<1	<1	1.06	<1	<1	<1	<1	<1	<1	<1	<1

<. Not detected above Reporting Limit (RL)
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B: Estimated result possibly biased high or false positive based on blank data

TABLE 24
VOC ANALYTICAL RESULTS SUMMARY, EBT-9 – TTA-1, MW-21 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	PMW21-01	PMW21-02	PMW21-02 DUP	PMW21-03	PMW21-04	PMW21-05
	Lab ID	L09030323-10	L09030323-11	L09030323-09	L09030323-12	L09030323-13	L09030323-14
	Date	3/12/2009	3/12/2009	3/12/2009	3/12/2009	3/12/2009	3/12/2009
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
Analyte	Units						
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	1.32	0.891 J	0.791 J	57.4	13.9	1.47
Tetrachloroethene	ug/L	23.5	49.5	51.7	18.7	13.5	61.2
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	7.6	21.4	20.6	8.01	5.52	13
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1
Acetone	ug/L	31.8	36.6	39	<10	29.1	<10
Carbon disulfide	ug/L	0.601 J	1.07	0.752 J	<1	<1	<1
MEK (2-Butanone)	ug/L	19.4	205	174	8.66 J	79.5	<10
Methyl t-butyl ether (MTBE)	ug/L	11.9	31.5	30.1	40.3	18.2	1.47 J
Styrene	ug/L	<1	<1	<1	<1	<1	<1

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J: Estimated result based on QC data or reported below RL
B. Estimated result possibly biased high or false positive based on blank data

TABLE 25
VOC ANALYTICAL RESULTS SUMMARY, EBT-9 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-01A	IW101-01A DUP	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-03A	IW101-03A DUP	IW101-03B	IW101-03C	IW101-04A	IW101-04B
	Lab ID	L09030224-14	L09030224-13	L09030224-15	L09030224-16	L09030224-05	L09030265-06	L09030265-07	L09030265-08	L09030265-05	L09030265-09	L09030265-10	L09030323-01	L09030323-02
	Date	3/9/2009	3/9/2009	3/9/2009	3/9/2009	3/9/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/12/2009	3/12/2009
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units													
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	8.83	8.87	19.4	110	42.7	44.2	145	15.4	17.1	28.2	184	17.7	35.5
Tetrachloroethene	ug/L	<1	<1	0.256 J	8.38	10.4	18.4	1.06	1.01	0.977 J	16.1	2.35	<1	0.328 J
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	<1	<1	<1	19.9	3.05	2.29	1.27	0.413 J	0.518 J	2.43	11.4	<1	0.464 J
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	0.433 J	<1	<1	<1	0.408 J	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	0.535	<0.5	<0.5	0.896	<0.5	<0.5	<0.5	2.34	<0.5	<0.5
1,2-Dichloropropane	ug/L	<1	<1	<1	1.36	<1	<1	1.26	<1	<1	<1	2.06	<1	<1
Acetone	ug/L	18.2	14	6.15 J	33.7	4.9 J	7.11 J	67.9	257	249	110	27.7	10.8 B	34.2
MEK (2-Butanone)	ug/L	1550	1740	388	1010	147	92.8 J	537	316	324	1210	619	821	2280

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TABLE 25
VOC ANALYTICAL RESULTS SUMMARY, EBT-9 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-04C	IW101-05A	IW101-05B	IW101-05B DUP	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B	IW101-07C	IW101-08A	IW101-08B
	Lab ID	L09030323-03	L09030323-06	L09030334-05	L09030334-04	L09030334-06	L09030334-07	L09030334-08	L09030334-09	L09030297-10	L09030297-11	L09030297-12	L09030379-08	L09030379-11
	Date	3/12/2009	3/12/2009	3/13/2009	3/13/2009	3/13/2009	3/13/2009	3/13/2009	3/13/2009	3/11/2009	3/11/2009	3/11/2009	3/16/2009	3/16/2009
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units													
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.6	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	103	27.8	27	27.5	136	9.82	19.9	184	32.7	155	238	43.7 J	51.8
Tetrachloroethene	ug/L	0.89 J	5.19	26.1	26.3	4.23	1.05	6.28	5.68	1.1	6	0.722 J	<1	0.765 J
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1
Trichloroethene	ug/L	2.85	1.28	4.72	4.54	8.82	0.502 J	4.17	33.4	1.43	23.5	1.94 J	<1	1.82
Vinyl chloride	ug/L	0.435 J	<1	<1	<1	0.491 J	<1	<1	0.884 J	<1	<1	<2	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1
1,2-Dichloroethane	ug/L	1.49	<0.5	<0.5	<0.5	0.684	<0.5	<0.5	2.24	<0.5	1.01	1.48	<0.5	<0.5
1,2-Dichloropropane	ug/L	1.54	<1	<1	<1	1.5	<1	<1	2.09	<1	0.937 J	2.13	<1	<1
Acetone	ug/L	23.3 B	34.2	4.21 J	4.85 J	156	16.3	63.1	11.8	43.7 B	45.7 B	47 B	14.8 B	13.8 B
MEK (2-Butanone)	ug/L	1160	323	135	159	826	313	487	276	298	259	1190 B	572 B	288 B

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J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE 25
VOC ANALYTICAL RESULTS SUMMARY, EBT-9 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-08C	IW101-09A	IW101-09B	IW101-09C	DR1-3	MW-101B	MW-101T	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02B	PMW101-03A	PMW101-03B
	Lab ID	L09030379-12	L09030297-13	L09030323-07	L09030323-08	L09030323-16	L09030297-15	L09030297-14	L09030224-06	L09030265-12	L09030224-07	L09030224-10	L09030224-11	L09030224-12
	Date	3/16/2009	3/11/2009	3/12/2009	3/12/2009	3/12/2009	3/11/2009	3/11/2009	3/9/2009	3/10/2009	3/9/2009	3/9/2009	3/9/2009	3/9/2009
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units													
Carbon tetrachloride	ug/L	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.6	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
cis-1,2-Dichloroethene	ug/L	167	4.57	86.2	163	13.3	31.2	35.2	19.6	49	37.7	35.2	68.1	58.1
Tetrachloroethene	ug/L	0.627 J	0.45 J	0.395 J	1.04	2.43	55.6	46.9	1.58	5.47	5.21	27	0.885 J	10.4
trans-1,2-Dichloroethene	ug/L	0.808 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	3.42	0.328 J	0.454 J	4.19	1.26	3.53	2.16	<1	1.41	<1	21	0.534 J	3.31
Vinyl chloride	ug/L	1.61 J	<1	1.73	0.442 J	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	1.34	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	1.24 J	<1	<1	0.987 J	<1	<1	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	42.9 B	7.51 B	16.6 B	19.7 B	<10	<10	<10	13.2	<10	<10 J	<10	<10	<10
MEK (2-Butanone)	ug/L	739 B	91.2	2090	1400	<10	5.22 B	3.98 B	252	7.3 J	22.4	<10	<10	<10

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B: Estimated result possibly biased high or false positive based on blank data

TABLE 25
VOC ANALYTICAL RESULTS SUMMARY, EBT-9 – TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	PMW101-03B DUP	PMW101-04A	PMW101-04B	PMW101-05A	PMW101-05B	PMW101-05B DUP	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A	PMW101-08A DUP	PMW101-08B
Lab ID	L09030224-04	L09030265-13	L09030265-14	L09030265-15	L09030265-16	L09030265-11	L09030265-17	L09030297-02	L09030297-03	L09030297-04	L09030297-07	L09030297-01	L09030297-08
Date	3/9/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/11/2009	3/11/2009	3/11/2009	3/11/2009	3/11/2009	3/11/2009
Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte Units													
Carbon tetrachloride ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform ug/L	<0.3	<0.3	<0.3	<0.3	0.207 J	0 172 J	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
cis-1,2-Dichloroethene ug/L	56.4	47	37.2	61.9	72.1	68.3	1.71	25.5	<1	1.74	23.1	21.8	155
Tetrachloroethene ug/L	10 9	22.6	22.4	3.8	15.9	16.2	1.17	<1	0.39 J	14.4	36.3	35.5	10.9
trans-1,2-Dichloroethene ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene ug/L	3.05	6.83	2.39	1.81	50	47.5	0.607 J	<1	<1	29.2	9.43	8.85	44.4
Vinyl chloride ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.23
1,2-Dichloroethane ug/L	<0.5	<0.5	<0.5	<0.5	0 4 J	0.383 J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane ug/L	<1	<1	<1	<1	1.07	0 969 J	<1	<1	<1	<1	<1	<1	0.679 J
Acetone ug/L	<10 J	<10	<10	<10	2.86 J	3 7 J	<10	<10	<10	<10	8 1 B	7 15 B	7.4 B
MEK (2-Butanone) ug/L	<10	<10	<10	<10	9.6 J	9.76 J	<10	<10	<10	<10	101	93.3	399

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B: Estimated result possibly biased high or false positive based on blank data

TABLE 26
VOC ANALYTICAL RESULTS SUMMARY, EBT-9 – TTA-2
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW85-01	IW85-02	IW85-05	IW85-06	IW92-01	IW92-01 DUP	IW92-02	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-08
	Lab ID	L09030334-11	L09030334-12	L09030334-02	L09030334-03	L09030297-18	L09030297-16	L09030297-19	L09030265-02	L09030297-20	L09030265-03	L09030224-02	L09030224-03	L09030323-18
	Date	3/13/2009	3/13/2009	3/13/2009	3/13/2009	3/11/2009	3/11/2009	3/11/2009	3/10/2009	3/11/2009	3/10/2009	3/9/2009	3/9/2009	3/12/2009
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
	Units													
Carbon tetrachloride	ug/L	<1	<1	<1	6.69	<1	<1	<1	<1	<2	<1	<1	<1	<5
Chloroform	ug/L	10.4	3.78	3.94	8.38	<0.3	<0.3	0.268 J	<0.3	<0.6	0.153 J	<0.3	<0.3	0.987 J
cis-1,2-Dichloroethene	ug/L	27.1	46	49	37.8	83.3	85.1	126	50	37.7	11.7	6.13	32.9	47.8
Tetrachloroethene	ug/L	4.84	3.62	1.87	5.48	0.264 J	0.303 J	0.371 J	<1	0.722 J	1.43	3.61	0.684 J	1.79 J
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<5
Trichloroethene	ug/L	1.79	2.01	0.824 J	2.72	<1	<1	<1	<1	<2	0.335 J	0.377 J	0.282 J	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	0.672 J	<1	<2	<1	<1	<1	<5
1,2,3-Trichloropropane	ug/L	13.5	9.42	10.8	16	<1	<1	<1	<1	<2	<1	<1	<1	45.3
1,2-Dichloroethane	ug/L	0.362 J	0.252 J	0.321 J	<0.5	<0.5	<0.5	<0.5	<0.5	<1	0.299 J	0.34 J	0.255 J	<2.5
1,2-Dichloropropane	ug/L	<1	1.83	0.317 J	2.57	<1	<1	<1	<1	<2	<1	<1	<1	<5
1,3-Dichloropropane	ug/L	<0.4	1.17	<0.4	2.77	<0.4	<0.4	<0.4	<0.4	<0.8	<0.4	<0.4	<0.4	<2
Acetone	ug/L	36.5	96.7	40.6	39.8	74.2 B	70.4 B	26.2 B	80.7	948 B	126	53 J	27.2 J	168
Carbon disulfide	ug/L	0.552 J	<1	0.542 J	<1	<1	<1	<1	<1	<2	4.5	<1	<1	<5
Chlorobenzene	ug/L	<0.5	<0.5	<0.5	0.134 J	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<2.5
MEK (2-Butanone)	ug/L	717	2060	405	5400	1760	1820	367	182 J	1810	941	854	899	1380
Methylene chloride	ug/L	7.8	5.44	3.47	1.44	<1	<1	0.812 J	<1	<2	1.61	2.26	0.391 J	4.28 J

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B: Estimated result possibly biased high or false positive based on blank data

TABLE 26
VOC ANALYTICAL RESULTS SUMMARY, EBT-9 – TTA-2
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	DR2-1	DR2-5	IW-01	MW-85	PMW85-01	PMW85-04	PMW85-05	PMW92-01	PMW92-02	PMW92-03	PMW92-04	PMW92-05	PMW92-06
	Lab ID	L09030323-20	L09030334-15	L09030379-17	L09030418-13	L09030334-14	L09030418-05	L09030418-06	L09030379-14	L09030379-15	L09030379-16	L09030418-11	L09030418-12	L09030323-19
	Date	3/12/2009	3/13/2009	3/16/2009	3/17/2009	3/13/2009	3/17/2009	3/17/2009	3/16/2009	3/16/2009	3/16/2009	3/17/2009	3/17/2009	3/12/2009
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units													
Carbon tetrachloride	ug/L	22 7	206	<10	69.9	<1	0.355 J	5.13	<10	<1	<1	<1	2.37	<1
Chloroform	ug/L	7.53	68.8	1.48 J	8.51	0.455	0.499	86.4	<3	<0.3	<0.3	0 733	14.4	<0.3
cis-1,2-Dichloroethene	ug/L	7.59	62	114	7 29	50.4	89.3	166	4 43 J	124	139	112	87.5	200
Tetrachloroethene	ug/L	150	114	<10	33.9	0.896 J	1.3	30.5	<10	<1	15.6	5.02	33.9	3.88
trans-1,2-Dichloroethene	ug/L	<1	<1	<10	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1
Trichloroethene	ug/L	5.09	35	<10	11.6	<1	<1	14.8	<10	<1	5.99	0 916 J	7.02	2 98
Vinyl chloride	ug/L	<1	<1	<10	<1	<1	0.339 J	<1	<10	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	37 3	<10	0.982 J	11	19.4	134	<10	<1	<1	<1	0.838 J	36.6
1,2-Dichloroethane	ug/L	<0.5	0.573	<5	<0 5	<0.5	<0.5	0.846	<5	<0.5	0.335 J	<0.5	0.389 J	0.899
1,2-Dichloropropane	ug/L	<1	0.386 J	<10	0.249 J	<1	9.08	0.801 J	<10	<1	0.207 J	<1	0.265 J	21.4
1,3-Dichloropropane	ug/L	<0.4	<0.4	<4	<0.4	<0.4	8.17	<0.4	<4	<0.4	<0.4	<0.4	<0.4	15.5
Acetone	ug/L	<10	<10	72.1 B	18.6 J	8.46 J	32.7 J	30.6 J	1160 B	6.05 B	3.38 B	<10 J	21.6 J	3.24 B
Carbon disulfide	ug/L	<1	<1	<10	<1	<1	<1	1.41	<10	<1	<1	<1	1.44	<1
Chlorobenzene	ug/L	<0 5	0.276 J	<5	<0.5	<0.5	0.293 J	0.522	<5	<0.5	<0.5	<0.5	<0.5	0.405 J
MEK (2-Butanone)	ug/L	<10	<10	1070	3.05 J	16.9	234	55	822 B	33.3 B	<10	<10	222	4.59 J
Methylene chloride	ug/L	<1	<1	<10	<1	<1	<1	3.9	<10	<1	<1	<1	5 14	1.23

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J. Estimated result based on QC data or reported below RL
B. Estimated result possibly biased high or false positive based on blank data

TABLE 27
CVOC CONCENTRATION TRENDS - TTA-1, MW-21 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Tetrachloroethene

Injection Well	Baseline	EBT-5	EBT-6	EBT-7	EBT-8	EBT-9	Change*
IW21-01A	234.0	30.9	20.7	21.7	4.5	3.4	-230.6
IW21-01B	144.0	0.7	1.5	<1	5.7	7.1	-136.9
IW21-02A	99.7	156.0	151.0	119.0	62.9	111.0	11.3
IW21-02B	80.2	67.1	76.3	68.0	18.6	10.7	-69.5
IW21-03A	193.0	89.4	133.0	127.0	0.4	3.7	-189.3
IW21-03B	49.4	36.6	31.4	24.2	<5	0.3	-49.1
IW21-04A	276.0	19.2	10.5	32.4	5.5	8.8	-267.3
IW21-04B	286.0	4.6	1.5	2.4	<5	0.4	-285.6
IW21-05A	83.6	12.4	9.8	9.7	<5	<1	-83.6
IW21-05B	41.5	26.8	16.9	12.2	3.1	2.1	-39.4
Monitoring Well	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-21	106	178	173	154	192.0	179.0	73.0
MW-115	10.1	9.81	8.94	8.89	9.5	10.8	0.7
PMW21-01**	156	130	193	114	73.3	23.5	-132.5
PMW21-02**	108	32.6	31.1	11.4	48.4	49.5	-58.5
PMW21-03	185	28.5	36.9	30.8	22.2	18.7	-166.3
PMW21-04**	199	93.4	93.9	90.9	16.2	13.5	-185.5
PMW21-05	6.37	50.3	43.2	36.9	40.3	61.2	54.8

Trichloroethene

Injection Well	Baseline	EBT-5	EBT-6	EBT-7	EBT-8	EBT-9	Change*
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
IW21-01A	55.7	21.7	13.1	16.7	5.2	2.3	-53.4
IW21-01B	30.1	0.4	2.4	<1	2.9	4.0	-26.1
IW21-02A	17.0	26.0	23.2	21.6	13.9	17.8	0.8
IW21-02B	14.8	6.6	6.9	5.8	2.1	1.8	-13.0
IW21-03A	56.1	29.6	42.6	42.9	<1	4.1	-52.0
IW21-03B	23.4	15.8	19.6	13.8	<5	1.3	-22.1
IW21-04A	64.5	9.5	5.8	14.4	3.9	7.8	-56.7
IW21-04B	56.4	3.6	2.8	2.2	1.3	1.0	-55.4
IW21-05A	30.8	7.0	7.1	7.8	<5	0.5	-30.3
IW21-05B	16.7	9.7	9.1	6.8	1.4	1.2	-15.5
Monitoring Well	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-21	16.3	32.5	28.9	26.1	20.4	16.6	0.3
MW-115	5.0	1.4	1.0	1.8	1.7	2.4	-2.5
PMW21-01**	40.6	39.5	54.2	32.2	23.9	7.6	-33.0
PMW21-02**	37.8	17.0	12.6	12.8	20.4	21.4	-16.4
PMW21-03	58.0	9.8	9.0	9.7	9.8	8.0	-50.0
PMW21-04**	87.7	49.0	47.0	55.5	5.8	5.5	-82.2
PMW21-05	34.4	18.2	34.6	10.3	10.4	13.0	-21.4

cis 1,2-Dichloroethene

Injection Well	Baseline	EBT-5	EBT-6	EBT-7	EBT-8	EBT-9	Change*
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
IW21-01A	3.2	88.2	80.2	91.4	75.2	104.0	100.8
IW21-01B	2.0	59.3	9.4	35.2	63.7	40.8	38.8
IW21-02A	1.8	6.7	14.3	15.8	24.1	38.6	36.8
IW21-02B	1.0	38.6	49.8	82.8	2.4	4.4	3.4
IW21-03A	2.7	7.8	9.5	31.6	96.8	134.0	131.3
IW21-03B	0.9	13.5	10.1	21.8	16.1	34.0	33.1
IW21-04A	4.1	37.3	62.2	72.6	65.0	70.8	66.7
IW21-04B	3.6	5.4	15.4	22.0	22.0	16.7	13.1
IW21-05A	1.6	25.6	30.9	38.5	7.1	12.8	11.3
IW21-05B	0.8	20.2	19.5	17.8	10.0	10.6	9.8
Monitoring Well	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-21	1.3	2.1	1.8	2.3	2.4	2.3	1.0
MW-115	4.2	2.5	0.6	1.6	3.6	7.5	3.3
PMW21-01**	2.0	2.2	2.6	1.9	1.8	1.3	-0.6
PMW21-02**	1.5	0.6	0.5	0.3	1.0	0.9	-0.6
PMW21-03	2.6	0.4	0.4	0.5	19.2	57.4	54.9
PMW21-04**	2.9	1.8	1.6	2.3	3.5	13.9	11.0
PMW21-05	0.5	0.5	0.3	<1	0.9	1.5	0.9

* Note that the change represents the overall change from the Baseline through the 9th Quarter (EBT-9)
** Converted to an Injection Well as of 4/30/2008

TABLE 28
CVOC CONCENTRATION TRENDS - TTA-1, MW-101 AREA
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Tetrachloroethene

Injection Well	Baseline µg/L	EBT-5 µg/L	EBT-6 µg/L	EBT-7 µg/L	EBT-8 µg/L	EBT-9 µg/L	Change* µg/L
IW101-01A	47.5	1.5	0.5	<1	<1	<1	-47.5
IW101-01B	71.8	1.4	0.4	1.1	1.9	0.3	-71.5
IW101-01C	228.0	96.8	70.3	68.2	12.5	8.4	-219.6
IW101-02A	232.0	11.4	1.4	24.0	4.9	10.4	-221.6
IW101-02B	221.0	102.0	98.4	44.0	17.9	18.4	-202.6
IW101-02C	190.0	49.9	48.4	30.1	22.0	1.1	-188.9
IW101-03A	4.0	13.3	17.8	14.2	0.9	1.0	-2.9
IW101-03B	89.9	88.4	86.2	17.6	9.3	16.1	-73.8
IW101-03C	59.0	25.8	15.3	17.5	11.2	2.4	-56.7
IW101-04A	190.0	0.4	0.3	0.5	<1	<1	-190.0
IW101-04B	182.0	2.9	2.4	2.1	0.5	0.3	-181.7
IW101-04C	169.0	2.9	2.1	2.8	3.5	0.9	-168.1
IW101-05A	63.1	10.5	8.9	10.1	7.4	5.2	-57.9
IW101-05B	202.0	76.9	80.2	79.6	24.6	26.1	-175.9
IW101-05C	219.0	44.0	27.2	27.6	15.2	4.2	-214.8
IW101-06A	6.8	22.4	17.7	12.3	1.5	1.1	-5.8
IW101-06B	47.0	50.8	50.3	20.8	17.2	6.3	-40.7
IW101-06C	66.2	10.4	6.0	5.3	10.6	5.7	-60.5
IW101-07A	5.2	8.6	9.3	6.1	1.9	1.1	-4.1
IW101-07B	38.0	2.1	1.4	1.6	3.0	6.0	-32.0
IW101-07C	60.9	24.2	2.0	<2	2.5	0.7	-60.2
IW101-08A	0.9	1.3	1.4	2.6	<1	<1	-0.9
IW101-08B	17.5	0.7	3.9	1.3	0.8	0.8	-16.7
IW101-08C	66.6	2.1	2.0	3.2	7.1	0.8	-65.8
IW101-09A	0.6	0.4	0.5	0.9	0.4	0.5	-0.1
IW101-09B	45.8	1.7	1.2	0.6	0.9	0.4	-45.4
IW101-09C	101.0	13.4	4.6	5.3	3.4	1.0	-100.0
Monitoring Well	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**
DR1-3	45.7	0.9	2.1	3.0	2.6	2.4	-43.3
MW-101B	239.0	120.0	81.3	78.9	47.0	55.6	-183.4
MW-101T	251.0	125.0	113.0	101.0	16.5	46.9	-204.1
PMW101-01A	110.0	1.4	2.3	1.8	2.4	1.6	-108.4
PMW101-01B	158.0	23.4	14.7	20.1	1.7	5.5	-152.5
PMW101-02A	257.0	13.9	20.3	24.5	24.0	5.2	-251.8
PMW101-02B	196.0	<1	<1	<1	4.0	27.0	-169.0
PMW101-03A	100.0	24.9	9.2	1.9	0.8	0.9	-99.1
PMW101-03B	144.0	13.8	8.6	3.3	5.8	10.4	-133.6
PMW101-04A	199.0	5.9	5.7	4.6	13.9	22.6	-176.4
PMW101-04B	90.4	29.3	5.3	12.8	37.0	22.4	-68.0
PMW101-05A	194.0	0.8	0.7	0.9	0.8	3.8	-190.2
PMW101-05B	38.7	26.8	21.8	16.4	26.1	15.9	-22.8
PMW101-06A	4.2	7.2	7.1	5.5	0.3	1.2	-3.0
PMW101-06B	23.3	2.6	3.2	1.2	<1	<1	-23.3
PMW101-07A	0.6	0.3	0.4	0.3	0.5	0.4	-0.2
PMW101-07B	53.6	21.6	20.6	14.9	13.3	14.4	-39.2
PMW101-08A**	0.7	9.9	13.8	28.8	65.4	36.3	35.6
PMW101-08B**	46.6	39.8	34.7	43.2	25.4	10.9	-35.7

Trichloroethene

Injection Well	Baseline µg/L	EBT-5 µg/L	EBT-6 µg/L	EBT-7 µg/L	EBT-8 µg/L	EBT-9 µg/L	Change* µg/L
IW101-01A	0.6	3.0	<1	<1	<1	<1	-0.6
IW101-01B	<1	0.8	0.4	1.0	0.6	<1	0.0
IW101-01C	0.9	7.0	6.7	6.7	22.1	19.9	19.0
IW101-02A	<1	5.5	0.9	5.6	2.8	3.1	3.1
IW101-02B	0.4	4.0	1.7	1.8	3.3	2.3	1.9
IW101-02C	3.7	12.3	11.7	9.5	40.3	1.3	-2.5
IW101-03A	<1	4.2	4.3	4.2	0.5	0.4	0.4
IW101-03B	1.1	0.6	1.7	2.9	1.9	2.4	1.4
IW101-03C	78.5	47.4	31.1	28.9	54.0	11.4	-67.1
IW101-04A	0.3	0.4	0.4	0.7	<1	<1	0.3
IW101-04B	0.3	2.0	1.8	1.6	0.6	0.5	0.2
IW101-04C	29.7	13.3	8.2	12.4	13.4	2.9	-26.9
IW101-05A	<1	1.0	2.0	2.0	1.7	1.3	1.3
IW101-05B	0.3	2.5	1.9	1.6	6.8	4.7	4.4
IW101-05C	3.4	5.6	5.1	5.5	31.3	8.8	5.4
IW101-06A	<1	2.3	2.4	2.1	0.9	0.5	0.5
IW101-06B	64.7	7.9	7.3	5.0	6.5	4.2	-60.5
IW101-06C	204.0	29.2	15.7	13.3	48.7	33.4	-170.6
IW101-07A	2.6	10.9	9.5	5.4	2.7	1.4	-1.2
IW101-07B	138.0	7.0	4.4	4.1	9.9	23.5	-114.5
IW101-07C	207.0	100.0	7.3	2.6	5.9	1.9	-205.1
IW101-08A	1.0	1.1	1.0	1.8	<1	<1	1.0
IW101-08B	51.0	0.7	1.8	1.5	2.5	1.8	-49.2
IW101-08C	240.0	7.7	8.4	9.0	36.2	3.4	-236.6
IW101-09A	0.3	0.3	0.3	0.9	<1	0.3	0.0
IW101-09B	96.0	5.0	4.0	2.4	3.2	0.5	-95.5
IW101-09C	316.0	46.5	18.2	20.4	13.8	4.2	-311.8
Monitoring Well	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**
DR1-3	4.2	0.3	1.3	2.0	1.3	1.3	-2.9
MW-101B	0.3	0.8	2.2	4.2	0.9	3.5	3.2
MW-101T	0.3	0.3	1.4	1.1	1.6	2.2	1.9
PMW101-01A	<1	0.3	0.7	0.8	<1	<1	0.0
PMW101-01B	1.2	1.5	0.8	1.6	1.8	1.4	0.2
PMW101-02A	0.3	1.3	3.9	6.0	2.3	<1	0.3
PMW101-02B	4.7	<1	<1	0.7	5.4	21.0	16.3
PMW101-03A	<1	0.3	0.3	<1	<1	0.5	-0.5
PMW101-03B	2.4	1.6	1.1	1.0	1.0	3.3	0.9
PMW101-04A	0.3	0.3	0.6	1.7	2.7	6.8	6.6
PMW101-04B	23.2	2.9	1.6	4.9	5.0	2.4	-20.8
PMW101-05A	<1	0.4	0.3	1.0	0.4	1.8	1.8
PMW101-05B	151.0	116.0	85.3	60.7	77.8	50.0	-101.0
PMW101-06A	<1	<1	0.3	<1	0.3	0.6	0.6
PMW101-06B	16.2	1.0	1.7	1.3	<1	<1	-16.2
PMW101-07A	0.8	<1	0.5	0.3	<1	<1	-0.8
PMW101-07B	187.0	46.3	43.0	34.0	24.5	29.2	-157.8
PMW101-08A**	<1	0.3	0.4	2.1	9.9	9.4	9.4
PMW101-08B**	232.0	132.0	115.0	161.0	103.0	44.4	-187.6

cis-1,2-Dichloroethene

Injection Well	Baseline µg/L	EBT-5 µg/L	EBT-6 µg/L	EBT-7 µg/L	EBT-8 µg/L	EBT-9 µg/L	Change* µg/L
IW101-01A	<1	18.6	6.8	13.8	10.1	8.8	8.8
IW101-01B	0.3	27.6	24.3	23.1	21.7	19.4	19.1
IW101-01C	<1	21.3	21.8	15.7	75.5	110.0	110.0
IW101-02A	<1	64.7	48.5	46.2	47.9	42.7	42.7
IW101-02B	<1	20.6	12.6	13.2	39.5	44.2	44.2
IW101-02C	0.3	58.2	53.3	52.9	92.5	145.0	144.7
IW101-03A	<1	16.6	16.1	15.4	22.9	15.4	15.4
IW101-03B	<1	0.8	2.2	53.0	41.4	28.2	28.2
IW101-03C	3.0	63.6	89.8	88.4	207.0	184.0	181.0
IW101-04A	<1	32.0	26.1	33.3	23.2	17.7	17.7
IW101-04B	<1	46.5	42.3	44.5	45.2	35.5	35.5
IW101-04C	1.6	232.0	227.0	192.0	108.0	103.0	101.4
IW101-05A	<1	39.7	46.8	43.0	31.8	27.8	27.8
IW101-05B	<1	28.8	15.2	8.5	32.4	27.0	27.0
IW101-05C	0.3	70.7	76.6	69.7	127.0	136.0	135.7
IW101-06A	<1	3.3	5.0	9.3	14.0	9.8	9.8
IW101-06B	2.2	1.1	3.4	15.9	11.5	19.9	17.7
IW101-06C	11.2	115.0	126.0	102.0	209.0	184.0	172.8
IW101-07A	<1	14.2	21.0	25.5	30.3	32.7	32.7
IW101-07B	5.6	109.0	119.0	111.0	176.0	155.0	149.4
IW101-07C	16.2	255.0	325.0	307.0	295.0	238.0	221.8
IW101-08A	0.3	21.2	22.2	17.2	37.8	43.7	43.4
IW101-08B	2.1	71.5	54.5	73.4	60.5	51.8	49.7
IW101-08C	19.9	250.0	287.0	311.0	236.0	167.0	147.1
IW101-09A	<1	0.3	0.5	<1	<1	4.6	4.6
IW101-09B	5.4	166.0	187.0	150.0	138.0	86.2	80.8
IW101-09C	22.9	206.0	310.0	245.0	169.0	163.0	140.1
Monitoring Well	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**
DR1-3	<1	22.6	17.0	19.5	16.5	13.3	13.3
MW-101B	0.3	5.3	35.6	23.3	29.1	31.2	30.9
MW-101T	0.3	0.6	10.1	3.2	51.2	35.2	34.9
PMW101-01A	0.3	13.3	18.2	20.3	16.8	19.6	19.3
PMW101-01B	0.3	54.9	55.3	42.9	60.3	49.0	48.7
PMW101-02A	<1	58.7	48.0	37.7	31.2	37.7	37.7
PMW101-02B	0.3	101.0	87.7	96.1	55.0	35.2	34.9
PMW101-03A	<1	38.0	38.1	56.5	73.0	68.1	68.1
PMW101-03B	<1	87.6	87.6	86.8	60.8	58.1	58.1
PMW101-04A	<1	72.6	81.3	42.6	60.7	47.0	47.0
PMW101-04B	1.0	48.1	69.3	52.2	26.0	37.2	36.2
PMW101-05A	<1	92.6	73.9	77.0	69.6	61.9	61.9
PMW101-05B	8.9	89.8	76.2	70.6	57.4	72.1	63.3
PMW101-06A	<1	0.4	0.9	0.4	3.6	1.7	1.7
PMW101-06B	0.7	40.5	45.8	39.3	31.9	25.5	24.8
PMW101-07A	0.3	0.4	0.3	<1	<1	<1	-0.3
PMW101-07B	14.6	1.6	1.7	5.5	1.4	1.7	-12.9
PMW101-08A**	0.3	<1	<1	3.6	7.2	23.1	23.1
PMW101-08B**	12.8	4.9	3.9	15.4	172.0	155.0	142.2

* Note that the change represents the overall change from the Baseline through the 9th Quarter (EBT-9)
** Converted to an Injection Well as of 4/30/2008
Note also MW101B and MW101T are two different intervals of the same well

TABLE 29
CVOC CONCENTRATION TRENDS - TTA-2
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Tetrachloroethene

Injection Well	Baseline µg/L	EBT-5 µg/L	EBT-6 µg/L	EBT-7 µg/L	EBT-8 µg/L	EBT-9 µg/L	Change* µg/L
IW85-01	79.2	23.4	40.0	27.7	10.6	4.8	-74.4
IW85-02	48.7	10.0	28.7	7.3	3.2	3.6	-45.1
IW85-05	-	31.2	45.0	1.4	8.3	1.9	-29.3
IW85-06	-	2.7	16.1	0.9	3.2	5.5	2.8
IW92-01	160.0	29.0	7.5	3.2	<5	0.3	-159.7
IW92-02	104.0	3.2	36.3	38.6	<5	0.4	-103.6
IW92-03	184.0	7.5	4.4	2.4	0.9	<1	-184.0
IW92-04	170.0	2.6	3.7	3.7	2.9	0.7	-169.3
IW92-05	194.0	8.3	18.9	13.3	6.6	1.4	-192.6
IW92-06	51.2	21.7	24.9	6.9	7.4	3.6	-47.6
IW92-07	196.0	20.1	6.8	15.7	4.3	0.7	-195.3
IW92-08	156.0	6.4	13.3	9.0	3.0	1.8	-154.2
Monitoring Well	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**
DR2-1	176.0	192.0	33.7	50.7	137.0	150.0	-26.0
DR2-5	54.2	57.3	49.5	41.7	48.9	114.0	59.8
IW-01**	40.4	70.9	74.4	50.8	2.5	<10	-40.4
MW-85	74.8	21.0	14.4	22.0	36.4	33.9	-40.9
PMW85-01	79.6	30.7	16.3	19.3	22.5	0.9	-78.7
PMW85-04	-	4.0	2.9	3.6	0.9	1.3	-2.7
PMW85-05**	-	127.0	138.0	126.0	71.0	30.5	-96.5
PMW92-01**	73.0	79.5	90.0	24.8	5.3	<10	-73.0
PMW92-02	157.0	<1	<1	<1	<1	<1	-157.0
PMW92-03	252.0	30.9	30.8	27.1	33.3	15.6	-236.4
PMW92-04	165.0	12.1	19.8	8.8	14.0	5.0	-160.0
PMW92-05**	223.0	178.0	173.0	168.0	55.2	33.9	-189.1
PMW92-06	179.0	6.8	2.0	0.8	0.7	3.9	-175.1

Trichloroethene

Injection Well	Baseline µg/L	EBT-5 µg/L	EBT-6 µg/L	EBT-7 µg/L	EBT-8 µg/L	EBT-9 µg/L	Change* µg/L
IW85-01	26.3	10.3	14.7	10.7	3.4	1.8	-24.5
IW85-02	15.5	5.1	10.2	3.4	2.1	2.0	-13.5
IW85-05	-	10.1	15.3	1.0	6.2	0.8	-9.3
IW85-06	-	0.7	6.4	<1	2.1	2.7	2.0
IW92-01	6.4	9.5	2.8	2.3	<5	<1	-6.4
IW92-02	4.0	0.9	2.7	8.6	<5	<1	-4.0
IW92-03	6.8	1.9	1.4	1.6	<1	<1	-6.8
IW92-04	6.2	0.6	0.9	2.1	0.5	<2	-6.2
IW92-05	6.1	3.2	1.4	2.5	0.8	0.3	-5.8
IW92-06	2.6	5.7	4.2	3.6	0.9	0.4	-2.2
IW92-07	9.2	2.9	2.1	3.6	<5	0.3	-8.9
IW92-08	26.9	3.6	3.3	4.4	1.0	<5	-26.9
Monitoring Well	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**
DR2-1	8.5	5.7	12.7	5.4	5.5	5.1	-3.4
DR2-5	18.3	18.9	17.5	13.7	17.0	35.0	16.7
IW-01**	5.9	8.6	9.5	11.6	0.4	<10	-5.9
MW-85	25.1	9.2	7.0	10.4	14.4	11.6	-13.5
PMW85-01	26.1	10.1	6.6	7.7	7.3	<1	-26.1
PMW85-04	-	2.8	1.1	2.1	<1	<1	-2.8
PMW85-05**	-	39.3	38.7	34.5	26.6	14.8	-24.5
PMW92-01**	2.9	2.8	3.9	1.5	<1	<10	-2.9
PMW92-02	5.8	<1	<1	<1	<1	<1	-5.8
PMW92-03	11.5	6.9	4.7	8.8	12.7	6.0	-5.5
PMW92-04	7.8	1.6	2.0	2.1	2.4	0.9	-6.9
PMW92-05**	17.1	15.6	13.9	14.3	3.4	7.0	-10.1
PMW92-06	39.7	2.3	0.7	<1	<1	3.0	-36.7

cis 1,2-Dichloroethene

Injection Well	Baseline µg/L	EBT-5 µg/L	EBT-6 µg/L	EBT-7 µg/L	EBT-8 µg/L	EBT-9 µg/L	Change* µg/L
IW85-01	40.3	56.3	59.0	54.3	21.7	27.1	-13.2
IW85-02	29.4	40.7	57.3	53.3	42.6	46.0	16.6
IW85-05	-	36.3	54.3	105.0	70.8	49.0	12.7
IW85-06	-	94.2	68.8	65.6	36.7	37.8	-56.4
IW92-01	14.1	130.0	50.6	107.0	97.0	83.3	69.2
IW92-02	10.4	123.0	37.6	90.5	139.0	126.0	115.6
IW92-03	9.3	107.0	53.0	63.9	147.0	50.0	40.7
IW92-04	10.2	98.4	56.2	45.8	77.3	37.7	27.5
IW92-05	5.9	39.4	9.9	10.0	20.7	11.7	5.8
IW92-06	3.1	51.0	30.4	34.9	7.3	6.1	3.0
IW92-07	13.3	76.7	104.0	67.5	52.3	32.9	19.6
IW92-08	57.9	134.0	20.5	35.4	101.0	47.8	-10.1
Monitoring Well	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**
DR2-1	17.0	7.7	86.4	38.1	9.1	7.6	-9.4
DR2-5	31.0	33.7	32.0	29.2	34.5	62.0	31.0
IW-01**	149.0	76.6	64.9	108.0	119.0	114.0	-35.0
MW-85	26.1	51.0	59.2	39.1	7.5	7.3	-18.8
PMW85-01	28.3	12.2	79.3	18.3	29.8	50.4	22.1
PMW85-04	-	92.3	107.0	107.0	99.2	89.3	-3.0
PMW85-05**	-	83.8	87.9	94.8	127.0	166.0	82.2
PMW92-01**	4.7	38.3	27.0	19.4	5.6	4.4	-0.3
PMW92-02	10.9	123.0	87.7	130.0	99.2	124.0	113.1
PMW92-03	19.9	159.0	161.0	159.0	159.0	139.0	119.1
PMW92-04	10.7	160.0	135.0	159.0	152.0	112.0	101.3
PMW92-05**	26.2	27.3	23.8	25.2	33.9	87.5	61.3
PMW92-06	91.4	150.0	179.0	178.0	193.0	200.0	108.6

* Note that the change represents the overall change from the Baseline through the 9th Quarter (EBT-9) except for IW85-05,IW85-06, PMW85-04, and PMW85-05 where the change is from the 2nd to 9th Quarter.
** Converted to an Injection Well as of 4/30/2008

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TABLE 29
CVOC CONCENTRATION TRENDS - TTA-2
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Carbon Tetrachloride						
Injection Well	Baseline µg/L	EBT-5 µg/L	EBT-6 µg/L	EBT-7 µg/L	EBT-8 µg/L	EBT-9 µg/L	Change* µg/L
IW85-01	168	43.4	31.2	21.5	<1	<1	-168 0
IW85-02	71.4	14.3	38.6	9.5	<1	<1	-71.4
IW85-05	-	59.8	32.2	5.6	<1	<1	-59.8
IW85-06	-	0.665	27	<1	0.9	6.7	6.0
IW92-01	22.7	1.28	0.808	<1	<5	<1	-22.7
IW92-02	13	0.295	5.18	3.7	<5	<1	-13.0
IW92-03	30.5	<1	<1	<1	<1	<1	-30 5
IW92-04	30	<1	<1	<2	<1	<2	-30.0
IW92-05	29.9	<1	<1	<1	<1	<1	-29 9
IW92-06	8.77	<1	<1	<1	<1	<1	-8.8
IW92-07	38.4	3.82	2.46	0 8	<5	<1	-38.4
IW92-08	103	<1	2 42	<1	<1	<5	-103.0
Monitoring Well	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**
DR2-1	32.3	15.5	1.26	2.8	20.4	22.7	-9.6
DR2-5	142	138	114	103.0	112.0	206.0	64.0
IW-01**	9.79	16 1	16.6	8.4	<1	<10	-9.8
MW-85	188	34.3	22.5	47.2	76.2	69.9	-118 1
PMW85-01	222	72.9	24 5	57.3	0.9	<1	-222.0
PMW85-04	-	<1	0.407	1.0	0.7	0.4	0 4
PMW85-05**	-	158	154	143.0	44.5	5.1	-152 9
PMW92-01**	8.92	6.86	8.34	<1	<1	<10	-8.9
PMW92-02	19.8	<1	<1	<1	<1	<1	-19.8
PMW92-03	58.1	0.969	0.586	<1	<1	<1	-58.1
PMW92-04	33.1	1.51	1.85	1.0	1.3	<1	-33.1
PMW92-05**	77.5	51 6	58.5	62.7	0.8	2 4	-75.1
PMW92-06	182	1.53	<1	<1	<1	<1	-182.0

	Chloroform						
Injection Well	Baseline µg/L	EBT-5 µg/L	EBT-6 µg/L	EBT-7 µg/L	EBT-8 µg/L	EBT-9 µg/L	Change* µg/L
IW85-01	51.8	58.0	79.3	81.7	18 6	10.4	-41.4
IW85-02	39.5	29.5	59.2	42.0	7.0	3.8	-35 7
IW85-05	-	87.4	143	36.4	37.8	3.9	-83.5
IW85-06	-	6 6	20.5	0 6	6.2	8.4	1.8
IW92-01	7.8	11.9	5.75	9.1	<1.5	<0.3	-7.8
IW92-02	9.5	12.7	10 4	27.7	5.7	0.3	-9.2
IW92-03	12.8	7.8	4.03	3.4	<0.3	<0.3	-12.8
IW92-04	13.1	0 6	0.334	0.6	<0.3	<0 6	-13.1
IW92-05	18.5	0.8	2.72	0.3	<0.3	0.2	-18 3
IW92-06	7.6	0.6	0.992	<0.3	<0.3	<0.3	-7.6
IW92-07	21.0	5.8	7.65	5.9	3.3	<0.3	-21 0
IW92-08	68.9	26.4	33	11.4	7.2	1.0	-67.9
Monitoring Well	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**
DR2-1	9.91	11.3	4 19	5.8	9.2	7.5	-2.4
DR2-5	46 7	43 6	40.9	37.2	37.9	68.8	22.1
IW-01**	8.72	8.36	11.5	10.8	0 3	1.5	-7.2
MW-85	43.8	51 5	38.6	8.0	9 8	8 5	-35.3
PMW85-01	58.9	41	36.3	29.9	78.0	0.5	-58.4
PMW85-04	-	61.7	9.37	6.6	0.8	0 5	-61.2
PMW85-05**	-	64.6	63.8	73.6	98.7	86.4	21.8
PMW92-01**	5.59	8.46	7 6	1.9	0.4	<3	-5.6
PMW92-02	12.2	<0.3	<0 3	<0 3	<0.3	<0.3	-12.2
PMW92-03	19.2	3.12	0.994	0.5	0.2	<0.3	-19.2
PMW92-04	11 4	5.3	6 6	3.9	2 1	0 7	-10.7
PMW92-05**	28.8	22 6	20.5	24.7	5.7	14 4	-14 4
PMW92-06	82.7	78.7	22.9	1.11	<0 3	<0.3	-82.7

* Note that the change represents the overall change from the Baseline through the 9th Quarter (EBT-9) except for IW85-05,IW85-06, PMW85-04, and PMW85-05 where the change is from the 2nd to 9th Quarter.
** Converted to an Injection Well as of 4/30/2008

TABLE 30
EBT WELL CLASSIFICATION FOR REDUCTIVE DECHLORINATION
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Best		Positive	Negative
IW21-01A	IW-01	IW21-02A	MW-21
IW21-01B	IW85-05	PMW21-01	MW-115
IW21-02B	IW85-06	PMW 21-04	PMW21-02
IW21-03A	IW92-01	IW101-05B	PMW21-05
IW21-03B	IW92-02	IW101-06B	DR2-1
IW21-04A	IW92-03	IW101-08A	DR2-5
IW21-04B	IW92-04	MW-101B	MW-85
IW21-05A	IW92-05	MW-101T	
IW21-05B	IW92-06	PMW101-01A	
IW101-01A	IW92-07	PMW101-02A	
IW101-01B	IW92-08	PMW101-05B	
IW101-01C	DR1-3	PMW101-07B	
IW101-02A	PMW 21-03	PMW101-08A	
IW101-02B	PMW 85-04	PMW101-08B	
IW101-02C	PMW85-05	IW85-01	
IW101-03A	PMW 92-02	IW85-02	
IW101-03B	PMW 92-03	PMW 85-01	
IW101-03C	PMW 92-04	PMW92-01	
IW101-04A	PMW92-05		
IW101-04B	PMW 92-06		
IW101-04C	PMW101-01B		
IW101-05A	PMW101-02B		
IW101-05C	PMW101-03A		
IW101-06A	PMW101-03B		
IW101-06C	PMW101-04A		
IW101-07A	PMW101-04B		
IW101-07B	PMW101-05A		
IW101-07C	PMW101-06A		
IW101-08B	PMW101-06B		
IW101-08C			
IW101-09B			
IW101-09C			

Well classification criteria:

Best: Active reductive dechlorination
Positive: Reductive dechlorination or mass loss
Negative: Neither reductive dechlorination nor mass loss

FIGURES

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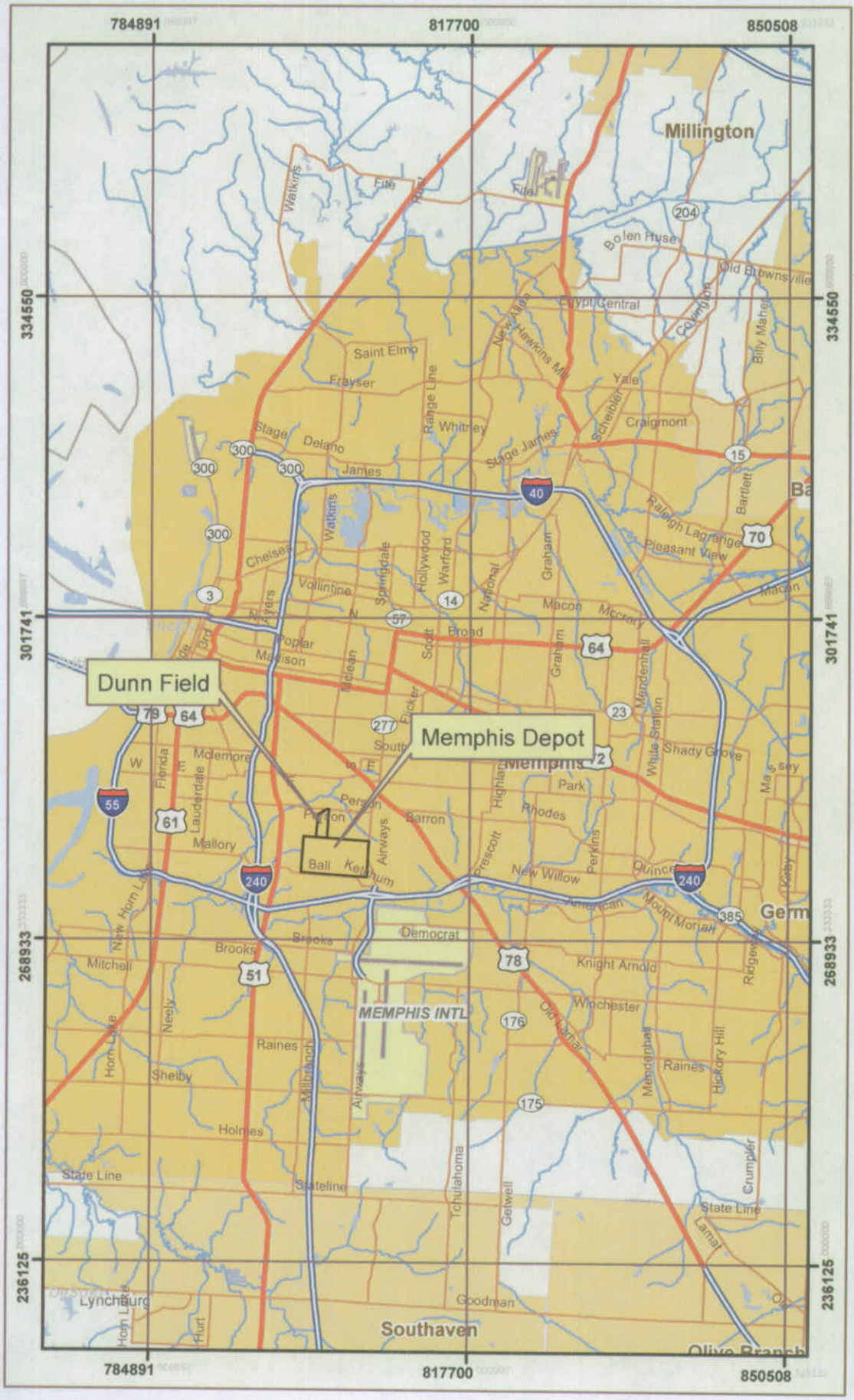

Figure 1

SITE LOCATION MAP

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-DEFENSE DEPOT MEMPHIS, TENNESSEE

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

Installation Location
Memphis, Tennessee

Date: August 2009
Edition: Rev 0

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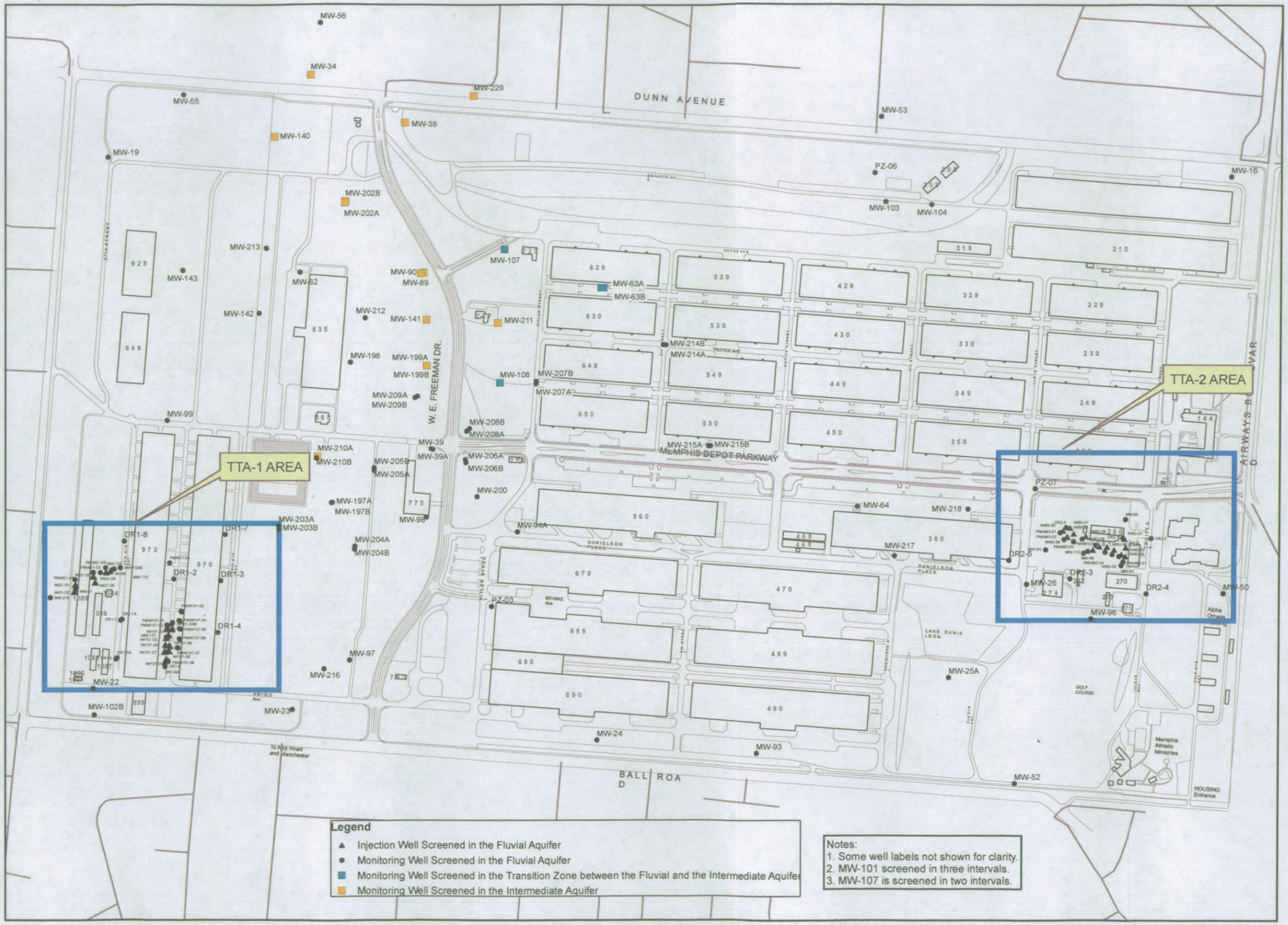

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Figure 2

WELL LOCATION MAP

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

0 250 500 750 1,000
Feet

Installation Location
Memphis, Tennessee

Date: August 2009
Edition: Rev 0

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G:\3202\016\EBT\Annual EBT Year 2\Fig 2 - MI Well Location Map.mxd

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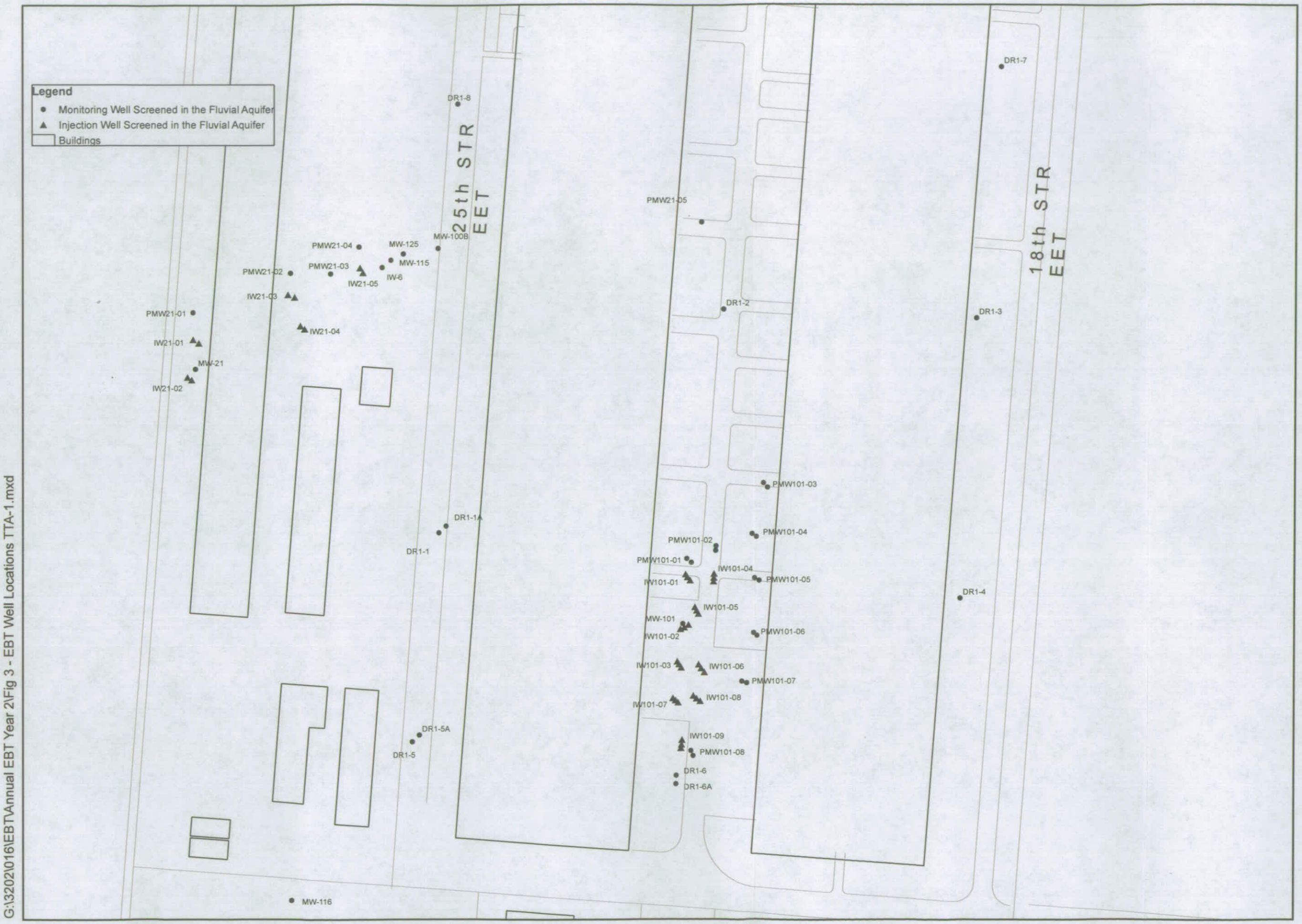

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Figure 3

WELL LOCATIONS, TTA-1

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

0 25 50 100 150
Feet

Installation Location
Memphis, Tennessee

Date: August 2009
Edition: Rev 0

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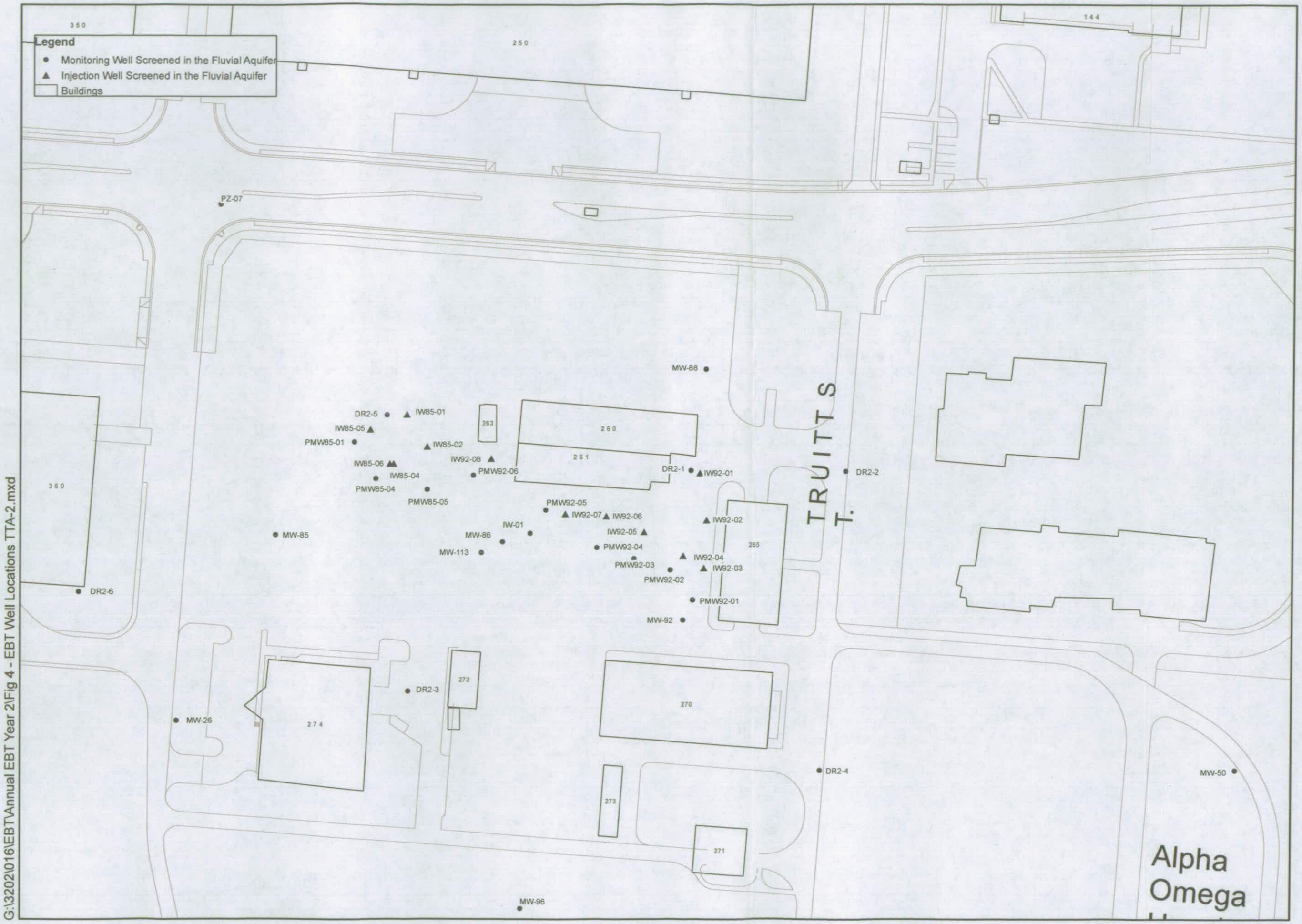

G:\3202\016\EBT\Annual EBT Year 2\Fig 4 - EBT Well Locations TTA-2.mxd

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Figure 4

WELL LOCATIONS, TTA-2

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

0 25 50 100 150

Feet

Installation Location
Memphis, Tennessee

Date: August 2009
Edition: Rev 0

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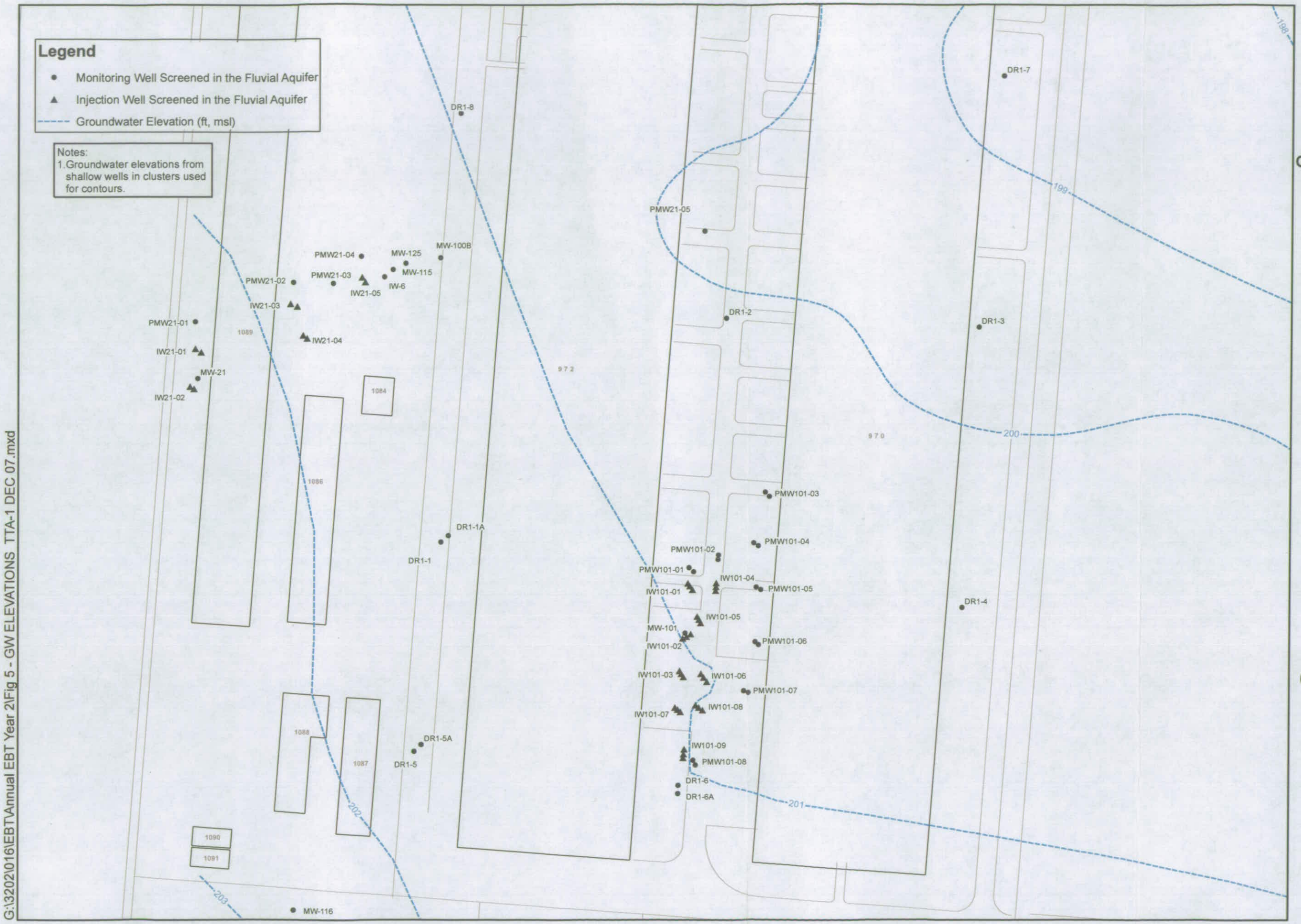

G:\3202\016\EBTVAnnual EBT Year 2\Fig 5 - GW ELEVATIONS TTA-1 DEC 07.mxd

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Figure 5

GROUNDWATER ELEVATION CONTOUR MAP, TTA-1 – DECEMBER 2007

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

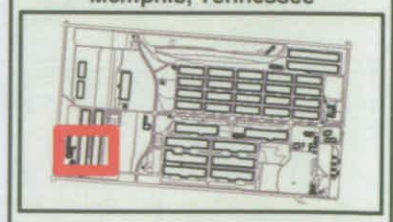
MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

0 50 100 200

Feet

Installation Location
Memphis, Tennessee



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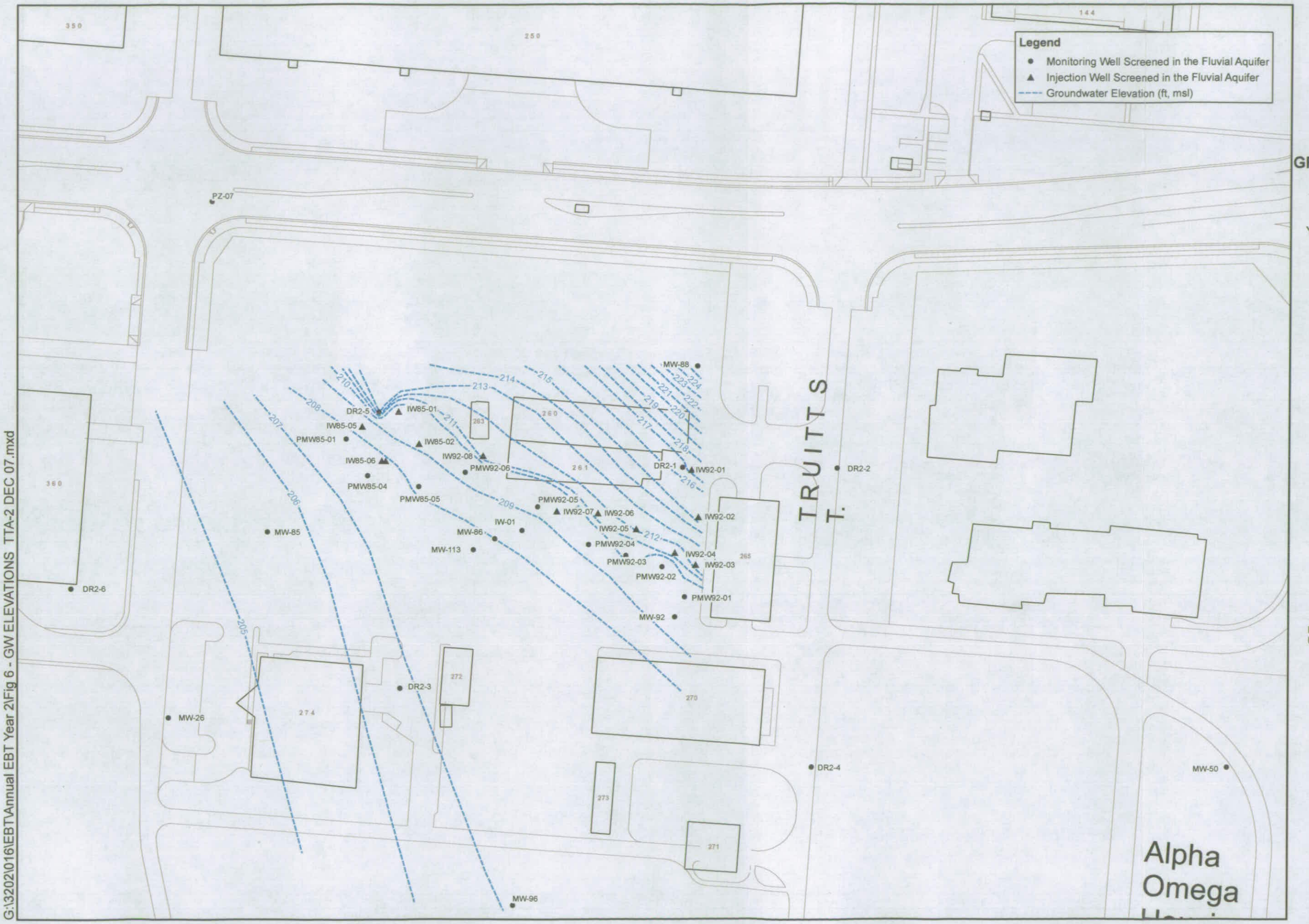

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Figure 6

GROUNDWATER ELEVATION CONTOUR MAP, TTA-2 – DECEMBER 2007

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

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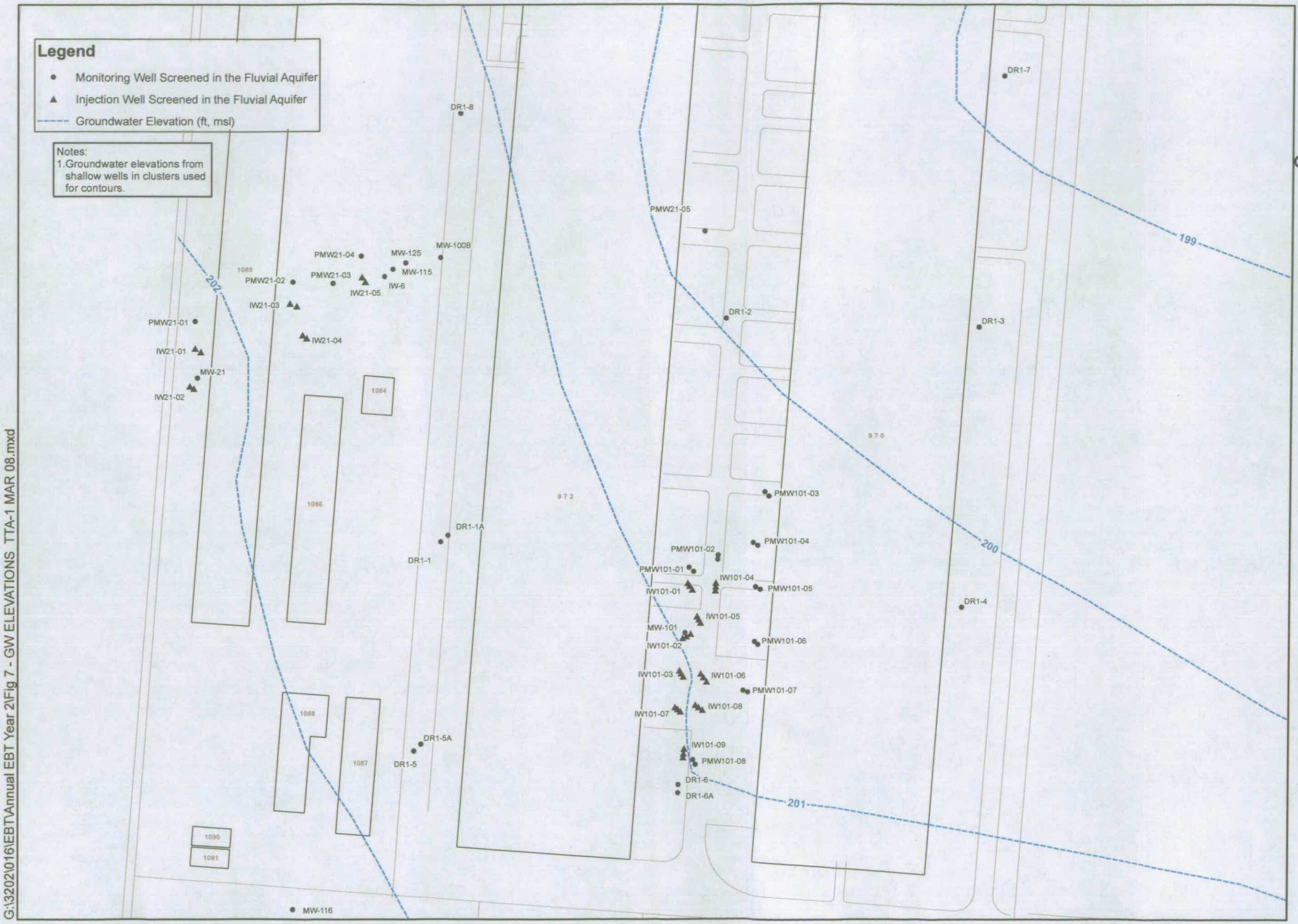

G:\3202\016\EBTAnnual EBT Year 2\Fig 7 - GW ELEVATIONS TTA-1 MAR 08.mxd

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Figure 7

GROUNDWATER ELEVATION CONTOUR MAP, TTA-1 – MARCH 2008

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

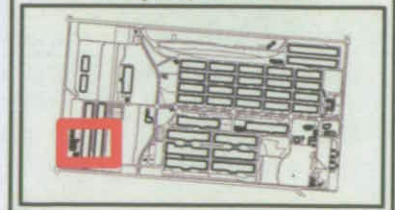
MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

0 50 100 200

Feet

Installation Location
Memphis, Tennessee



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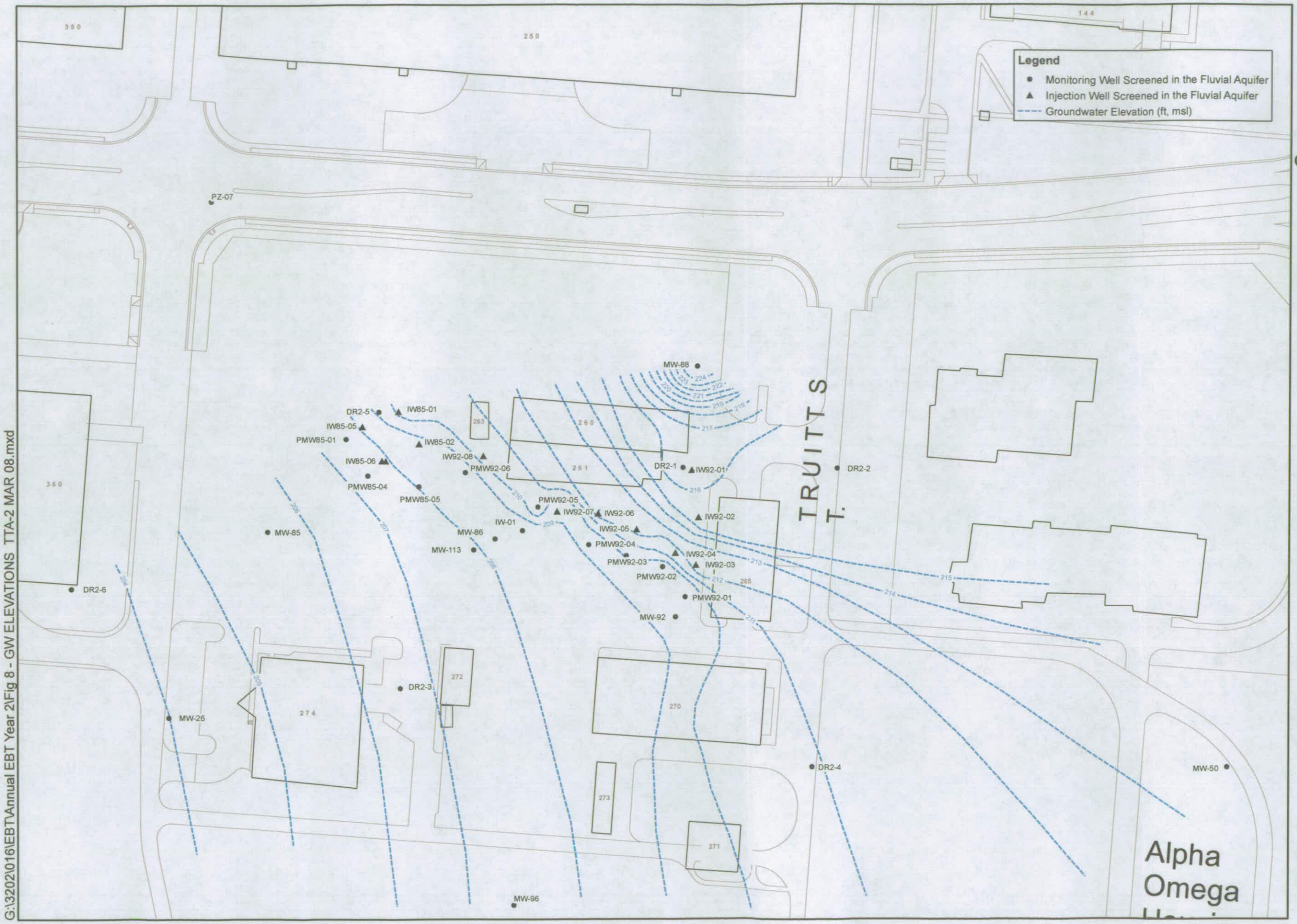


G:\3202\016\EBT\Annual EBT Year 2\Fig 8 - GW ELEVATIONS TTA-2 MAR 08.mxd

Figure 8

GROUNDWATER ELEVATION CONTOUR MAP, TTA-2 – MARCH 2008

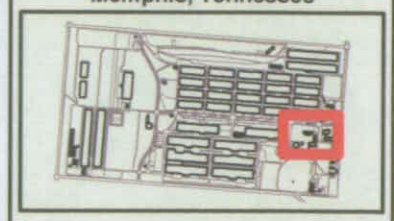
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

0 25 50 100 150
Feet

Installation Location
Memphis, Tennessee



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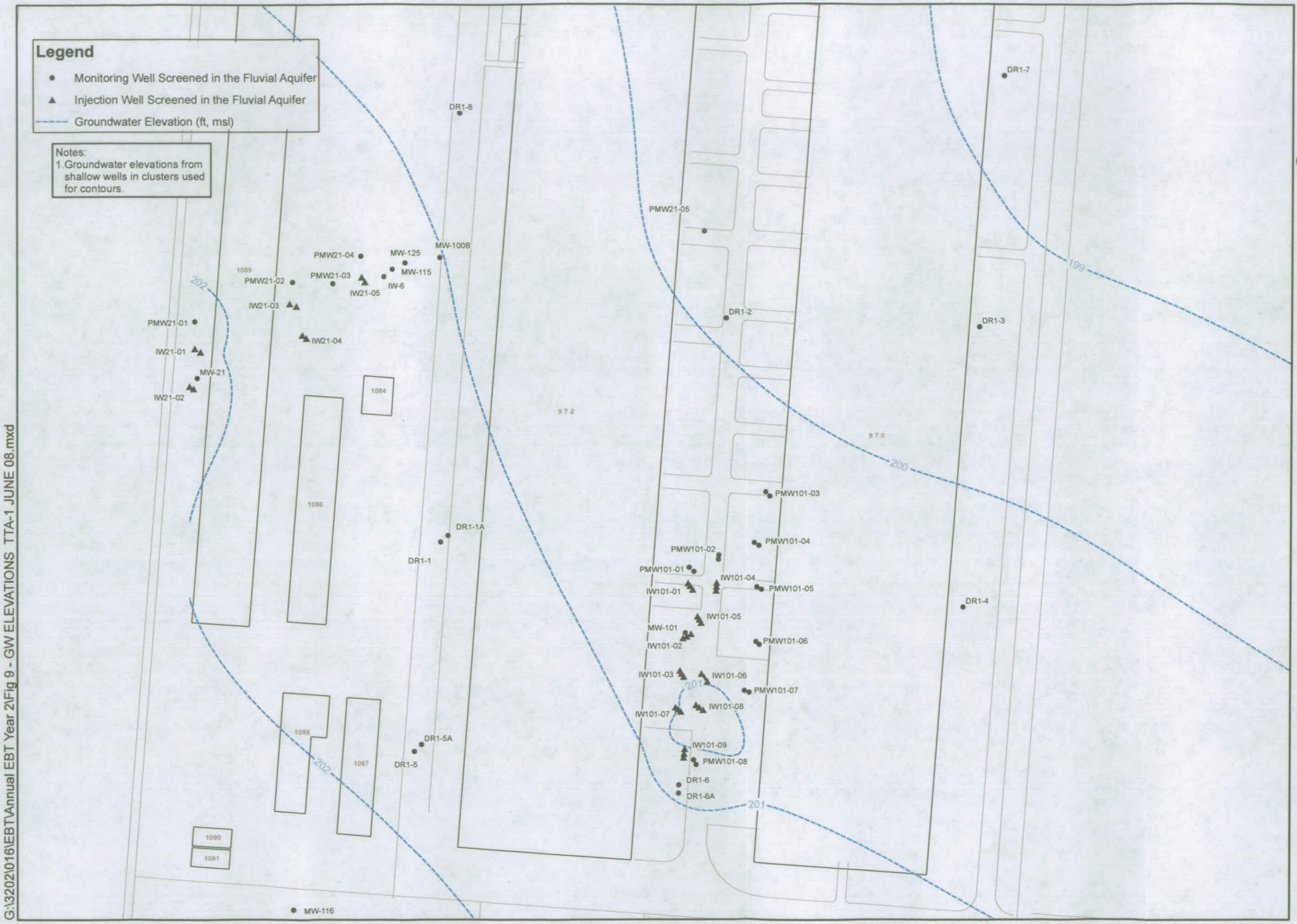

G:\3202\016\EBTAnnual EBT Year 2\Fig 9 - GW ELEVATIONS TTA-1 JUNE 08.mxd

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Figure 9

GROUNDWATER ELEVATION CONTOUR MAP, TTA-1 – JUNE 2008

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

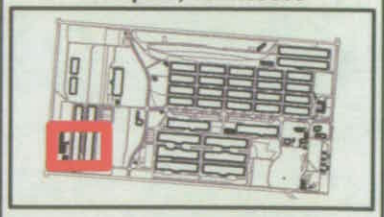
MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

0 50 100 200

Feet

Installation Location
Memphis, Tennessee



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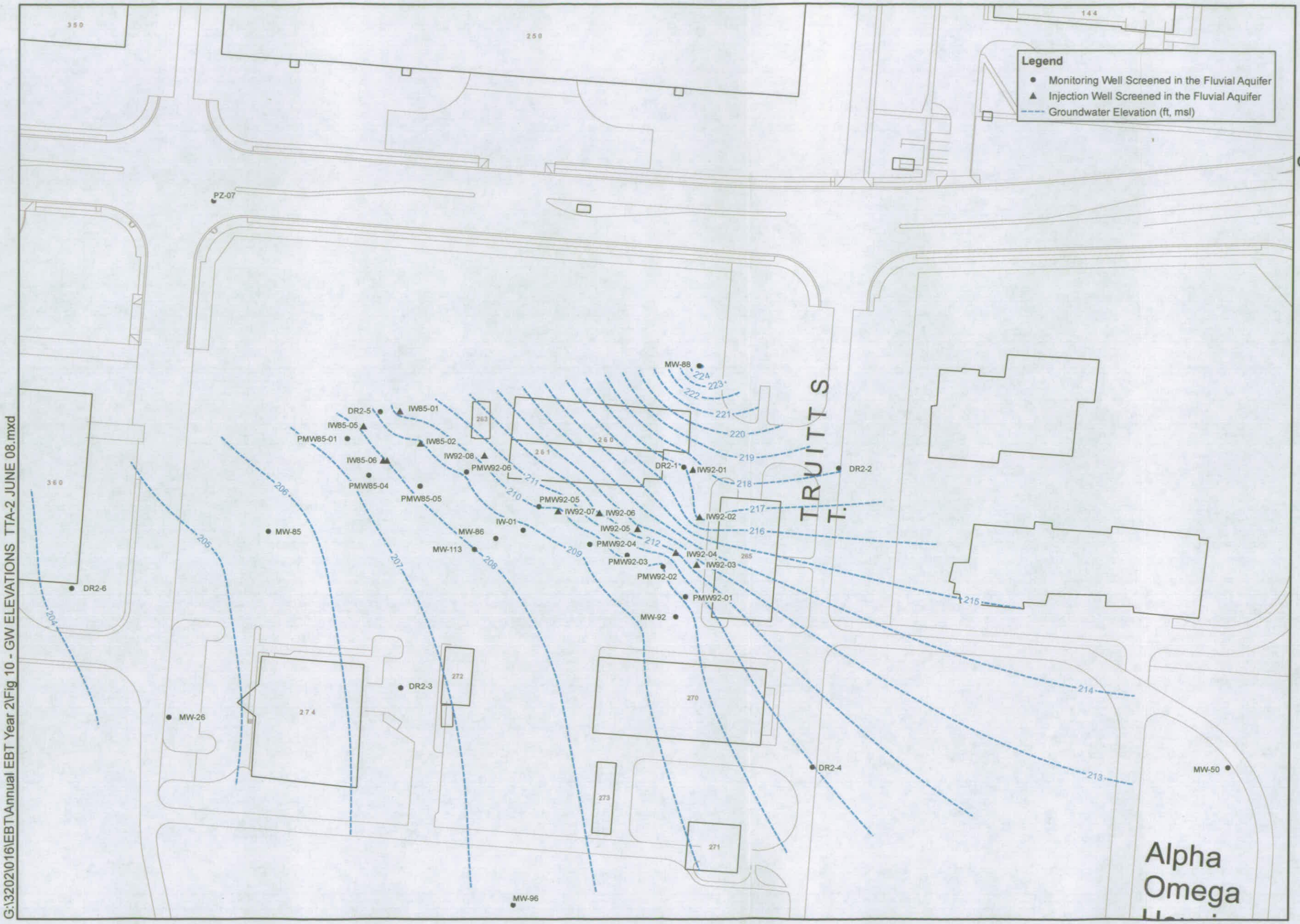

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Figure 10

GROUNDWATER ELEVATION CONTOUR MAP, TTA-2 – JUNE 2008

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

0 25 50 100 150
Feet

Installation Location
Memphis, Tennessee

Date: August 2009
Edition: Rev 0

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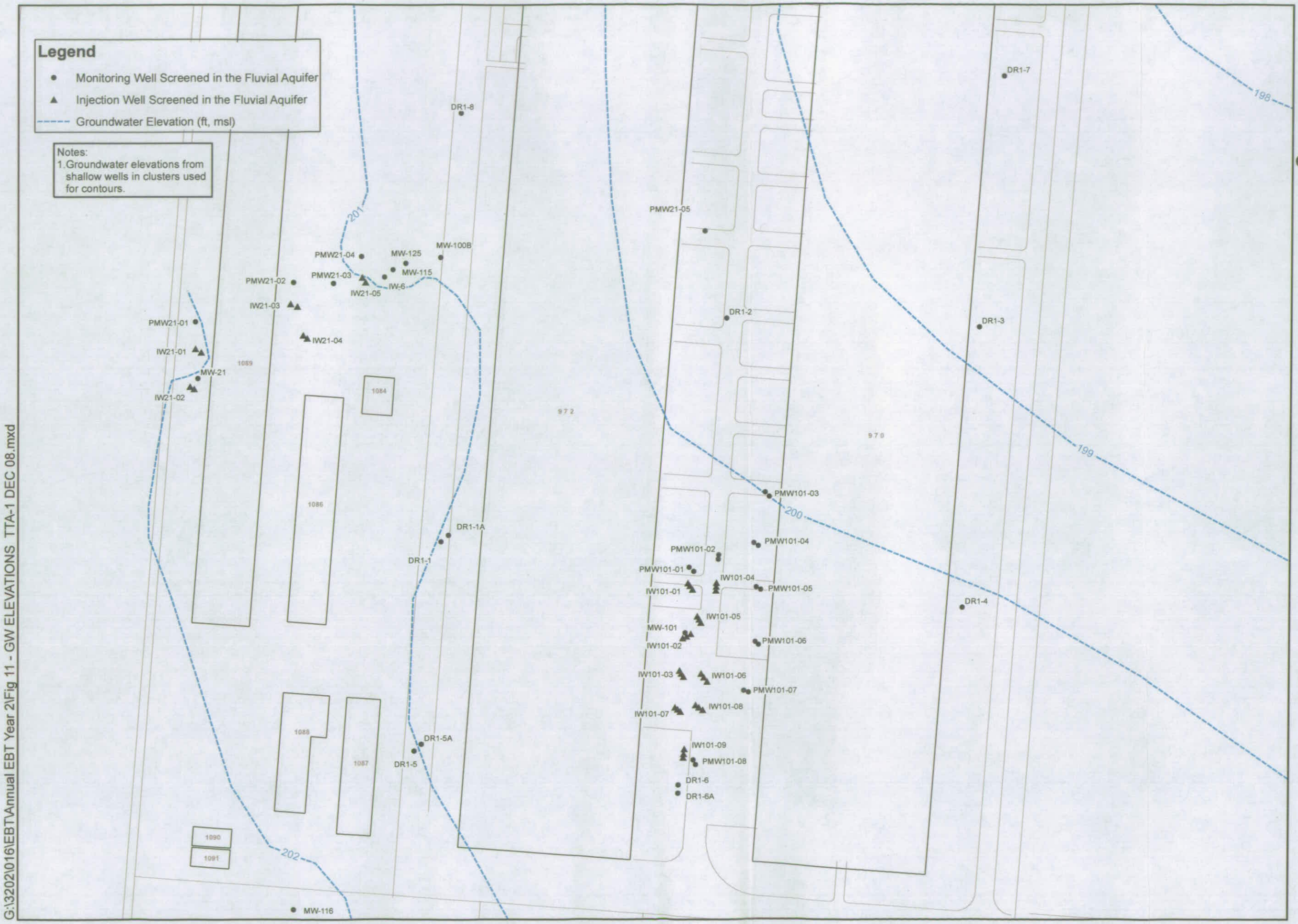

G:\3202\016\EBT\Annual EBT Year 2\Fig 11 - GW ELEVATIONS TTA-1 DEC 08.mxd

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Figure 11

GROUNDWATER ELEVATION CONTOUR MAP, TTA-1 – DECEMBER 2008

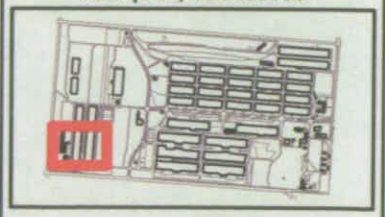
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

0 50 100 200
Feet

Installation Location
Memphis, Tennessee



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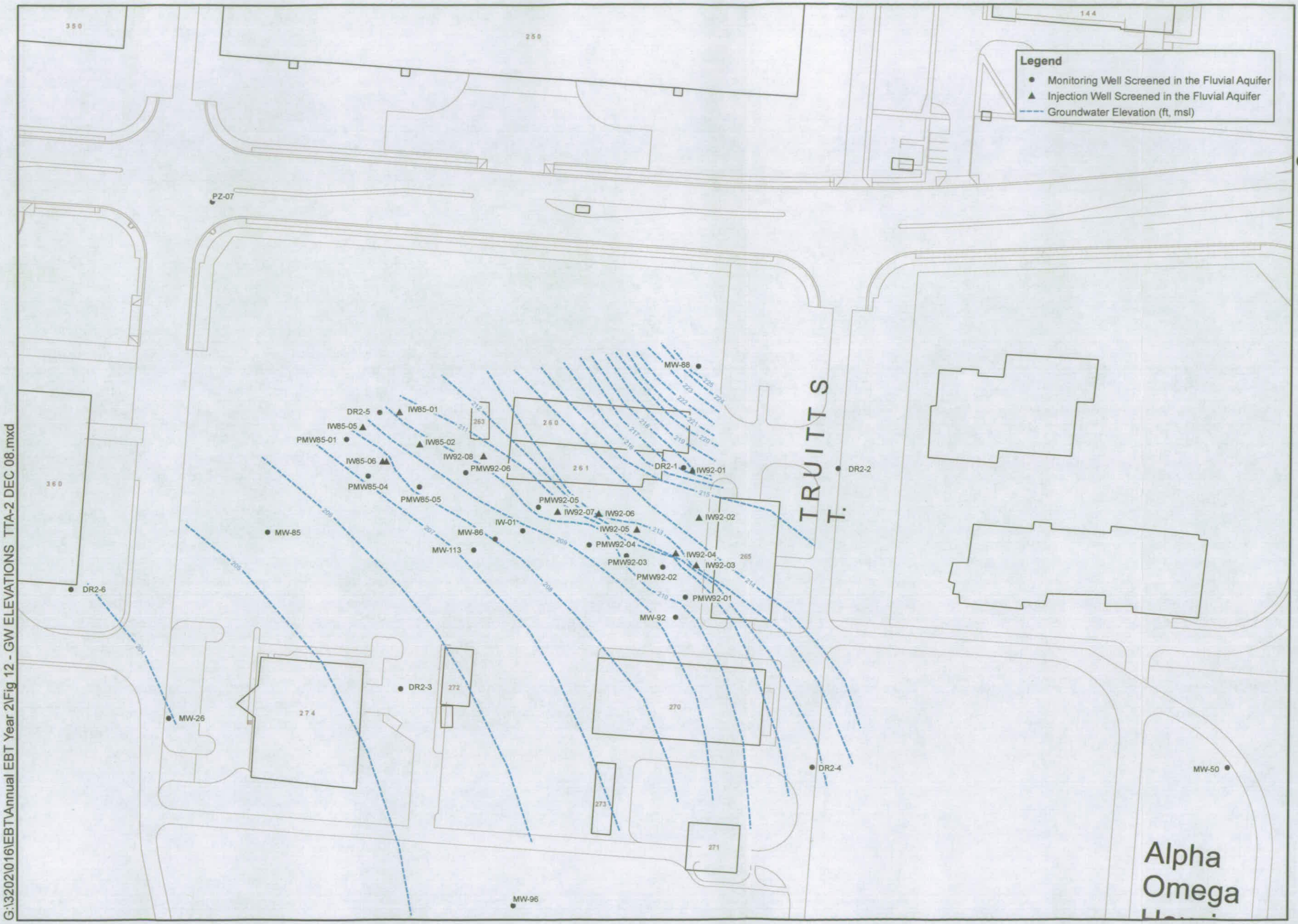

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Figure 12

GROUNDWATER ELEVATION CONTOUR MAP, TTA-2 – DECEMBER 2008

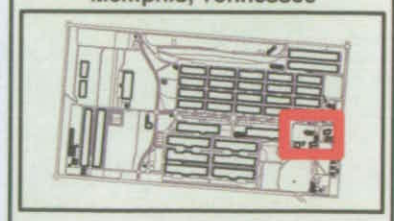
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

0 25 50 100 150
Feet

Installation Location
Memphis, Tennessee



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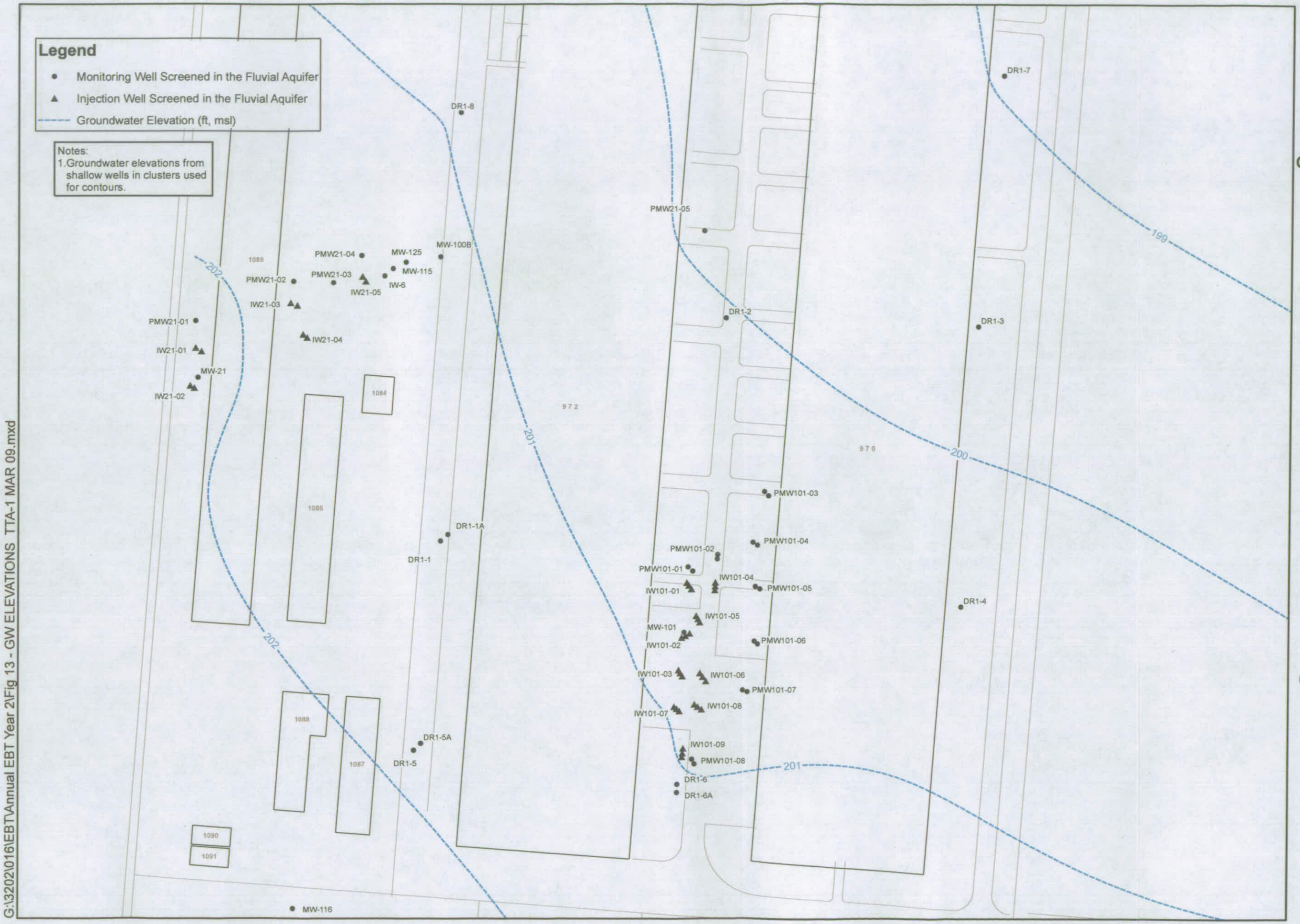


G:\3202\016\EBTAnnual EBT Year 2\Fig 13 - GW ELEVATIONS TTA-1 MAR 09.mxd

Figure 13

GROUNDWATER ELEVATION CONTOUR MAP, TTA-1 – MARCH 2009

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

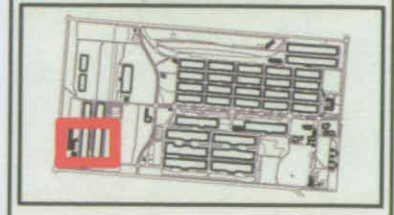
MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

0 50 100 200

Feet

Installation Location
Memphis, Tennessee



Date: August 2009
Edition: Rev 0

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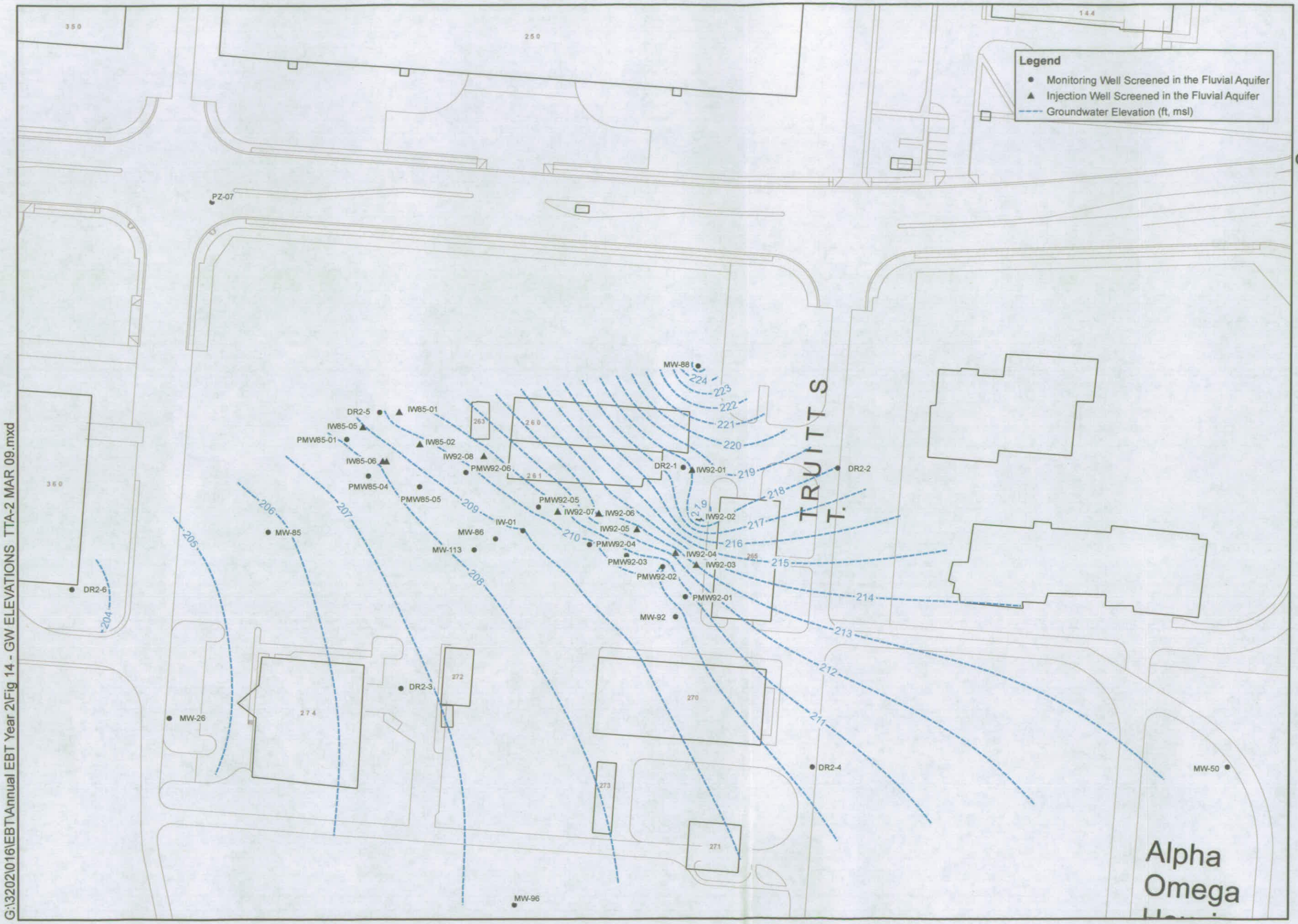


G:\3202\016\EBT\Annual EBT Year 2\Fig 14 - GW ELEVATIONS TTA-2 MAR 09.mxd

Figure 14

GROUNDWATER ELEVATION CONTOUR MAP, TTA-2 – MARCH 2009

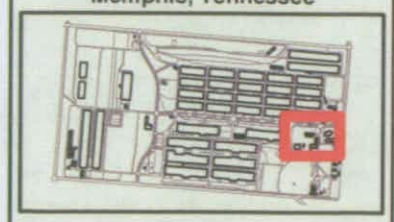
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

0 25 50 100 150
Feet

Installation Location
Memphis, Tennessee



Date: August 2009
Edition: Rev 0

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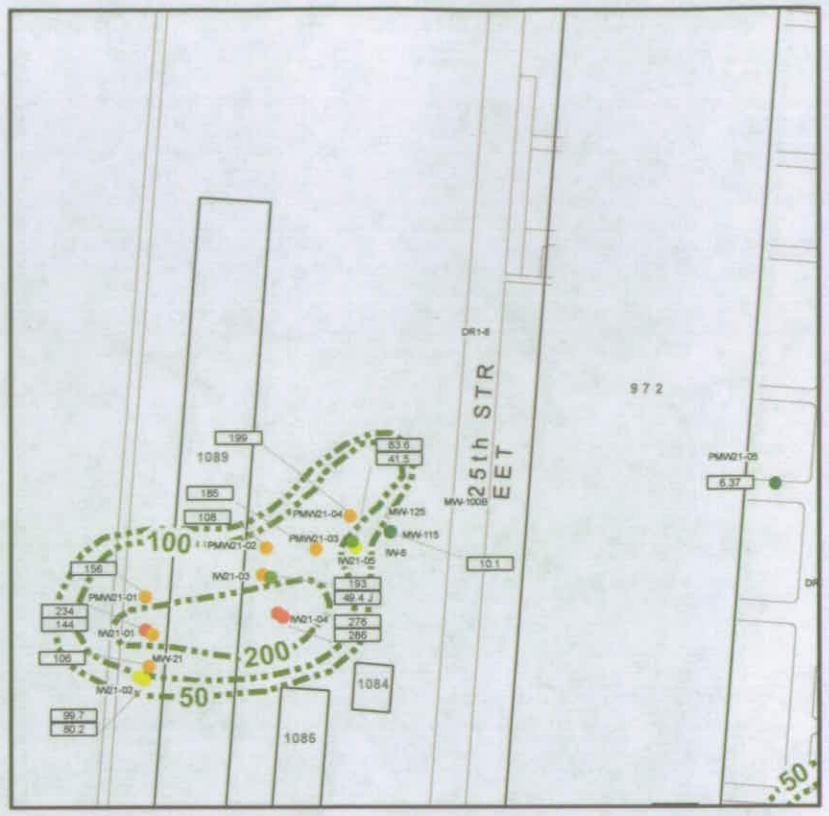
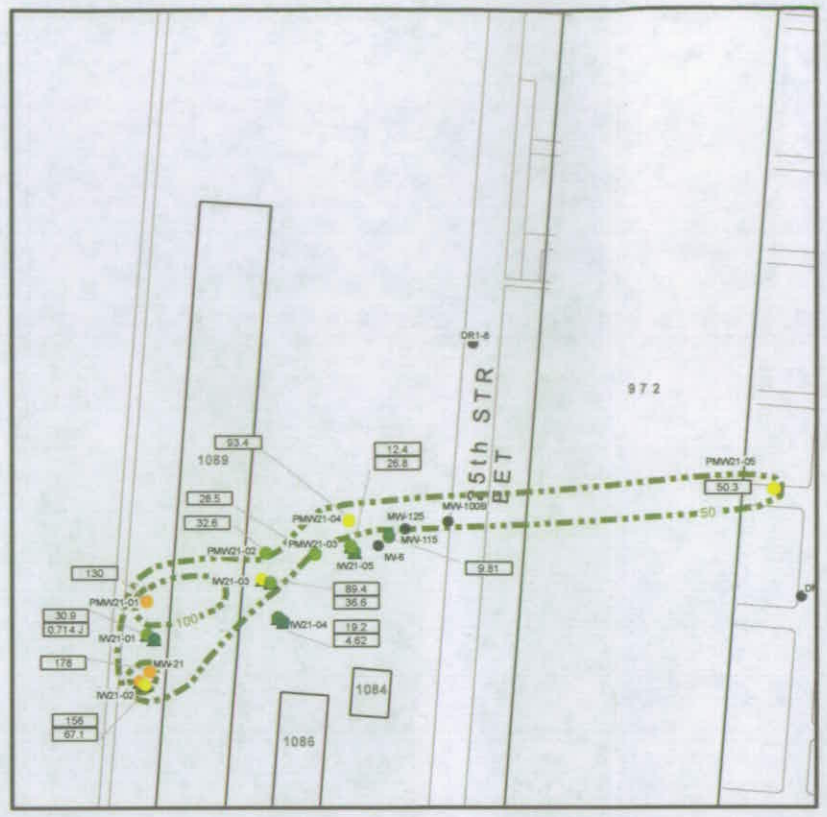
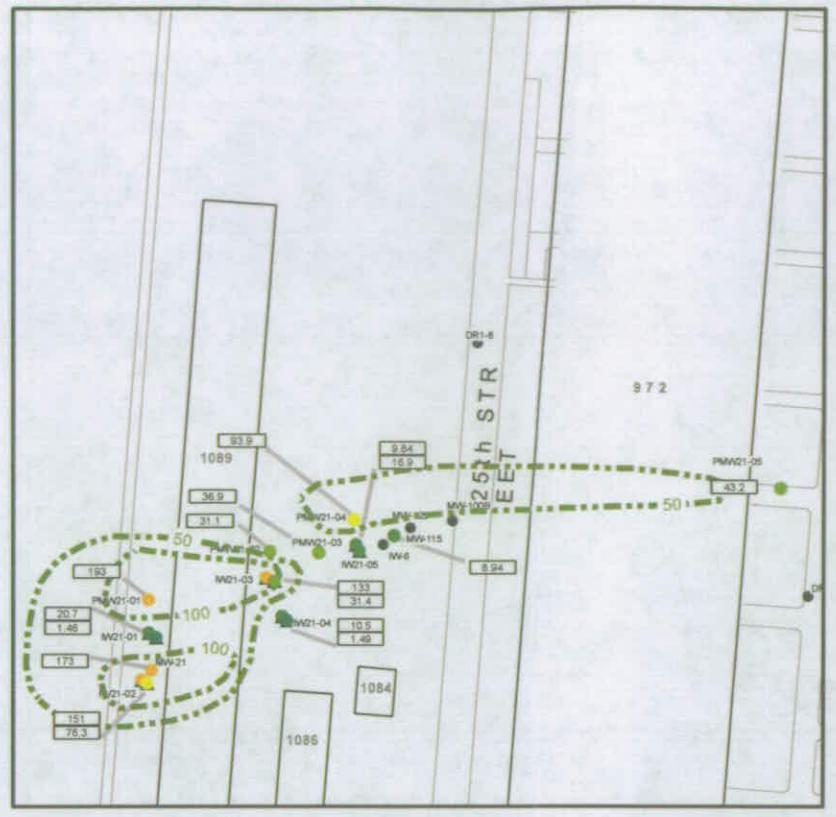


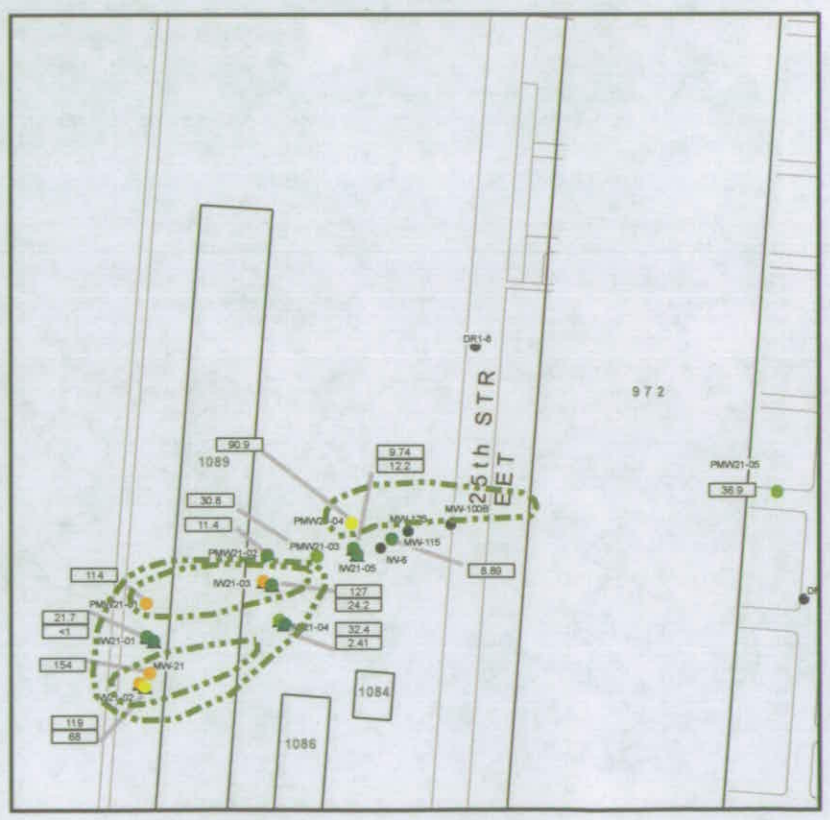
BASELINE



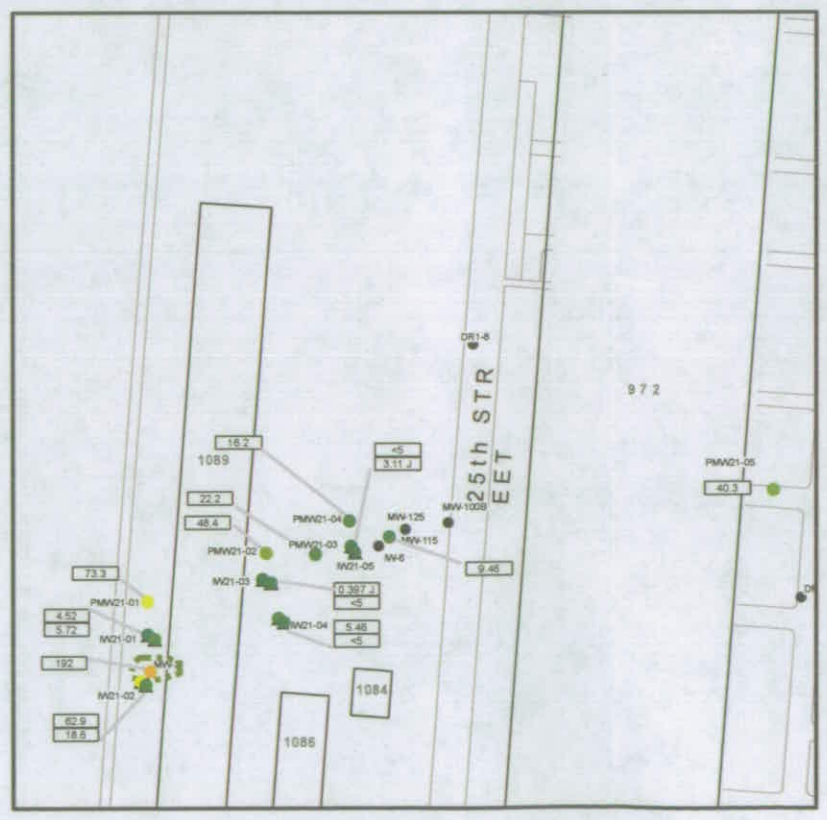
EBT-5



EBT-6



EBT-7



EBT-8

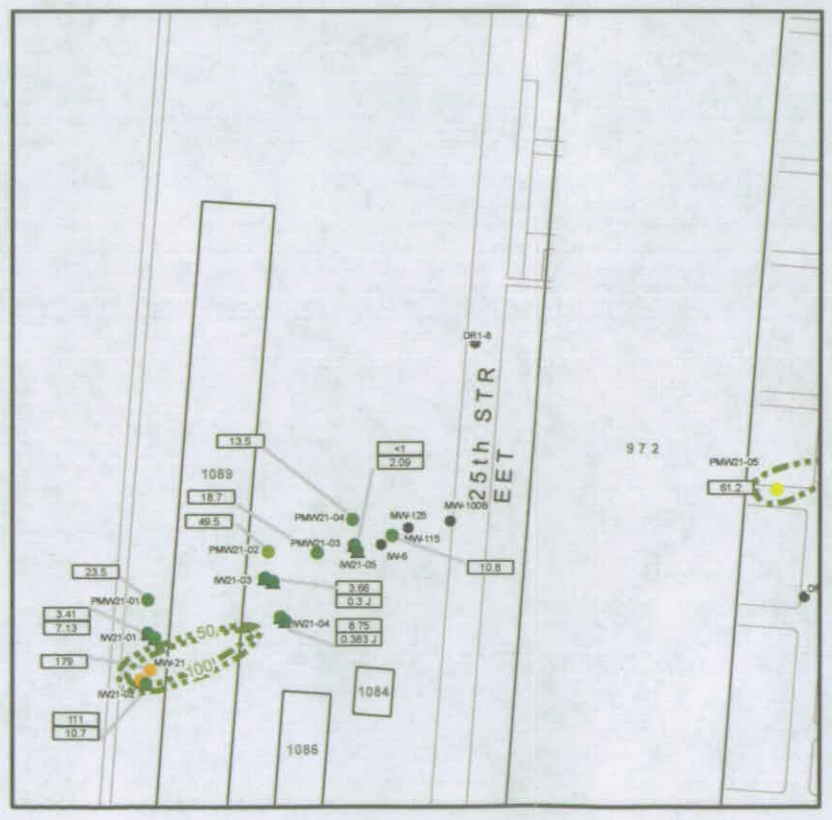


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Figure 15

PCE TIME SERIES - TTA-1, MW-21 AREA

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Legend

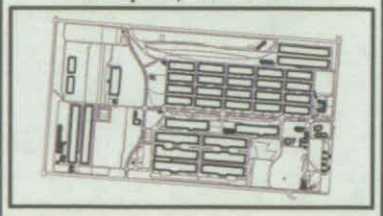
Isoconcentration contours of Tetrachloroethene (PCE)

Concentration Ranges
ug/L

- 0 - 5
- 5 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- 200 - 300
- 300+

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

Installation Location
Memphis, Tennessee



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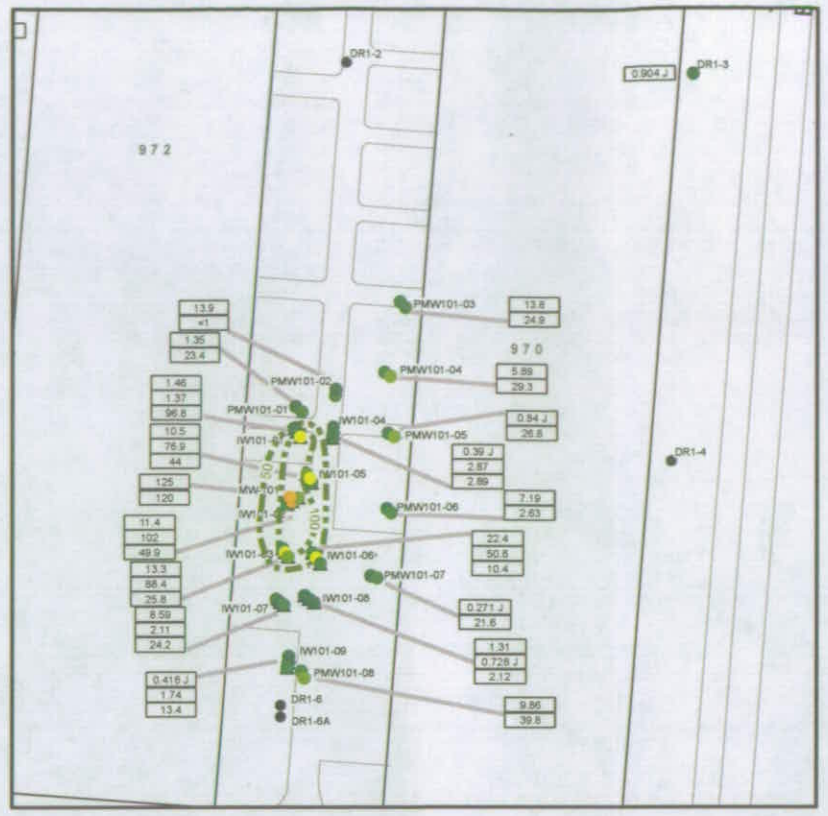
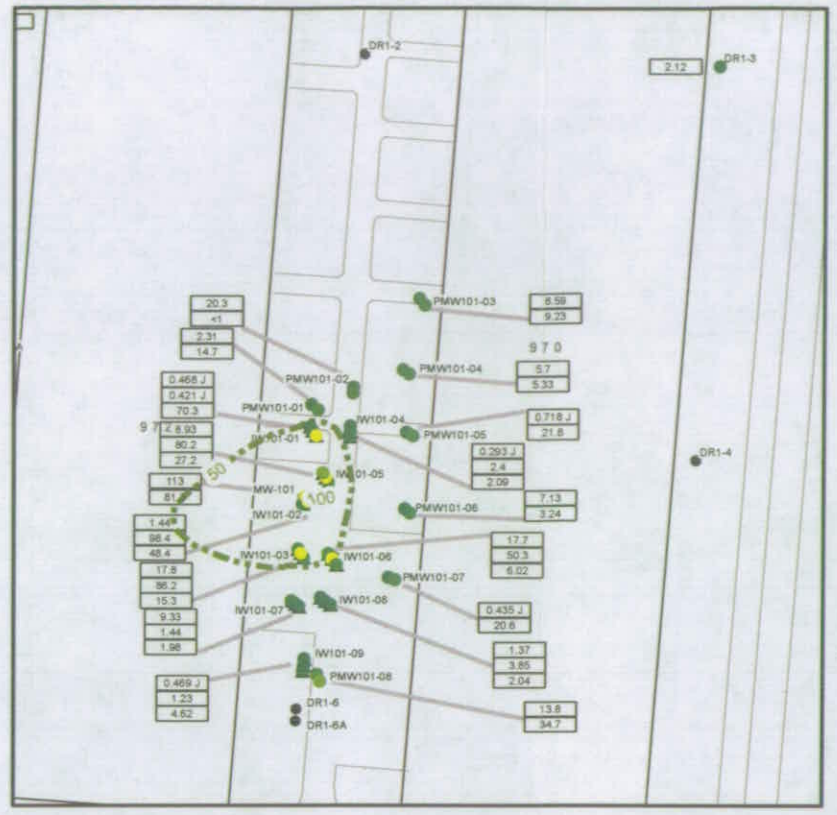
1013141

BASELINE



EBT-5



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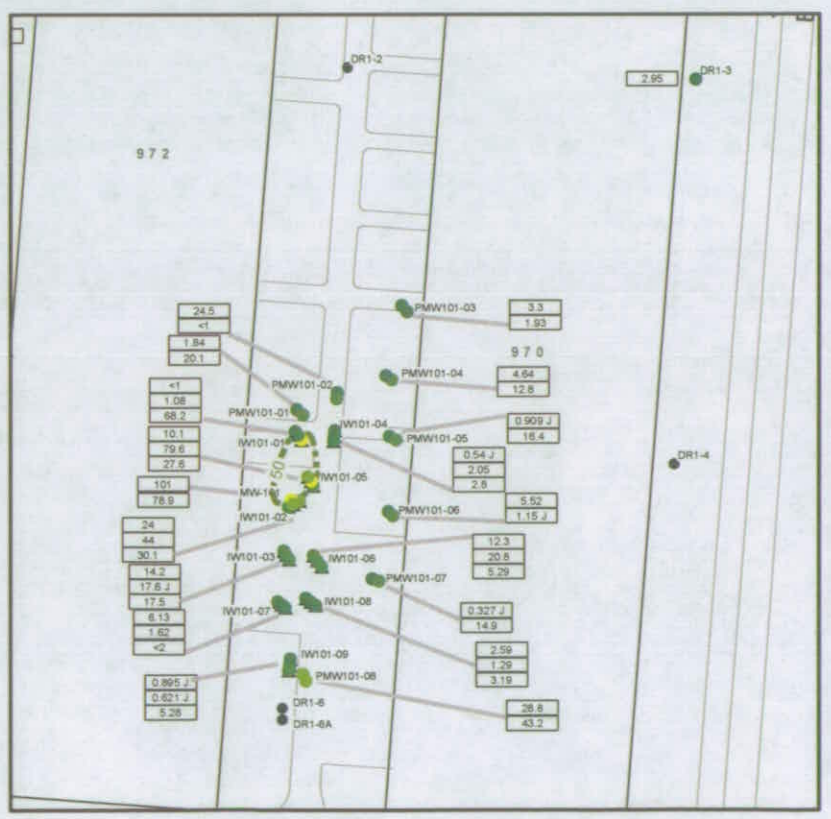

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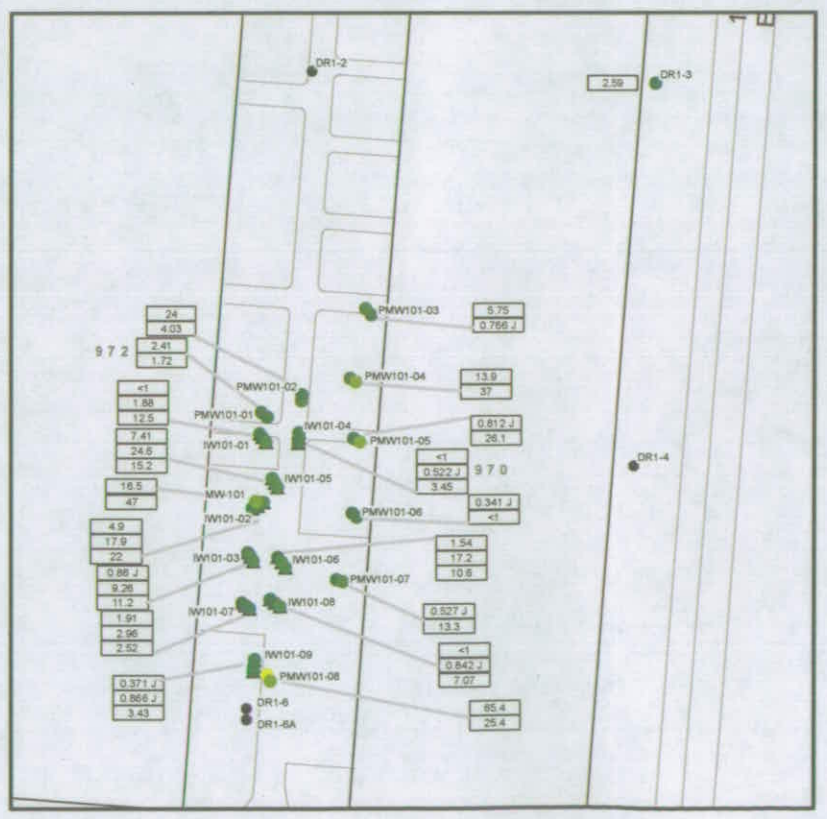

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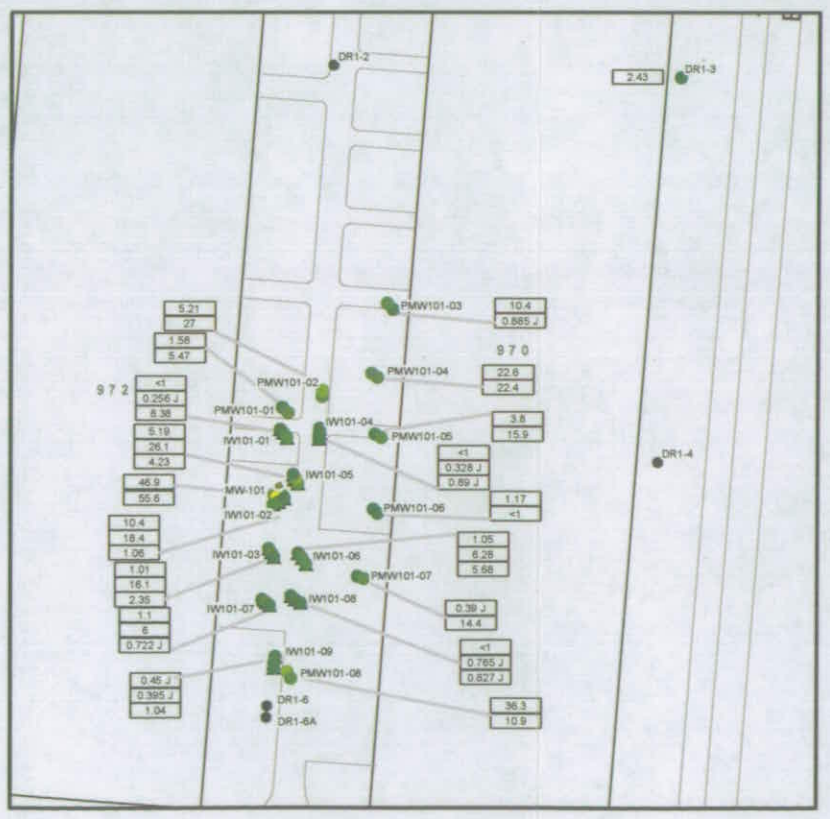

EBT-9

Legend

Isoconcentration contours of Tetrachloroethene (PCE)

Concentration Ranges

ug/L

- 0 - 5
- 6 - 25
- 26 - 50
- 51 - 100
- 101 - 200
- 201 - 300
- 300+

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

Installation Location
Memphis, Tennessee

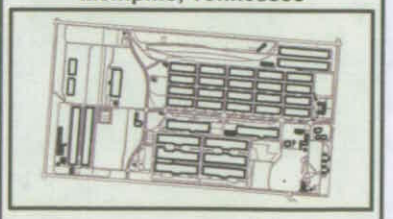

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Figure 16

PCE TIME SERIES - TTA-1, MW-101 AREA

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

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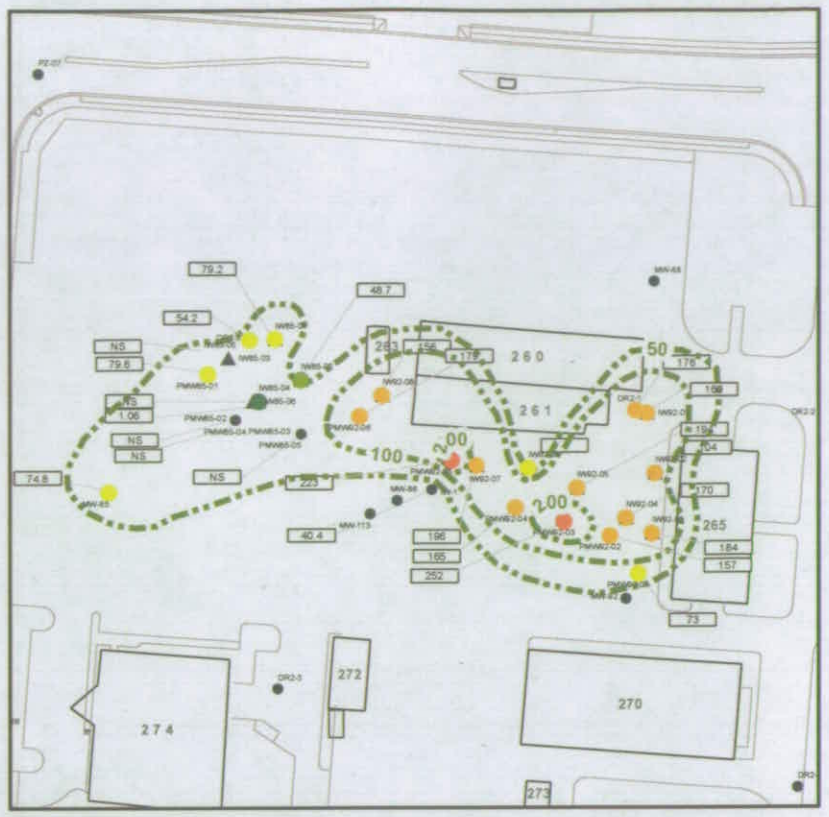
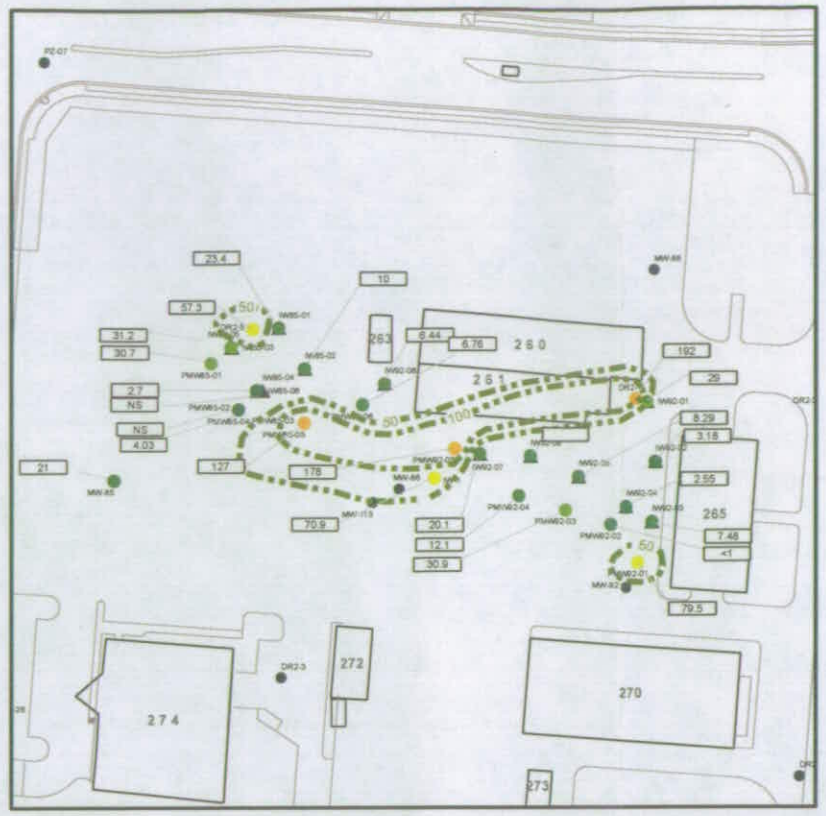
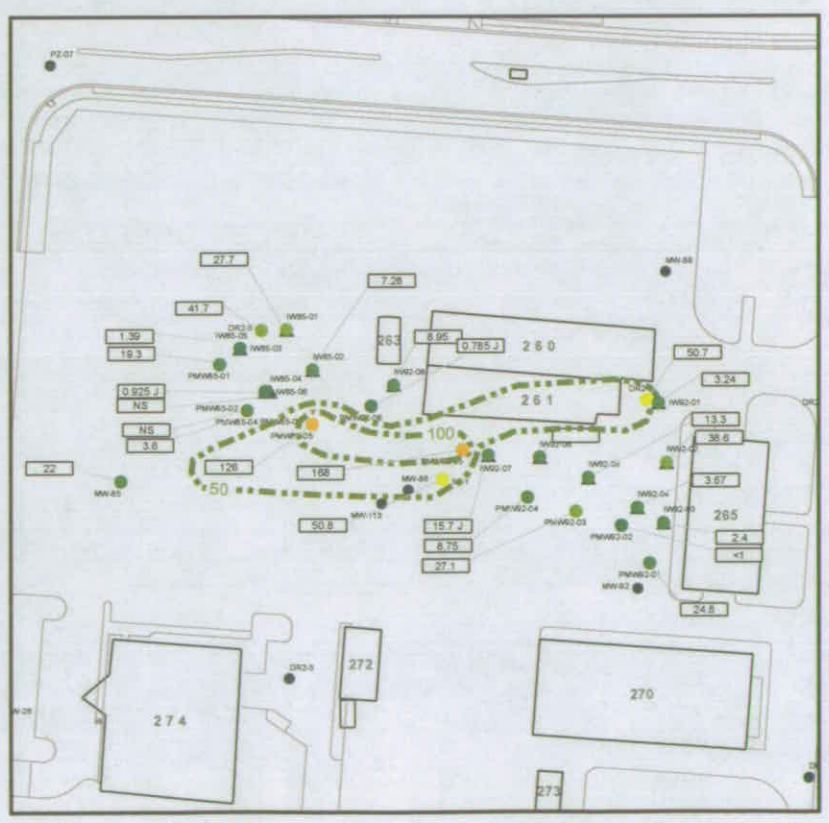


BASELINE



EBT-5

EBT-6



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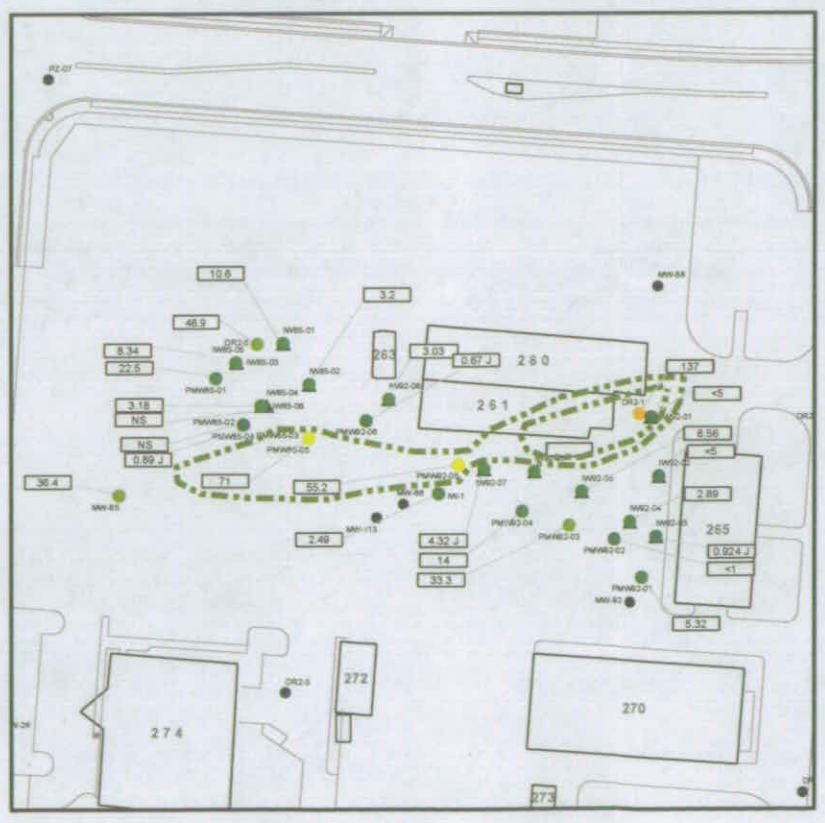
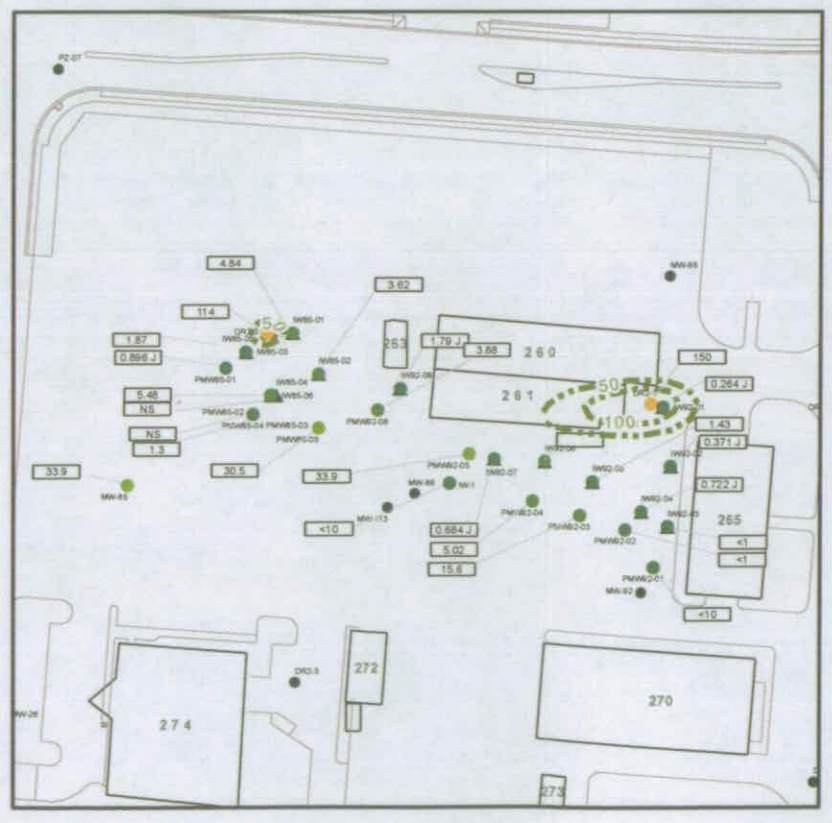


EBT-8



EBT-9

Figure 17

PCE TIME SERIES - TTA-2

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Legend

Isoconcentration contours of Tetrachloroethene (PCE)

Concentration Ranges

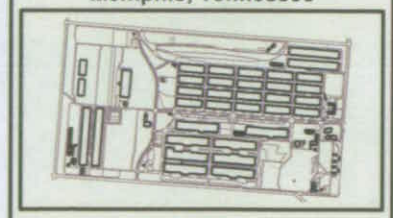
ug/L

- 0 - 5
- 6 - 25
- 26 - 50
- 51 - 100
- 101 - 200
- 201 - 300
- 300+

NS: Not Sampled

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

Installation Location
Memphis, Tennessee



Date: August 2009
Edition: Rev 0

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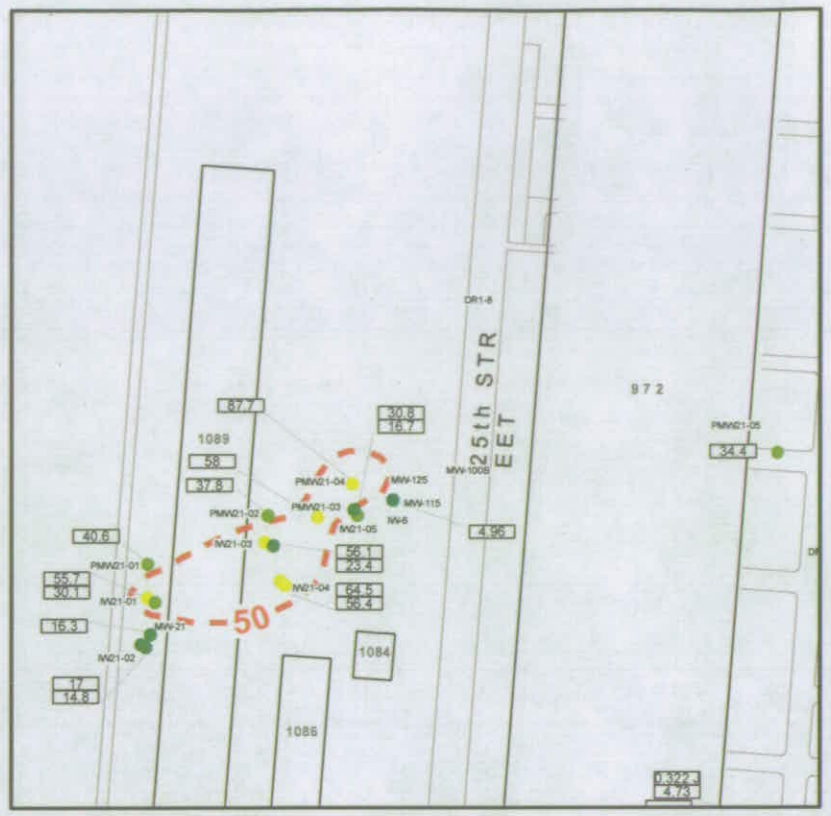
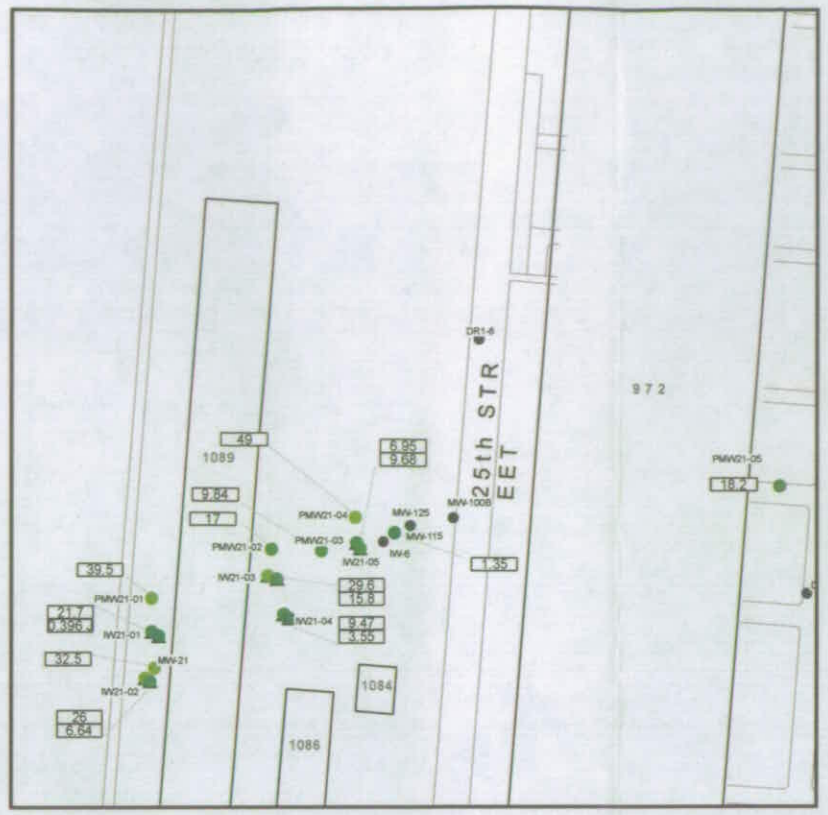


BASELINE



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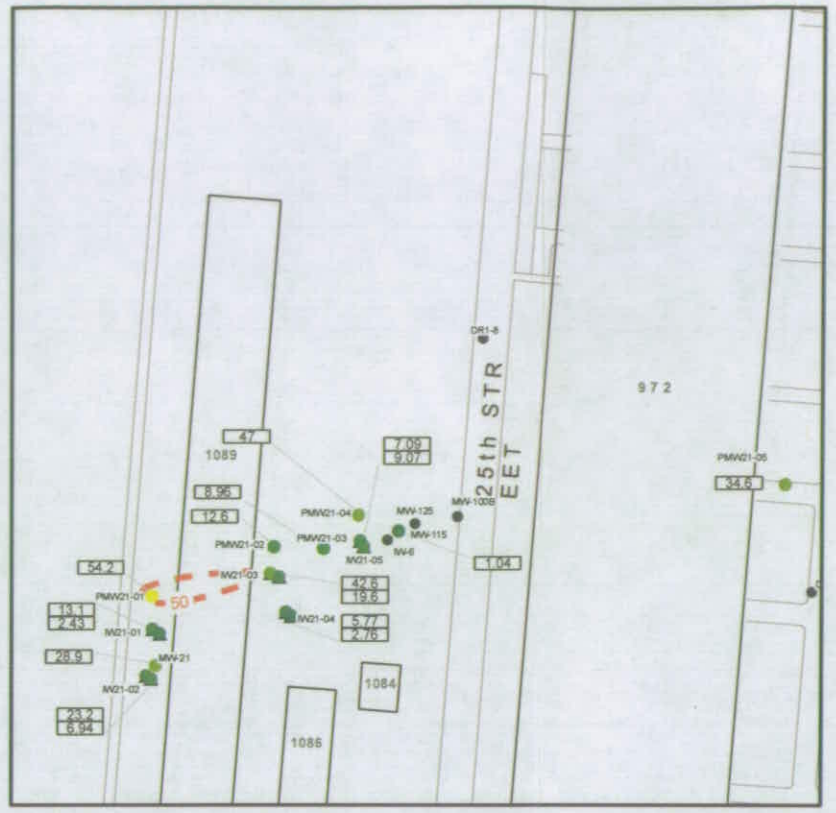

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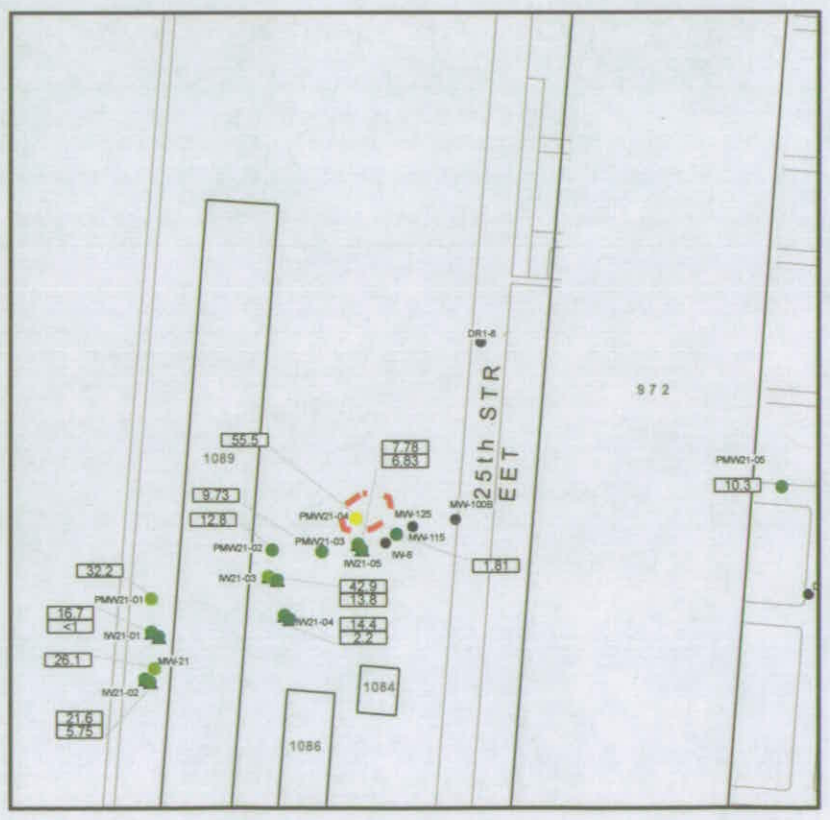

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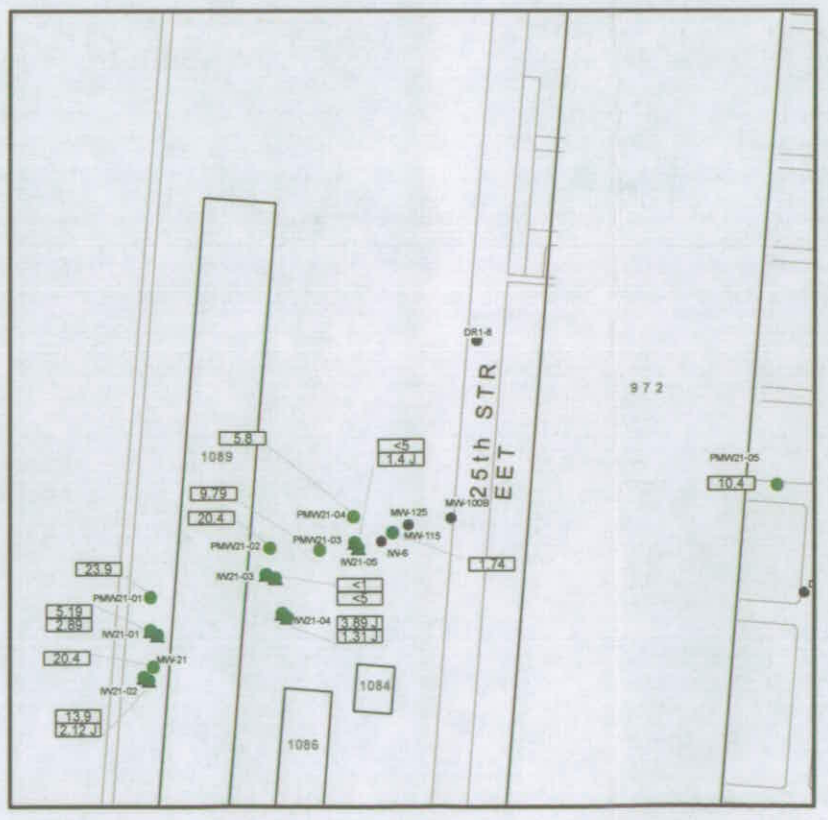

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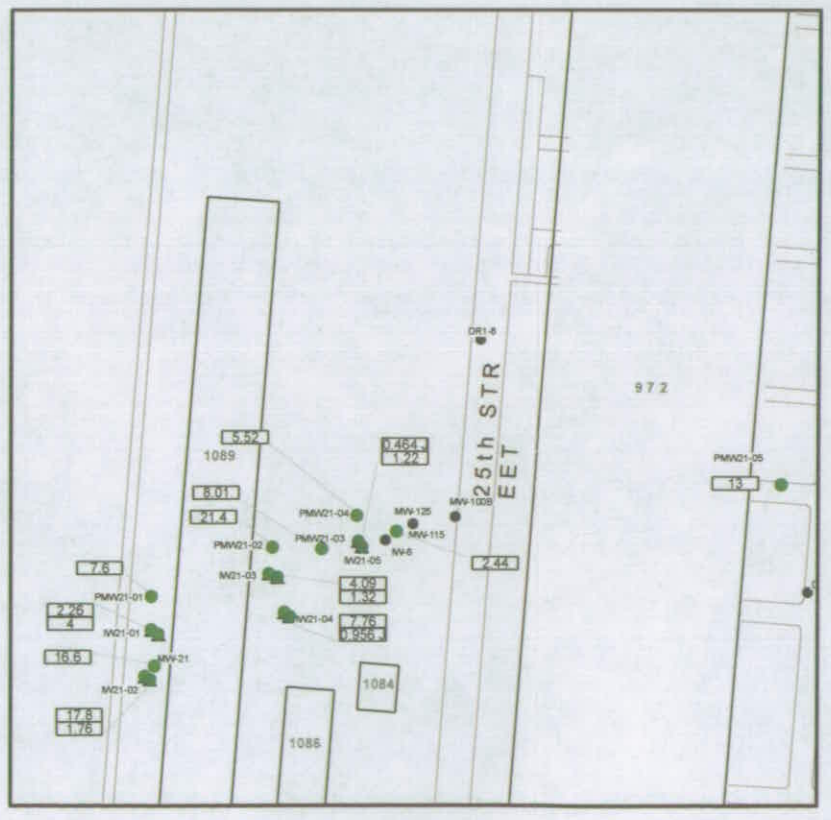

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Figure 18

TCE TIME SERIES - TTA-1, MW-21 AREA

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Legend

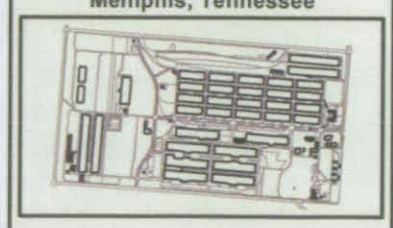
Isoconcentration contours of Trichloroethene (TCE)

Concentration Ranges
ug/L
- 0 - 5
- 6 - 25
- 26 - 50
- 51 - 100
- 101 - 200
- 201 - 300
- 300+

NS: Not Sampled

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

Installation Location
Memphis, Tennessee



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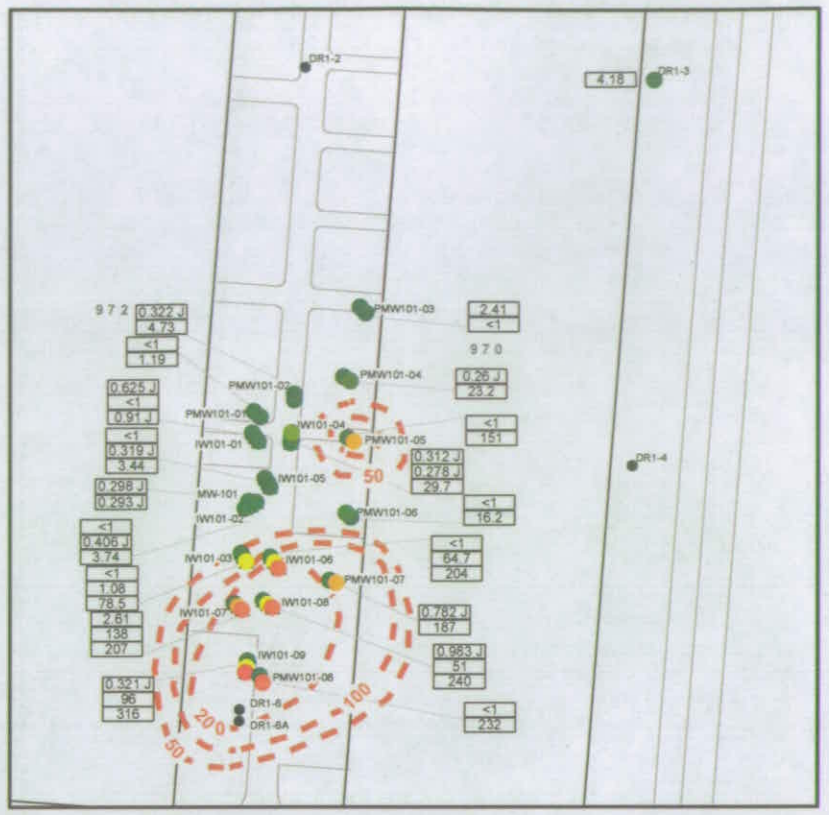
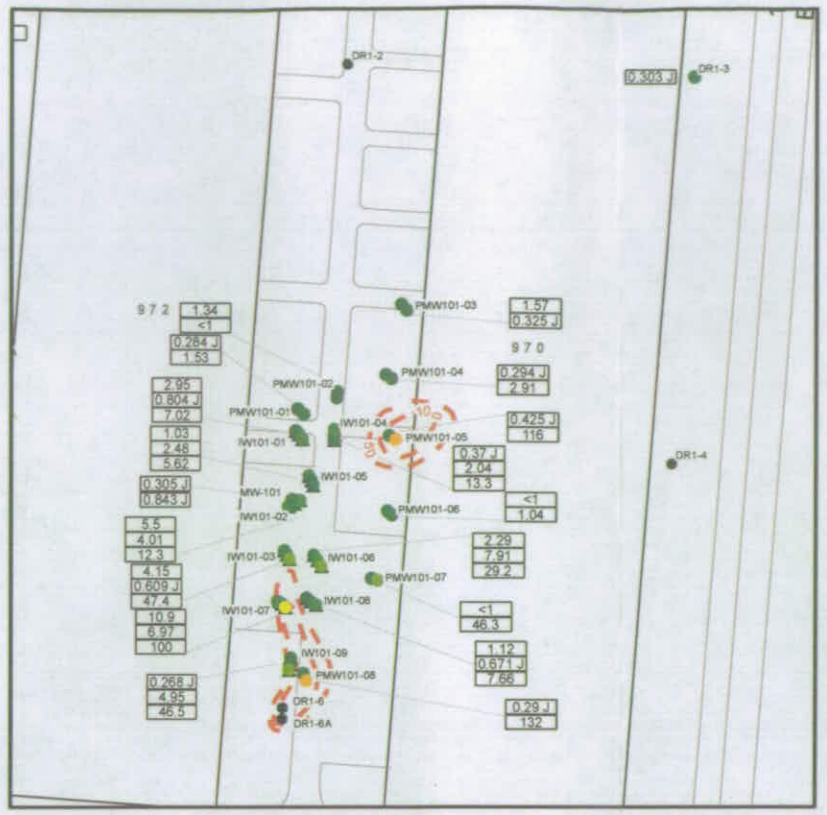
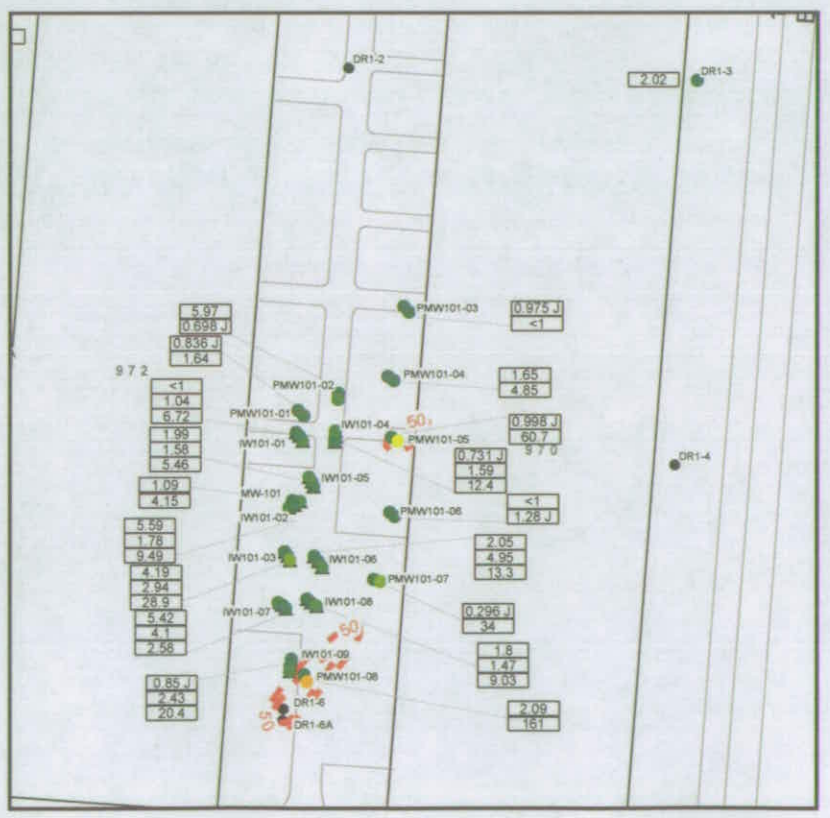


BASELINE



EBT-5

EBT-6



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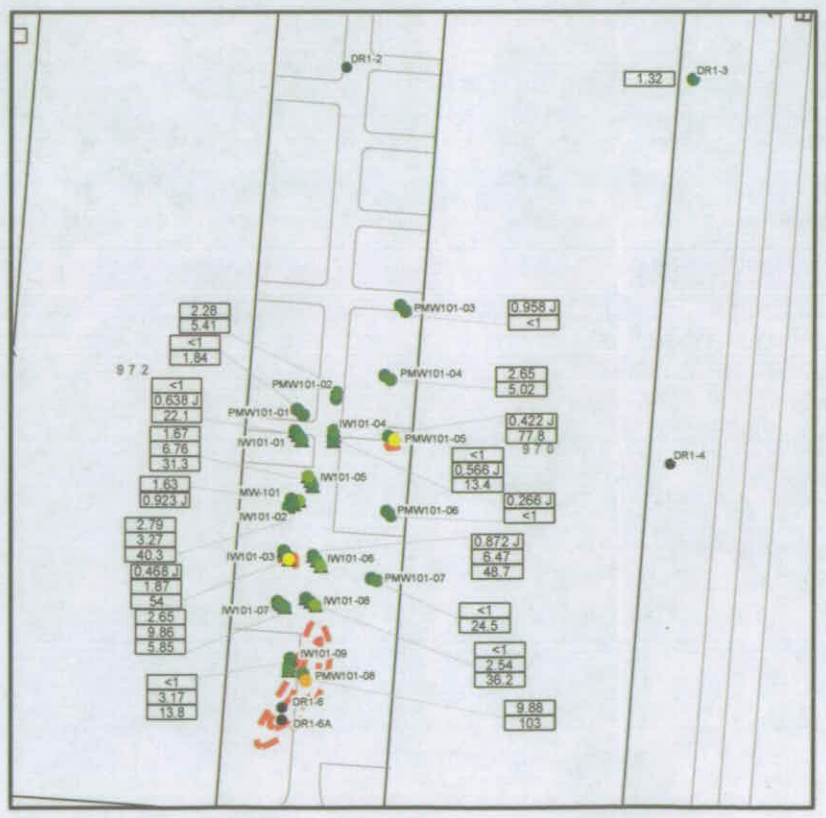

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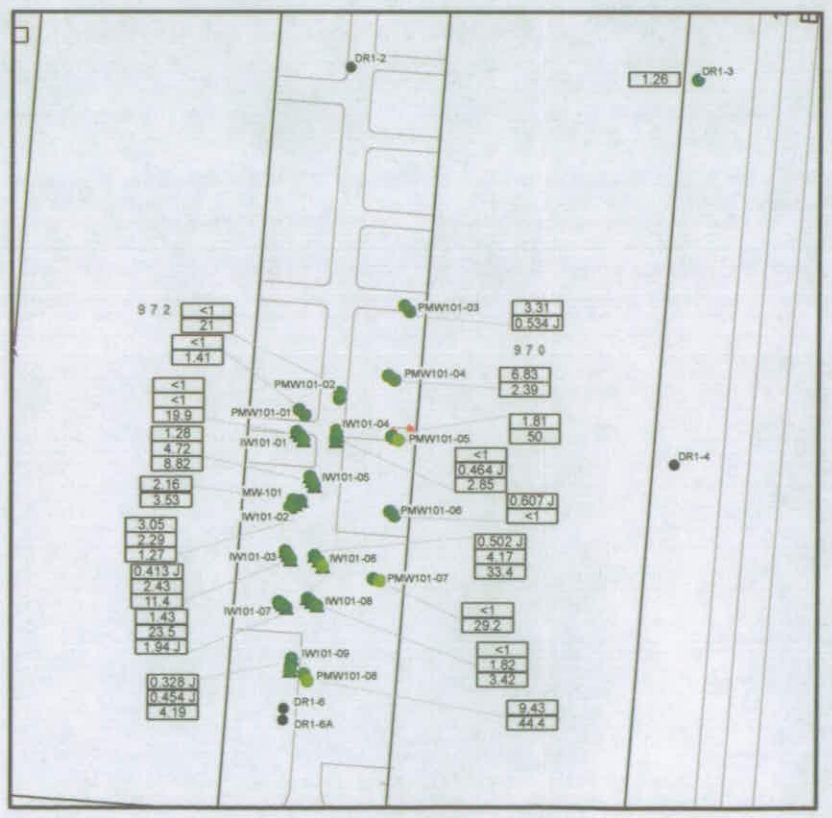

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Figure 19

TCE TIME SERIES - TTA-1, MW-101 AREA

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Legend

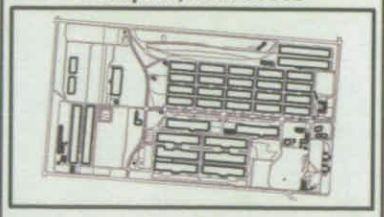
Isoconcentration contours of Trichloroethene (TCE)

Concentration Ranges
ug/L
- 0 - 5
- 6 - 25
- 26 - 50
- 51 - 100
- 101 - 200
- 201 - 300
- 300+

NS: Not Sampled

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

Installation Location
Memphis, Tennessee



Date: August 2009
Edition: Rev 0

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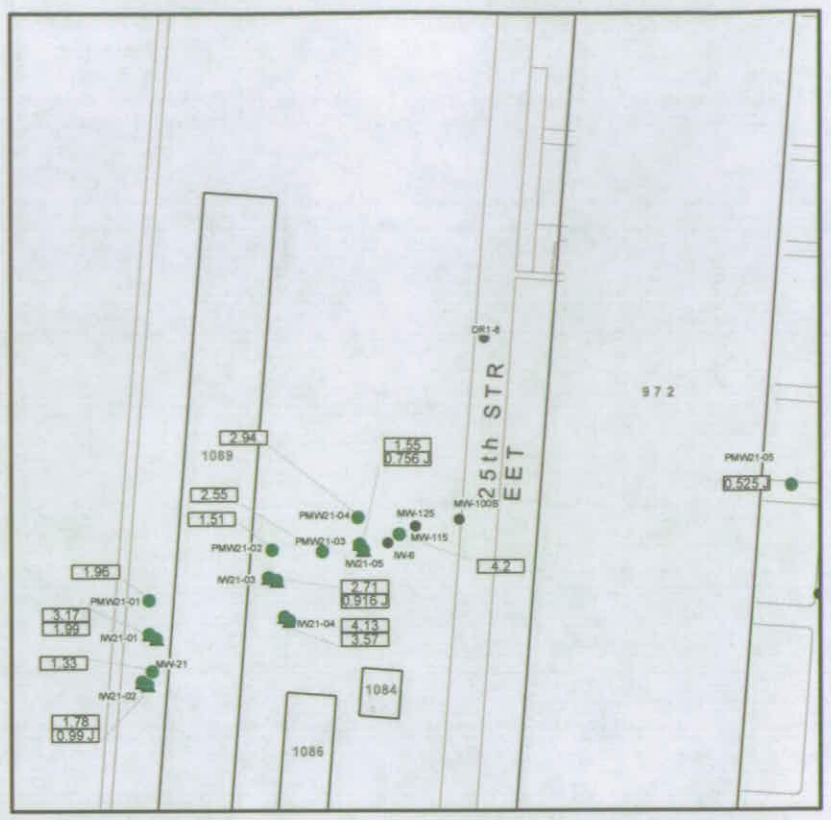
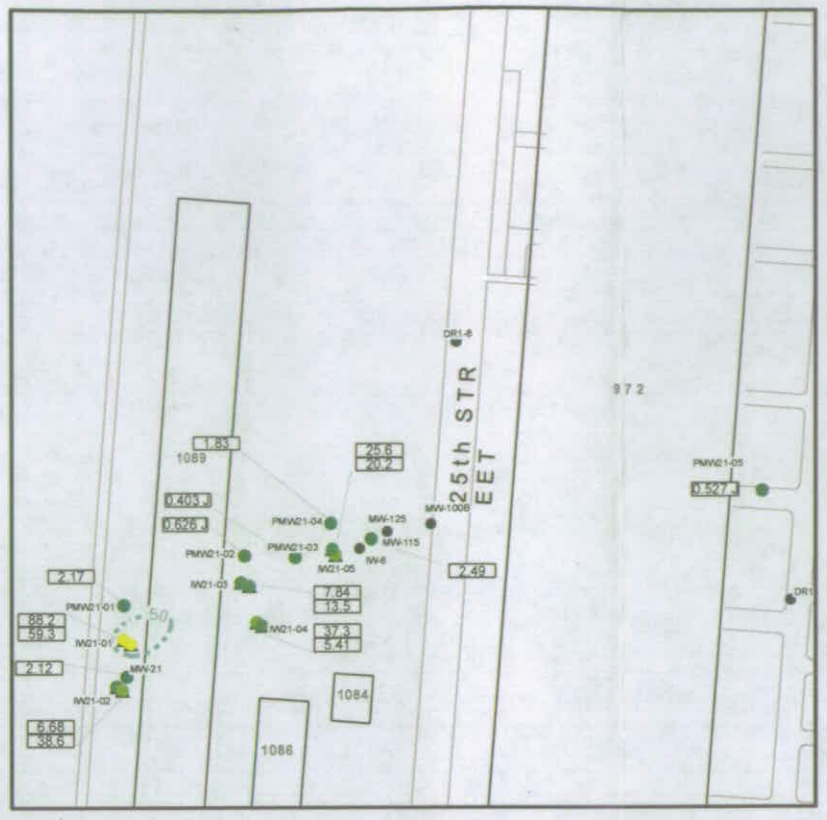


BASELINE



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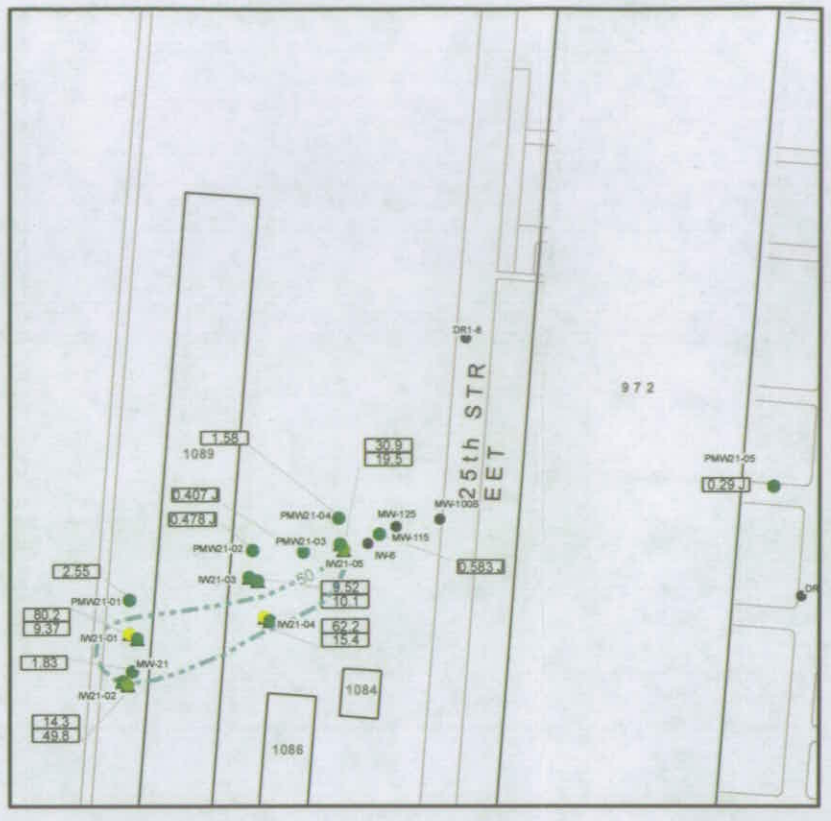

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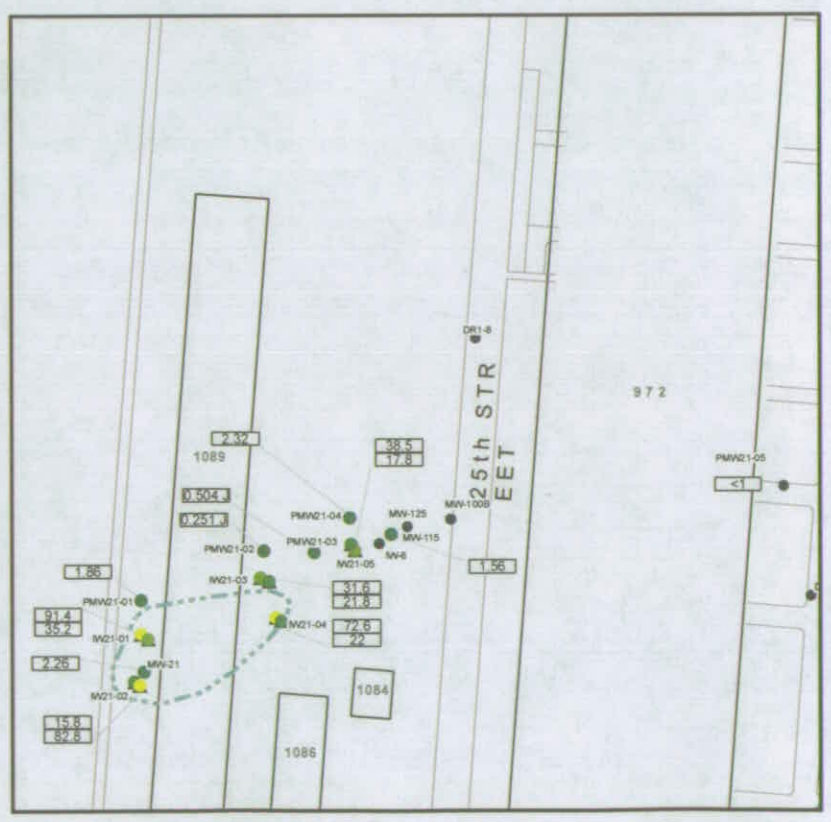

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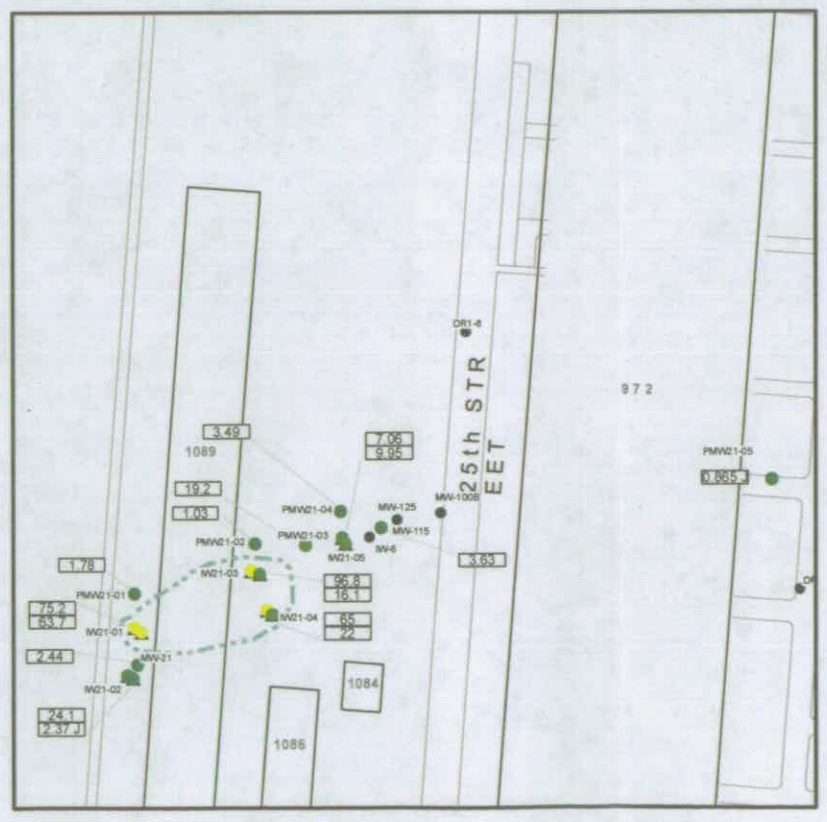

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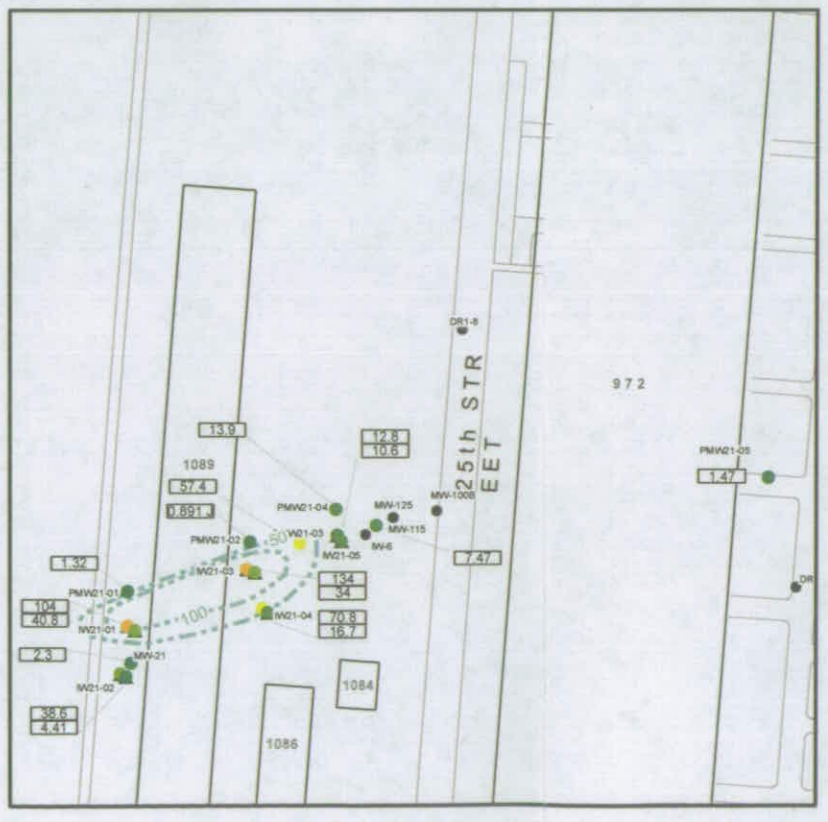

EBT-9

Figure 20

cDCE TIME SERIES - TTA-1, MW-21 AREA

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Legend

Isoconcentration contours of cis-1,2-Dichloroethene (cDCE)

Concentration Ranges
ug/L
- 0 - 5
- 6 - 25
- 26 - 50
- 51 - 100
- 101 - 200
- 201 - 300
- 300+

NS: Not Sampled

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

Installation Location
Memphis, Tennessee

Date: August 2009
Edition: Rev 0

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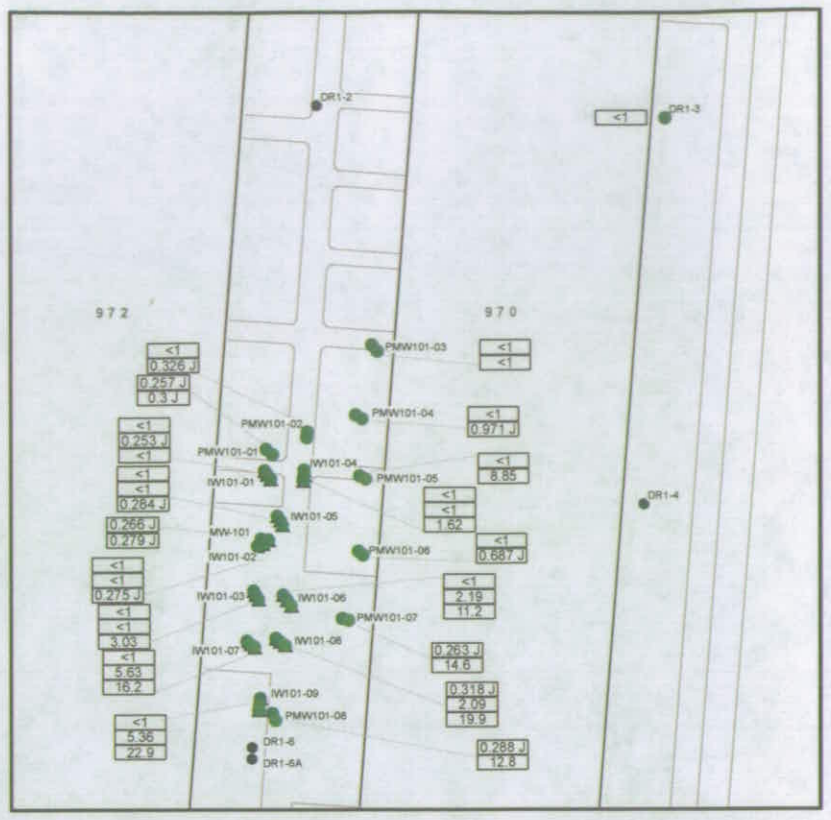
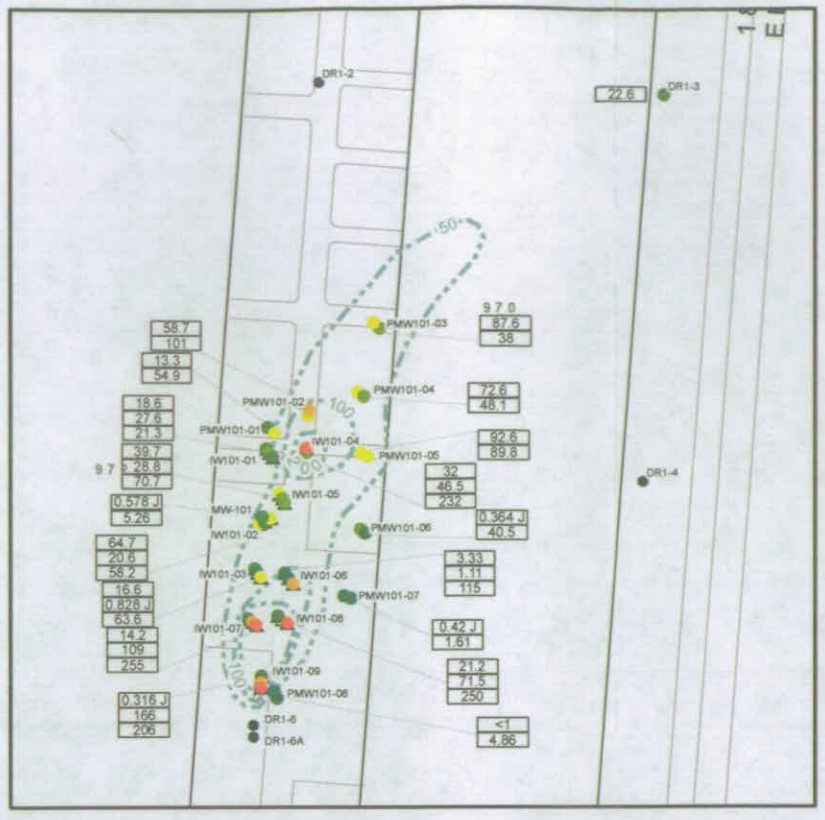
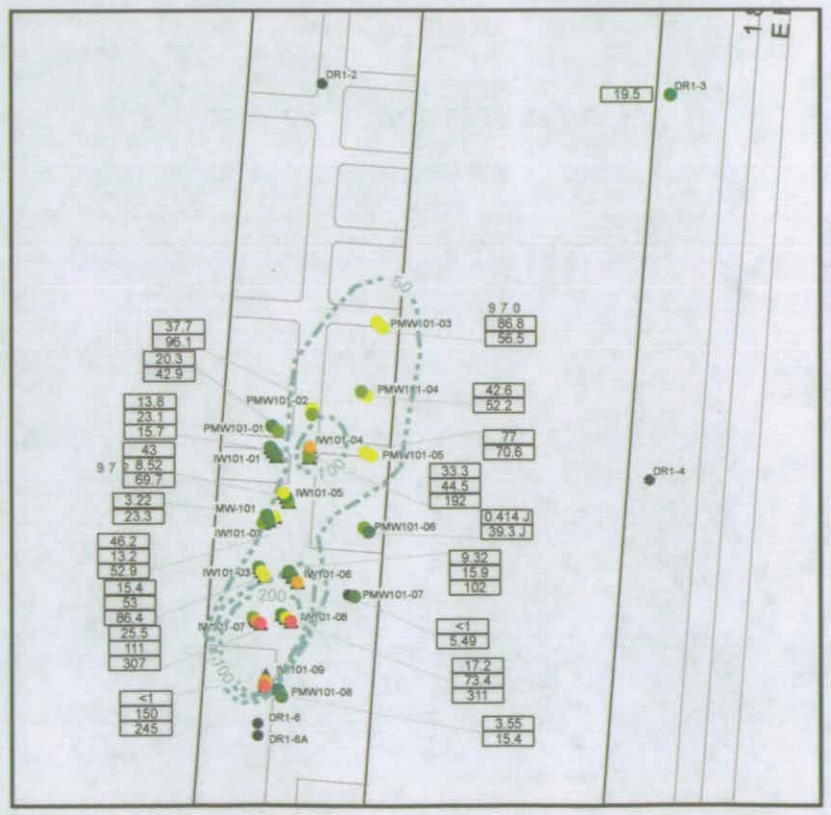


BASELINE



EBT-5

EBT-6



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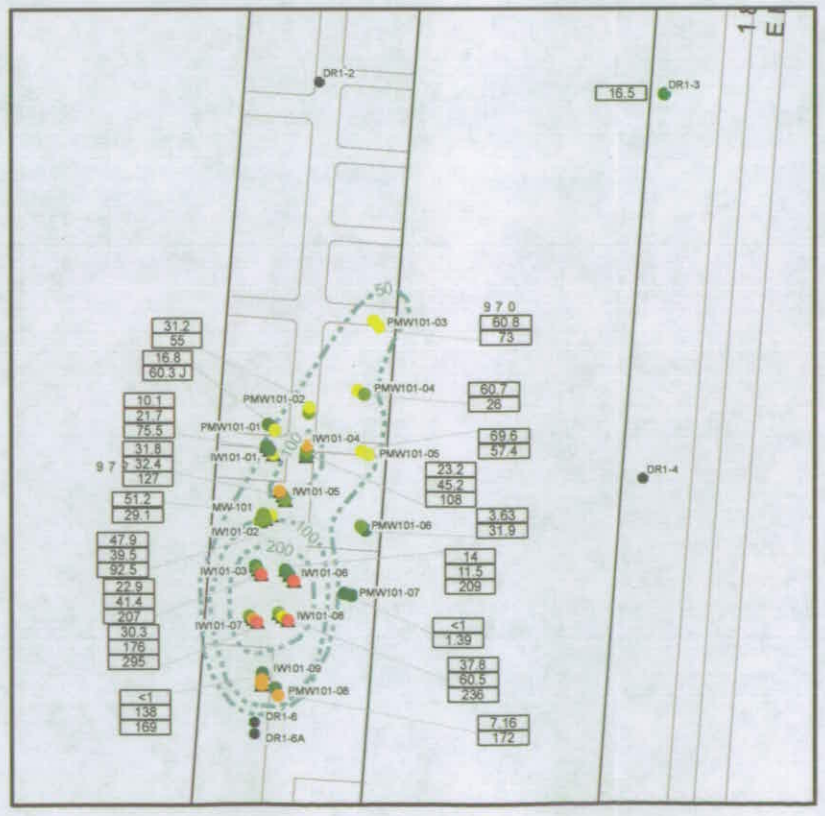
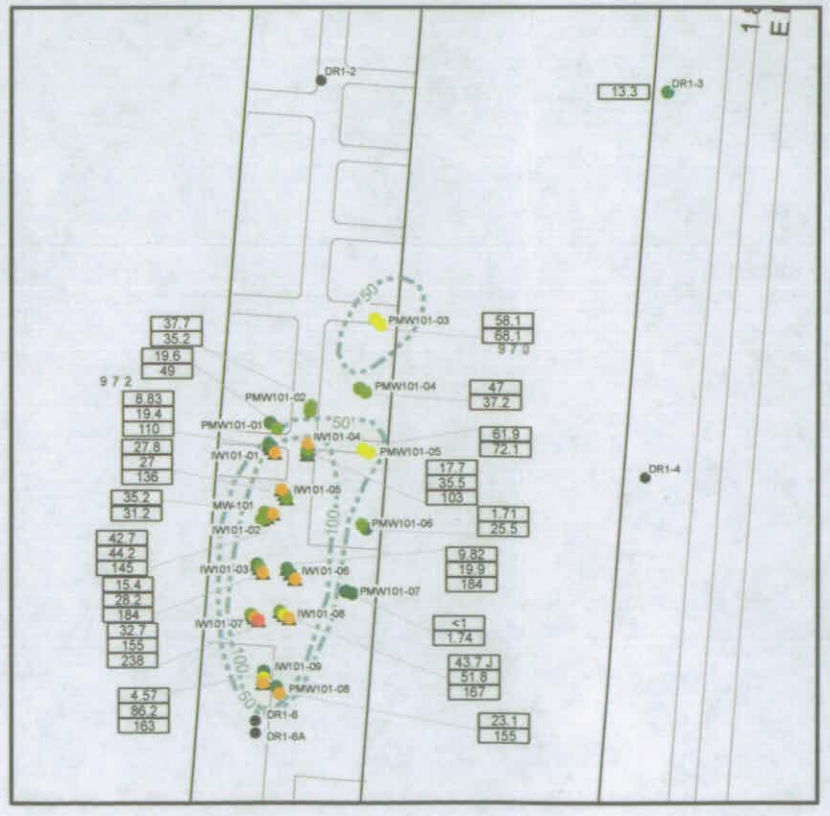


EBT-8



EBT-9

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Figure 21

cDCE TIME SERIES - TTA-1, MW-101 AREA

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Legend

Isoconcentration contours of cis-1,2-Dichloroethene (cDCE)

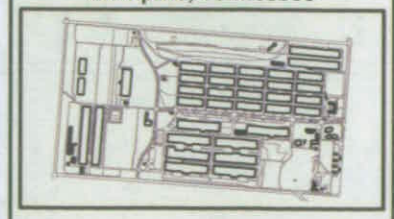
Concentration Ranges
ug/L

- 0 - 5
- 6 - 25
- 26 - 50
- 51 - 100
- 101 - 200
- 201 - 300
- 300+

NS: Not Sampled

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

Installation Location
Memphis, Tennessee



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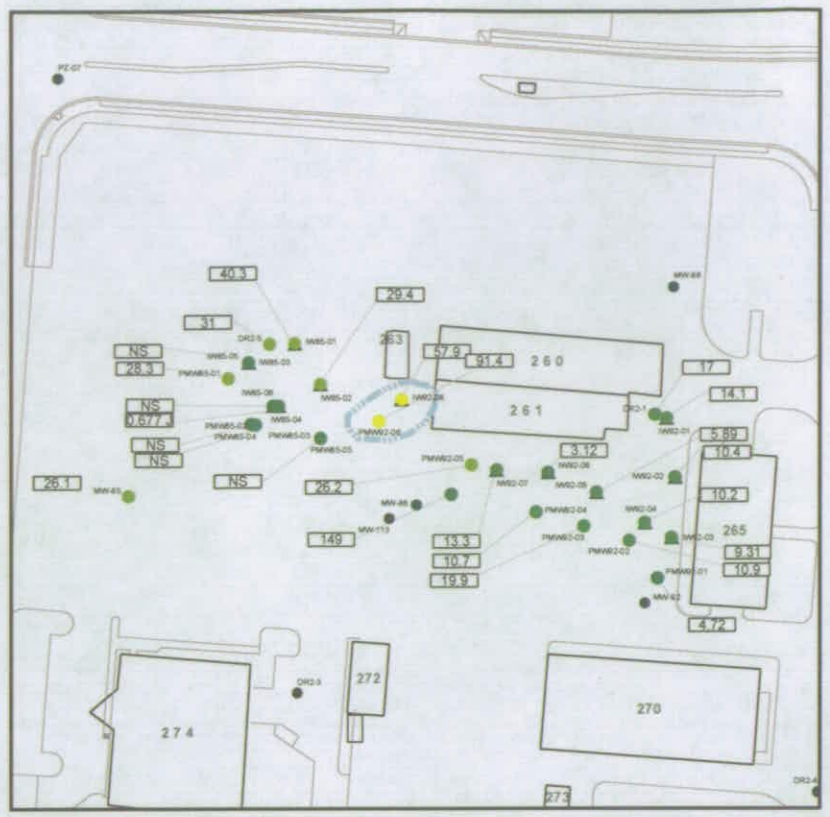
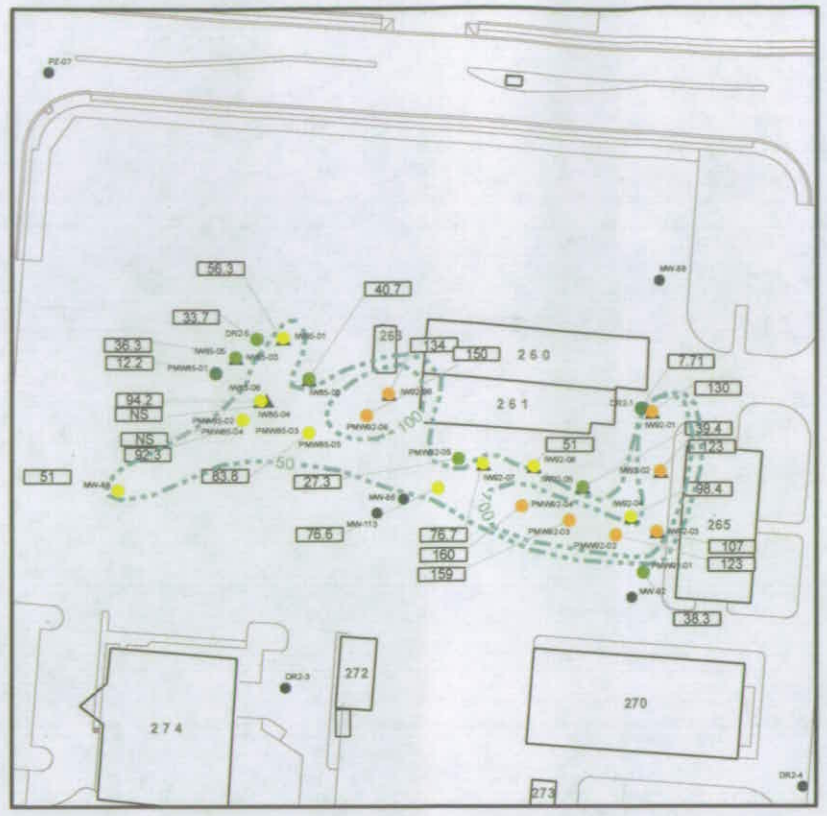
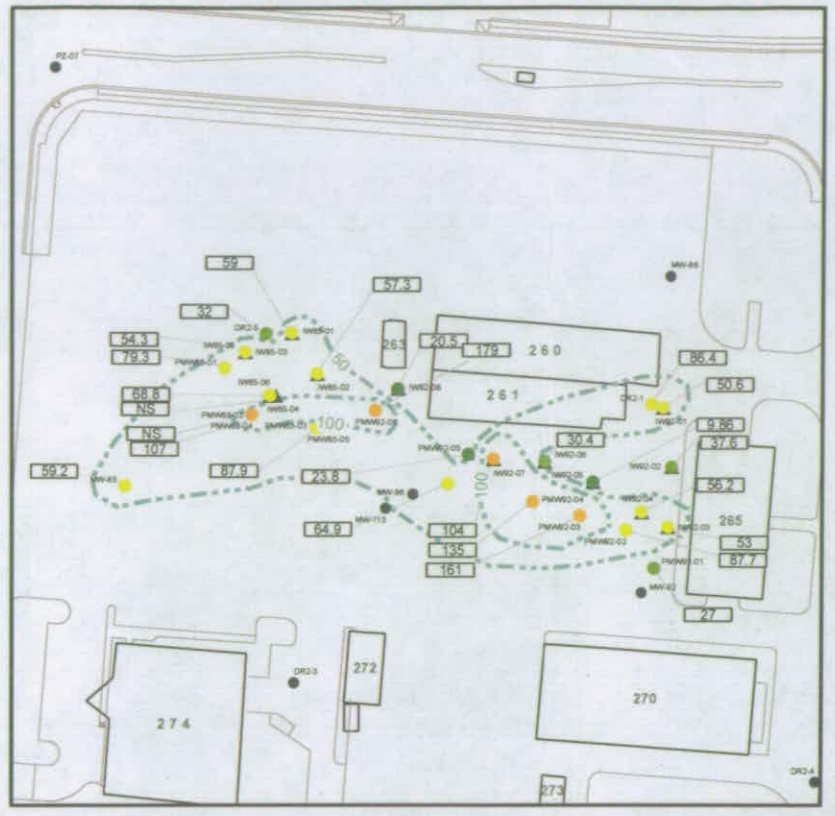


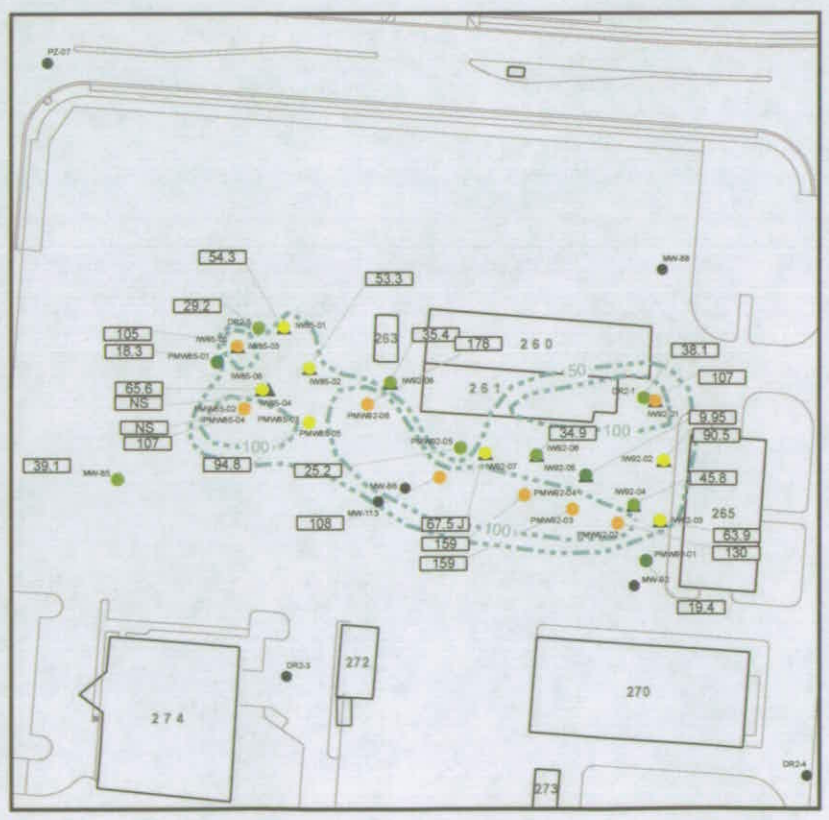
BASELINE



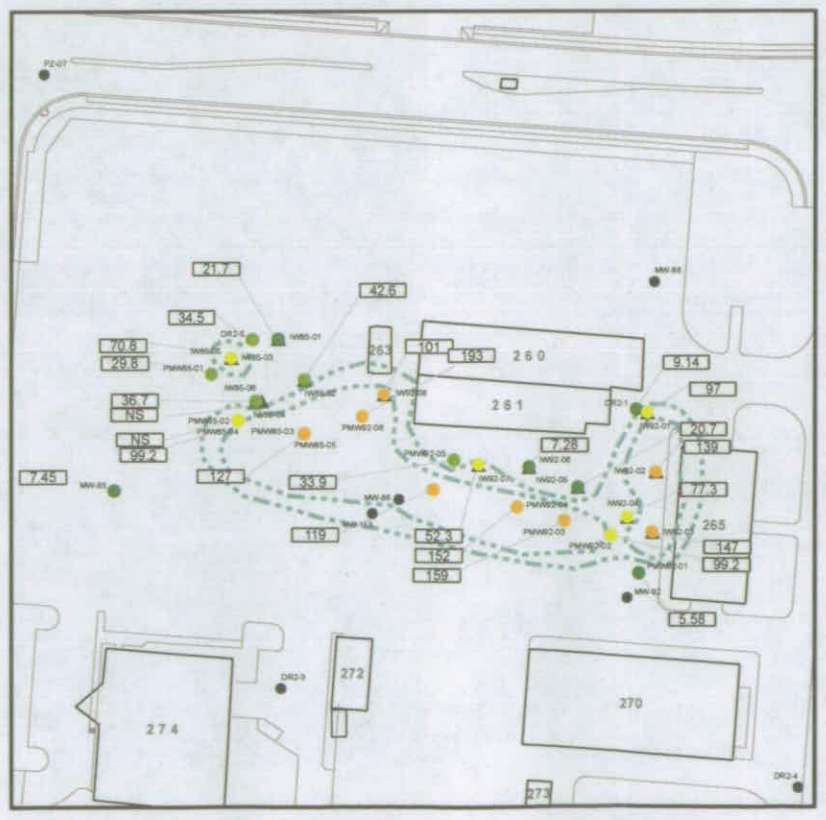
EBT-5



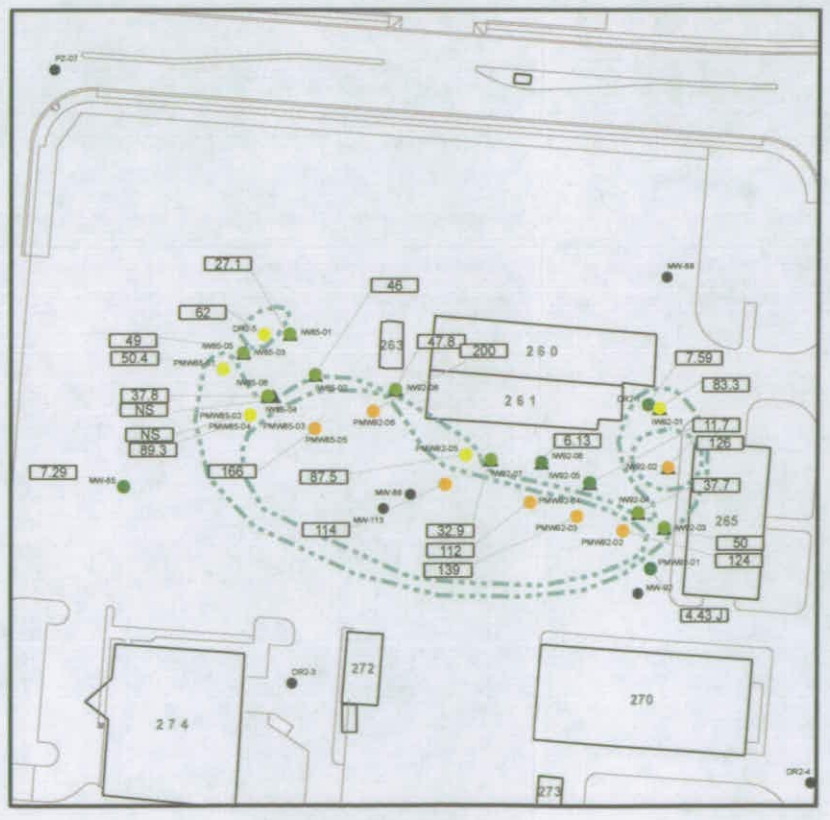
EBT-6



EBT-7



EBT-8



EBT-9

Legend

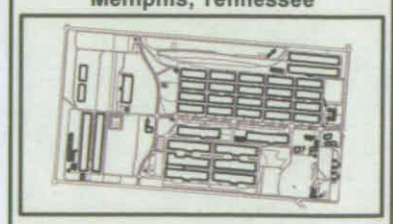
Isoconcentration contours of cis-1,2-Dichloroethene (cDCE)

Concentration Ranges
ug/L
- 0 - 5
- 6 - 25
- 26 - 50
- 51 - 100
- 101 - 200
- 201 - 300
- 300+

NS: Not Sampled

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

Installation Location
Memphis, Tennessee



Date: August 2009
Edition: Rev 0

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Figure 22

cDCE TIME SERIES - TTA-2

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

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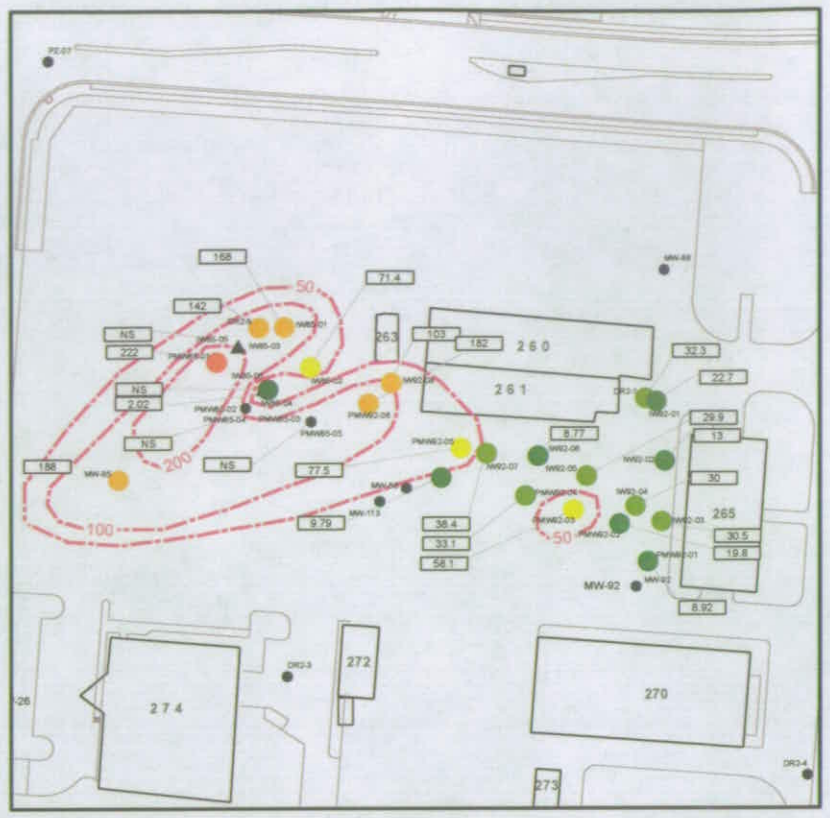
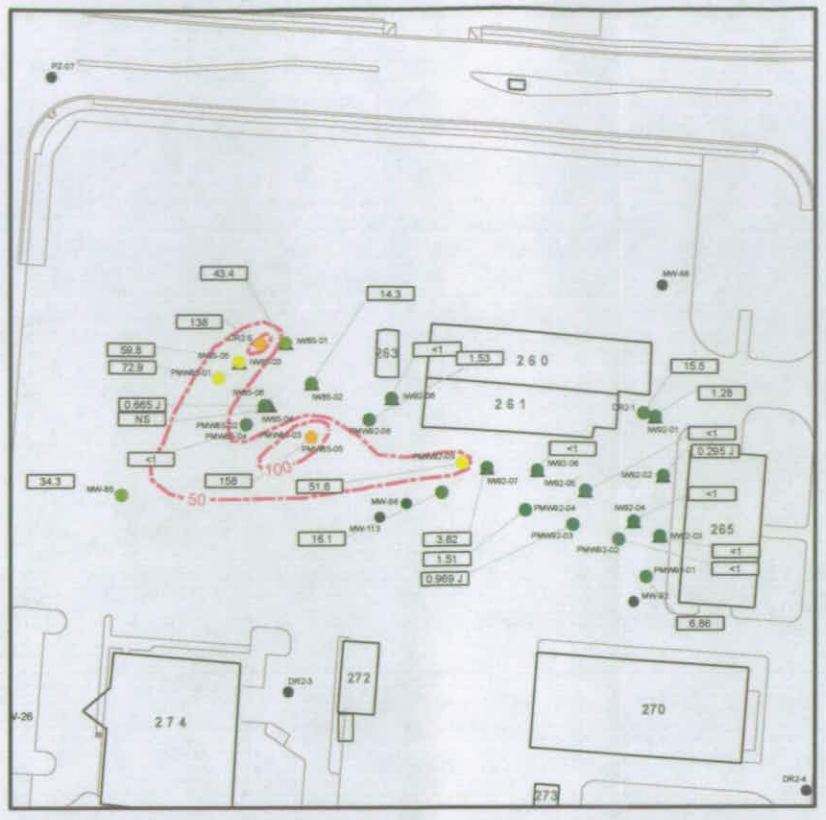
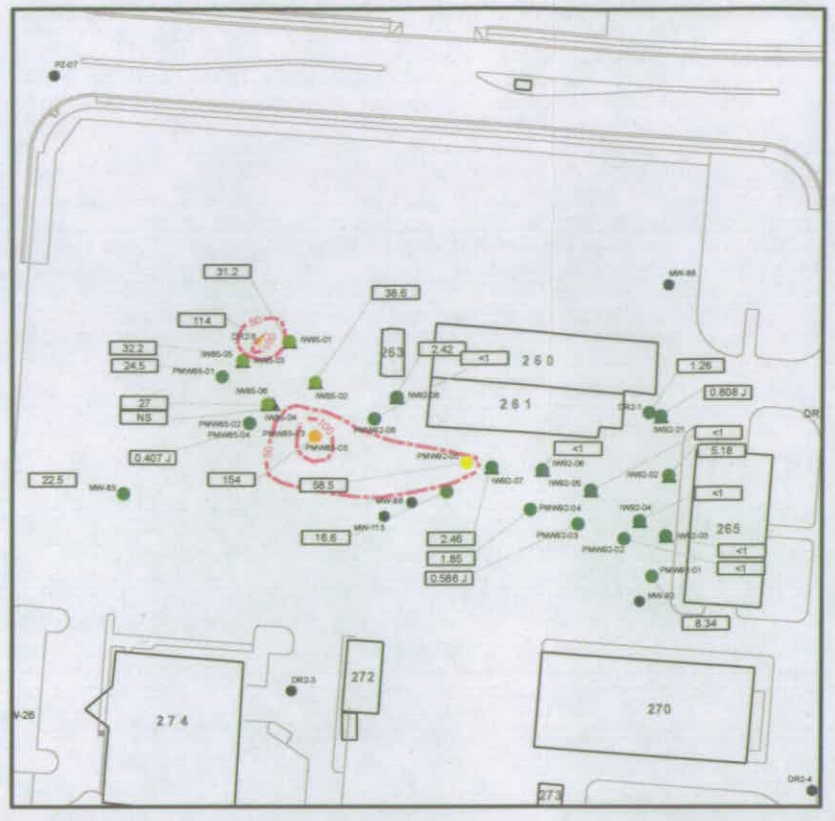


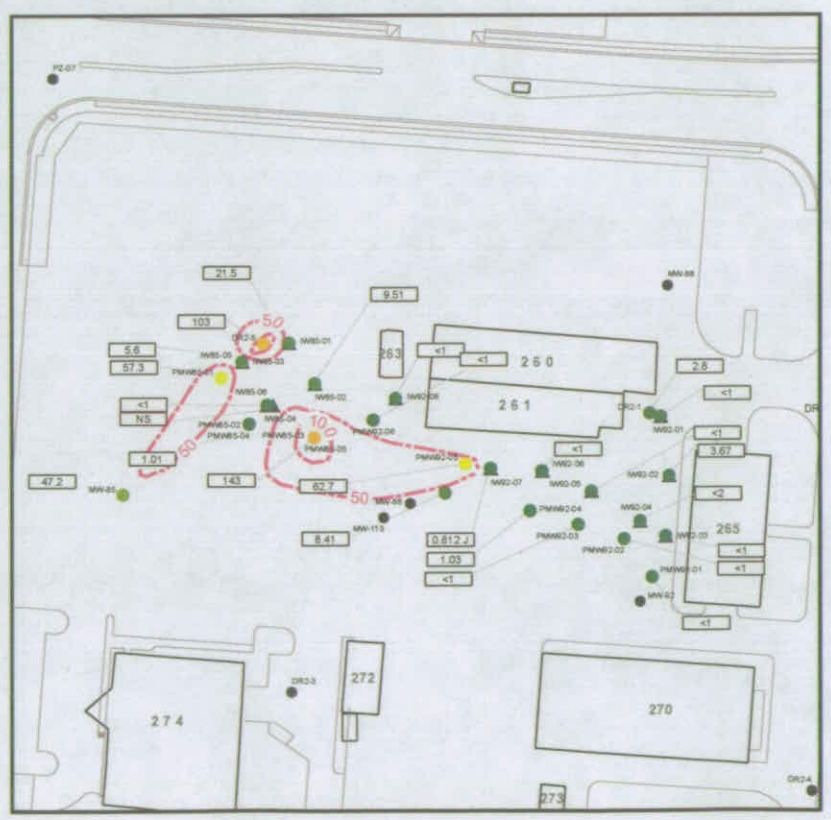
BASELINE



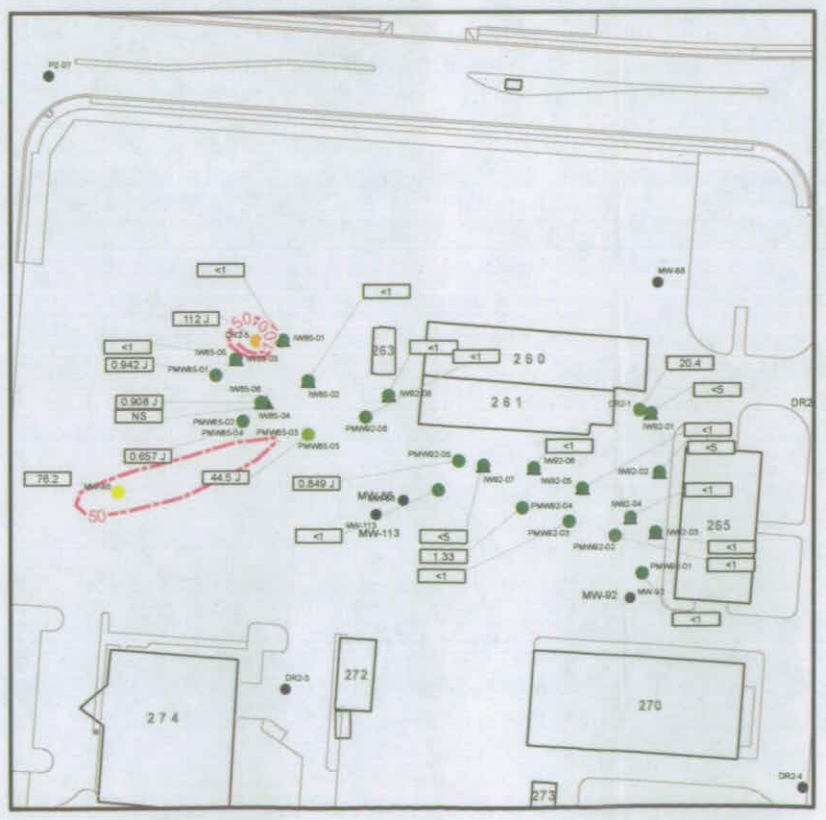
EBT-5



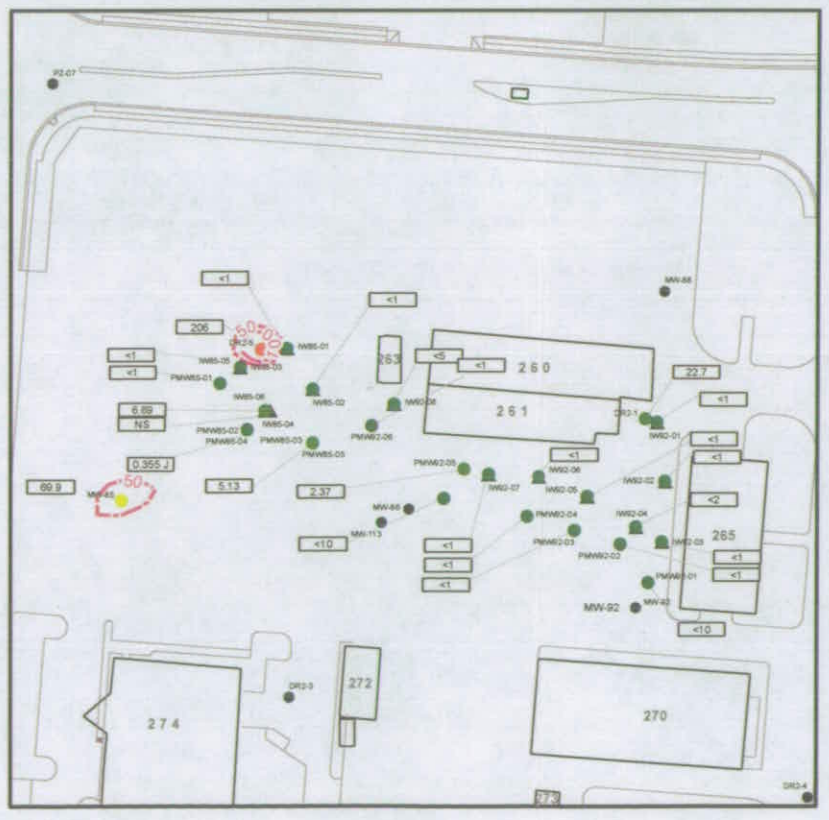
EBT-6



EBT-7



EBT-8



EBT-9

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Figure 23

CT TIME SERIES - TTA-2

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Legend

Isoconcentration contours of Carbon tetrachloride (CT)

Concentration Ranges
ug/L

- 0 - 5
- 6 - 25
- 26 - 50
- 51 - 100
- 101 - 200
- 201 - 300
- 300+

NS: Not Sampled

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

Installation Location
Memphis, Tennessee

Date: August 2009
Edition: Rev 0

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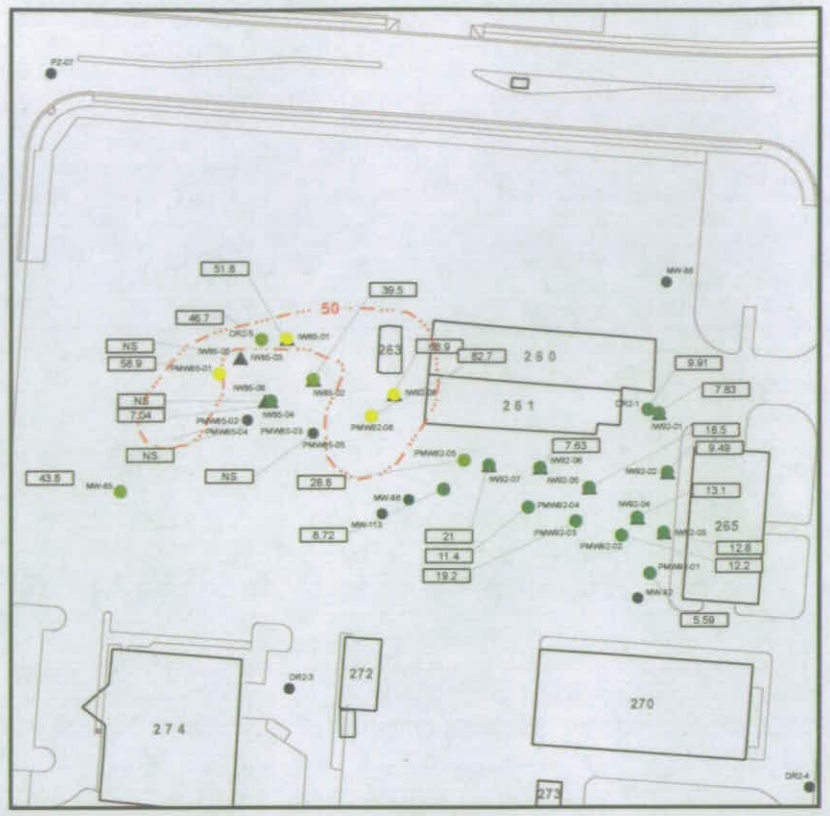

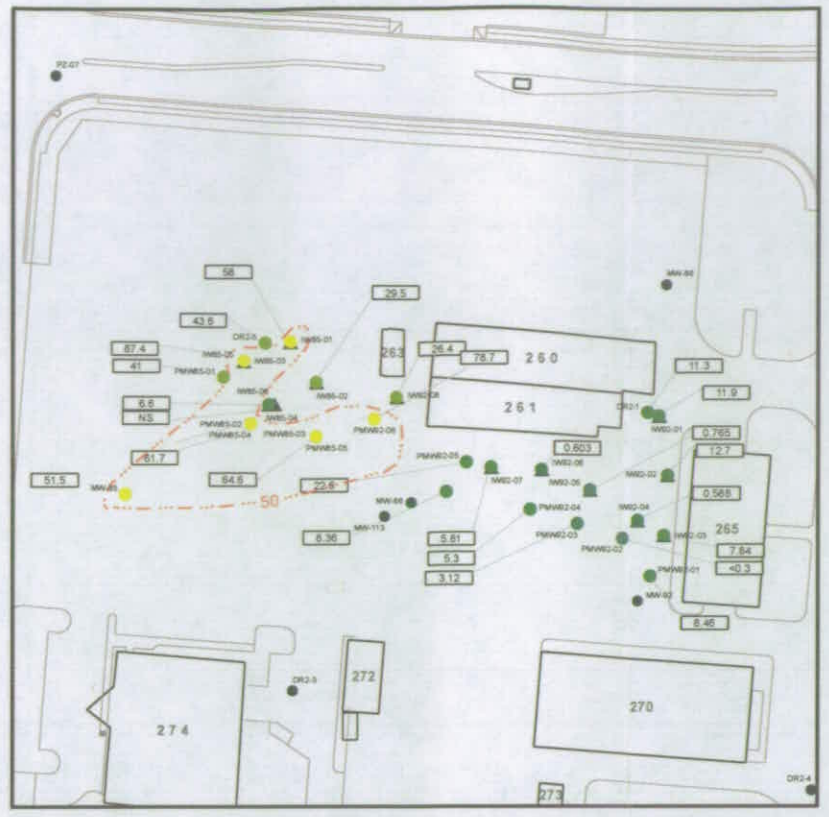

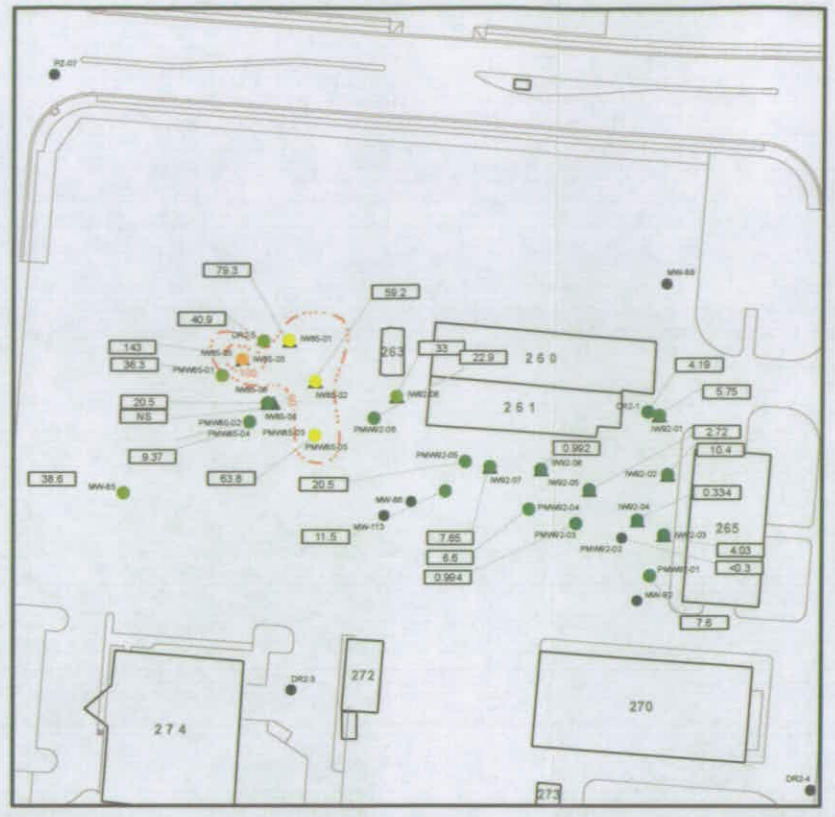

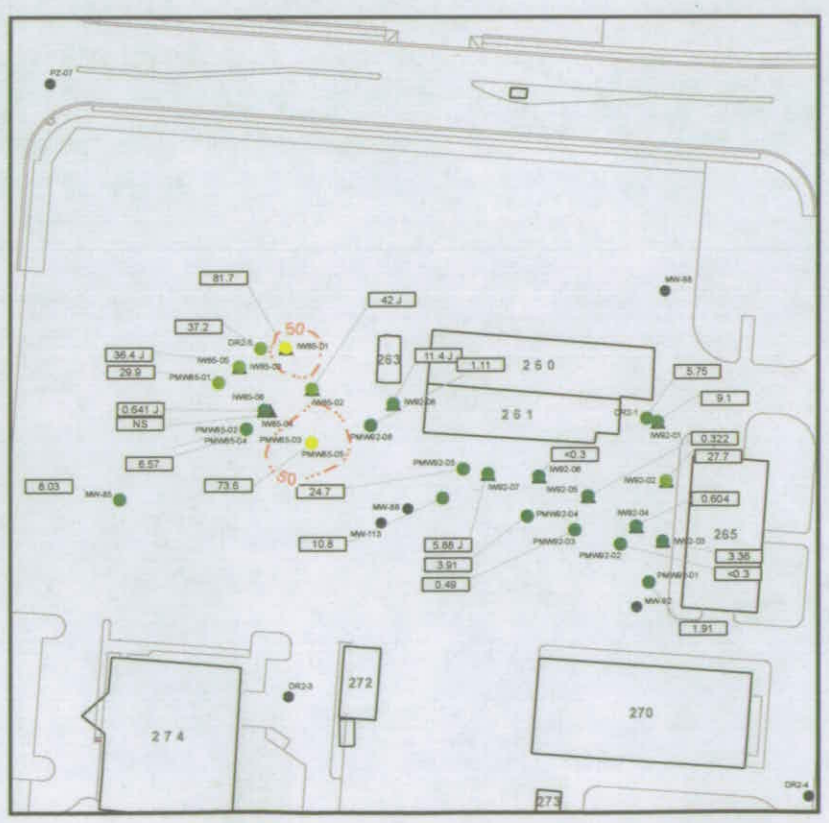

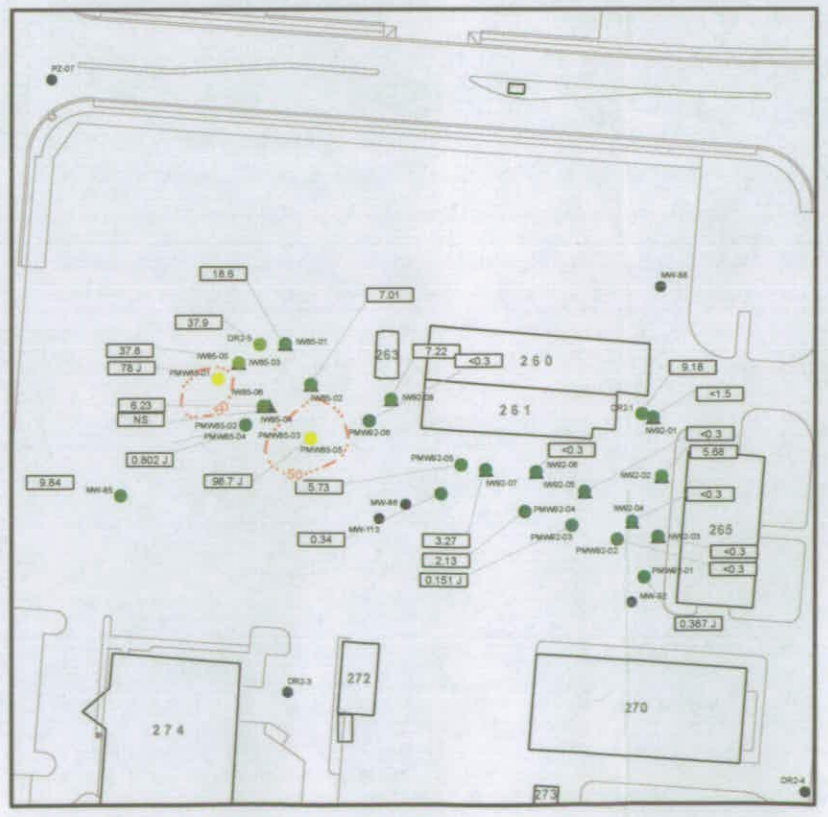

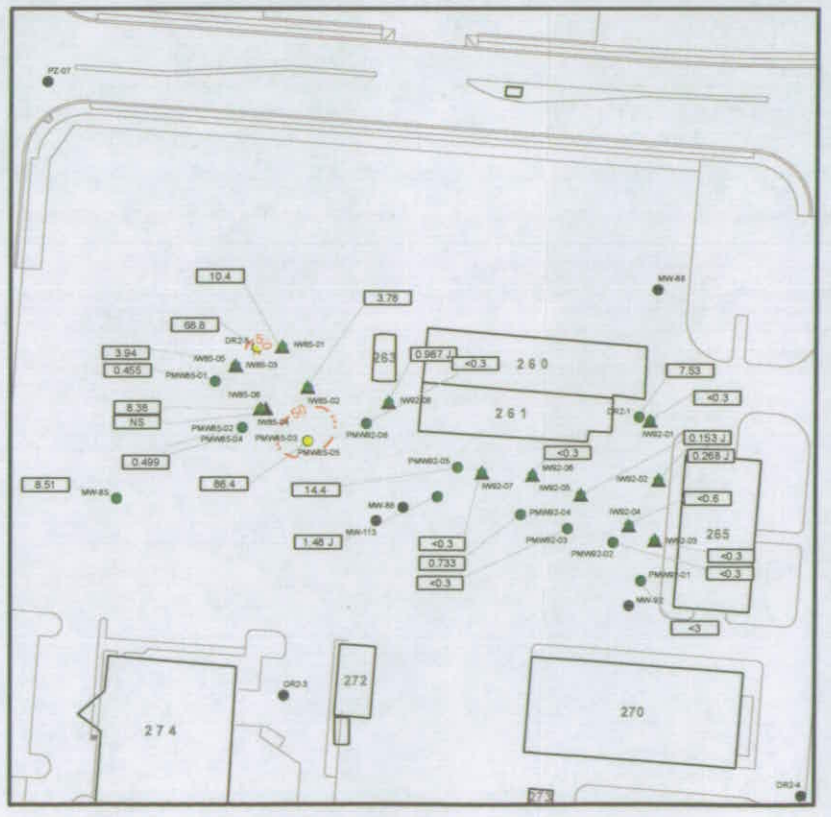

N
W E
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Figure 24

CF TIME SERIES - TTA-2

YEAR TWO REMEDIAL ACTION OPERATIONS REPORT

MAIN INSTALLATION-
DEFENSE DEPOT
MEMPHIS, TENNESSEE

Legend

Isoconcentration contours of Chloroform (CF)

Concentration Ranges
ug/L

- 0 - 5
- 6 - 25
- 26 - 50
- 51 - 100
- 101 - 200
- 201 - 300
- 300+

NS: Not Sampled

Projection: NAD 1927 StatePlane Tennessee
Units: Feet

Installation Location
Memphis, Tennessee

Date: August 2009
Edition: Rev 0

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APPENDIX A

INJECTION SUMMARIES

INJECTION 27
INJECTION SUMMARIES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)
IW101-01A	TTA-1	15	9/24/2007	7:35	7:45	2.16	29	250
IW101-01B	TTA-1	15	9/24/2007	7:45	7:56	2.16	27	246
IW101-01C	TTA-1	15	9/24/2007	8:56	9:05	2.16	28	250
IW101-02A	TTA-1	15	9/24/2007	9:08	9:18	2.16	28	248
IW101-02B	TTA-1	15	9/24/2007	10:20	10:29	2.16	28	250
IW101-02C	TTA-1	15	9/24/2007	10:30	10:39	2.16	28	240
IW101-03A	TTA-1	15	9/24/2007	9:22	9:32	2.16	24	250
IW101-03B	TTA-1	15	9/24/2007	9:33	9:44	2.16	24	250
IW101-03C	TTA-1	15	9/24/2007	11:11	11:22	2.16	24	250
IW101-04A	TTA-1	15	9/24/2007	13:40	13:50	2.16	27	244
IW101-04B	TTA-1	15	9/24/2007	15:02	15:12	2.16	29	250
IW101-04C	TTA-1	15	9/24/2007	15:12	15:22	2.16	28	241
IW101-05A	TTA-1	15	9/24/2007	14:20	14:30	2.16	24	245
IW101-05B	TTA-1	15	9/24/2007	14:32	14:42	2.16	24	237
IW101-05C	TTA-1	15	9/24/2007	15:47	15:58	2.16	24	251
IW101-06A	TTA-1	15	9/24/2007	16:00	16:11	2.16	24	253
IW101-06B	TTA-1	15	9/24/2007	16:33	16:42	2:16	29	250
IW101-06C	TTA-1	15	9/24/2007	16:42	16:53	2.16	27	245
IW101-07A	TTA-1	15	9/24/2007	11:24	11:35	2.16	24	244
IW101-07B	TTA-1	15	9/24/2007	12:43	12:54	2.16	24	250
IW101-07C	TTA-1	15	9/24/2007	12:54	13:04	2.16	24	238
IW101-08A	TTA-1	15	9/25/2007	7:12	7:21	2.16	29	250
IW101-08B	TTA-1	15	9/25/2007	7:21	7:30	2.16	29	241
IW101-08C	TTA-1	15	9/25/2007	8:13	8:24	2.16	28	246
IW101-09A	TTA-1	15	9/24/2007	11:55	12:05	2.16	27	250
IW101-09B	TTA-1	15	9/24/2007	12:06	12:15	2.16	27	240
IW101-09C	TTA-1	15	9/24/2007	13:29	13:38	2.16	29	250
IW21-01A	TTA-1	10	9/25/2007	7:12	7:32	2.16	24	494
IW21-01B	TTA-1	10	9/25/2007	9:01	9:21	2.16	24	492
IW21-02A	TTA-1	10	9/25/2007	9:48	10:06	2.16	28	494
IW21-02B	TTA-1	10	9/25/2007	11:23	11:40	2.16	28	489
IW21-03A	TTA-1	10	9/25/2007	10:37	10:57	2.16	24	488
IW21-03B	TTA-1	10	9/25/2007	12:11	12:32	2.16	24	494
IW21-04A	TTA-1	10	9/25/2007	12:56	13:15	2.16	28	492
IW21-04B	TTA-1	10	9/25/2007	14:33	14:52	2.16	28	497
IW21-05A	TTA-1	10	9/25/2007	13:46	14:07	2.16	24	497
IW21-05B	TTA-1	10	9/25/2007	15:23	15:45	2.16	24	489
IW85-01	TTA-2	10	9/26/2007	7:53	7:57	2.16	24	112
IW85-02	TTA-2	10	9/26/2007	8:01	8:05	2.16	24	112
IW85-05	TTA-2	10	9/26/2007	8:10	8:14	2.16	24	113
IW85-06	TTA-2	10	9/26/2007	8:17	8:24	2.16	24	154
IW92-01	TTA-2	10	9/25/2007	16:07	16:12	2.16	28	109
IW92-02	TTA-2	10	9/25/2007	16:14	16:19	2.16	26	110
IW92-03	TTA-2	10	9/25/2007	16:21	16:26	2.16	26	110
IW92-04	TTA-2	10	9/25/2007	16:27	14:32	2.16	24	110
IW92-05	TTA-2	10	9/26/2007	16:34	7:21	2.16	28	117
IW92-06	TTA-2	10	9/26/2007	7:25	7:29	2.16	27	112
IW92-07	TTA-2	10	9/26/2007	7:32	7:36	2.16	27	124
IW92-08	TTA-2	10	9/26/2007	7:38	7:45	2.16	26	180

INJECTION 28
INJECTION SUMMARIES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)
IW101-01A	TTA-1	15	10/23/2007	16:12	16:21	2.16	27	250
IW101-01B	TTA-1	15	10/23/2007	16:22	16:32	2.16	27	240
IW101-01C	TTA-1	15	10/24/2007	7:17	7:28	2.16	24	250
IW101-02A	TTA-1	15	10/24/2007	7:32	7:43	2.16	24	243
IW101-02B	TTA-1	15	10/24/2007	8:49	9:00	2.16	23	250
IW101-02C	TTA-1	15	10/24/2007	9:00	9:11	2.16	23	242
IW101-03A	TTA-1	15	10/24/2007	7:22	7:32	2.16	27	250
IW101-03B	TTA-1	15	10/24/2007	7:33	7:43	2.16	27	245
IW101-03C	TTA-1	15	10/24/2007	9:39	9:48	2.16	27	250
IW101-04A	TTA-1	15	10/24/2007	12:20	12:31	2.16	24	238
IW101-04B	TTA-1	15	10/24/2007	13:42	13:53	2.16	24	250
IW101-04C	TTA-1	15	10/24/2007	13:54	14:04	2.16	24	241
IW101-05A	TTA-1	15	10/24/2007	12:52	13:02	2.16	27	250
IW101-05B	TTA-1	15	10/24/2007	13:02	13:12	2.16	27	241
IW101-05C	TTA-1	15	10/24/2007	14:32	14:42	2.16	27	250
IW101-06A	TTA-1	15	10/24/2007	14:44	14:56	2.16	27	254
IW101-06B	TTA-1	15	10/24/2007	16:02	16:12	2.16	27	250
IW101-06C	TTA-1	15	10/24/2007	16:12	16:22	2.16	27	245
IW101-07A	TTA-1	15	10/24/2007	9:50	10:00	2.16	27	243
IW101-07B	TTA-1	15	10/24/2007	11:12	11:22	2.16	27	250
IW101-07C	TTA-1	15	10/24/2007	11:23	11:32	2.16	27	242
IW101-08A	TTA-1	15	10/24/2007	15:20	15:30	2.16	24	250
IW101-08B	TTA-1	15	10/24/2007	15:30	15:41	2.16	23	236
IW101-08C	TTA-1	15	10/25/2007	7:16	7:27	2.16	24	250
IW101-09A	TTA-1	15	10/24/2007	10:26	10:37	2.16	24	250
IW101-09B	TTA-1	15	10/24/2007	10:38	10:49	2.16	24	242
IW101-09C	TTA-1	15	10/24/2007	12:06	12:17	2.16	24	256
IW21-01A	TTA-1	10	10/25/2007	7:20	7:38	2.16	27	496
IW21-01B	TTA-1	10	10/25/2007	8:47	9:07	2.16	27	492
IW21-02A	TTA-1	10	10/25/2007	10:26	10:45	2.16	26	494
IW21-02B	TTA-1	10	10/25/2007	12:05	12:24	2.16	27	491
IW21-03A	TTA-1	10	10/25/2007	13:31	13:53	2.16	24	496
IW21-03B	TTA-1	10	10/25/2007	14:18	14:37	2.16	28	496
IW21-04A	TTA-1	10	10/25/2007	15:06	15:27	2.16	24	490
IW21-04B	TTA-1	10	10/25/2007	15:51	16:10	2.16	27	496
IW21-05A	TTA-1	10	10/25/2007	16:41	17:04	2.16	24	494
IW21-05B	TTA-1	10	10/25/2007	17:33	17:53	2.16	27	492
IW85-01	TTA-2	10	10/25/2007	11:22	11:27	2.16	24	111
IW85-02	TTA-2	10	10/25/2007	11:30	11:35	2.16	24	111
IW85-05	TTA-2	10	10/25/2007	11:38	11:44	2.16	24	111
IW85-06	TTA-2	10	10/25/2007	12:20	12:26	2.16	23	133
IW92-01	TTA-2	10	10/25/2007	7:38	7:43	2.16	23	111
IW92-02	TTA-2	10	10/25/2007	7:49	7:54	2.16	22	112
IW92-03	TTA-2	10	10/25/2007	9:32	9:37	2.16	24	111
IW92-04	TTA-2	10	10/25/2007	9:41	9:47	2.16	23	111
IW92-05	TTA-2	10	10/25/2007	9:50	9:55	2.16	24	112
IW92-06	TTA-2	10	10/25/2007	9:59	10:04	2.16	23	111
IW92-07	TTA-2	10	10/25/2007	10:10	11:12	2.16	24	111
IW92-08	TTA-2	10	10/25/2007	11:15	11:20	2.16	24	111

INJECTION 29
INJECTION SUMMARIES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)
IW101-01A	TTA-1	15	11/27/2007	15:11	15:20	2.16	27	250
IW101-01B	TTA-1	15	11/27/2007	15:20	15:30	2.16	27	241
IW101-01C	TTA-1	15	11/27/2007	15:56	16:07	2.16	24	250
IW101-02A	TTA-1	15	11/27/2007	16:09	16:20	2.16	24	248
IW101-02B	TTA-1	15	11/28/2007	7:26	7:37	2.16	24	250
IW101-02C	TTA-1	15	11/28/2007	7:38	7:49	2.16	24	238
IW101-03A	TTA-1	15	11/28/2007	8:20	8:29	2.16	27	250
IW101-03B	TTA-1	15	11/28/2007	8:30	8:40	2.16	27	247
IW101-03C	TTA-1	15	11/28/2007	9:02	9:12	2.16	24	250
IW101-04A	TTA-1	15	11/28/2007	12:04	12:15	2.16	27	244
IW101-04B	TTA-1	15	11/28/2007	12:45	12:59	2.16	24	250
IW101-04C	TTA-1	15	11/28/2007	13:00	13:11	2.16	24	243
IW101-05A	TTA-1	15	11/28/2007	13:36	13:46	2.16	27	250
IW101-05B	TTA-1	15	11/28/2007	13:46	13:57	2.16	27	236
IW101-05C	TTA-1	15	11/28/2007	15:15	15:24	2.16	28	250
IW101-06A	TTA-1	15	11/28/2007	15:26	15:37	2.16	28	252
IW101-06B	TTA-1	15	11/28/2007	16:42	16:51	2:16	28	250
IW101-06C	TTA-1	15	11/28/2007	16:52	17:02	2:16	29	244
IW101-07A	TTA-1	15	11/28/2007	9:15	9:26	2.16	24	240
IW101-07B	TTA-1	15	11/28/2007	9:51	10:00	2.16	28	250
IW101-07C	TTA-1	15	11/28/2007	10:00	10:10	2.16	27	242
IW101-08A	TTA-1	15	11/28/2007	14:27	14:38	2:16	24	250
IW101-08B	TTA-1	15	11/28/2007	14:39	14:49	2.16	23	240
IW101-08C	TTA-1	15	11/28/2007	15:47	15:58	2.16	23	245
IW101-09A	TTA-1	15	11/28/2007	10:40	10:51	2.16	24	250
IW101-09B	TTA-1	15	11/28/2007	10:51	11:02	2.16	24	240
IW101-09C	TTA-1	15	11/28/2007	11:53	12:02	2.16	27	250
IW21-01A	TTA-1	10	11/29/2007	7:10	7:29	2.16	27	497
IW21-01B	TTA-1	10	11/29/2007	7:51	8:12	2.16	24	496
IW21-02A	TTA-1	10	11/29/2007	8:38	8:57	2.16	27	497
IW21-02B	TTA-1	10	11/29/2007	9:39	10:00	2.16	24	488
IW21-03A	TTA-1	10	11/29/2007	10:30	10:48	2.16	27	489
IW21-03B	TTA-1	10	11/29/2007	11:33	11:55	2.16	24	492
IW21-04A	TTA-1	10	11/29/2007	12:25	12:44	2.16	27	491
IW21-04B	TTA-1	10	11/29/2007	13:18	13:39	2.16	24	492
IW21-05A	TTA-1	10	11/29/2007	14:12	14;31	2.16	27	493
IW21-05B	TTA-1	10	11/29/2007	15:01	15:23	2.16	24	491
IW85-01	TTA-2	10	11/30/2007	7:45	7:51	2.16	23	102
IW85-02	TTA-2	10	11/30/2007	8:36	8:41	2.16	23	111
IW85-05	TTA-2	10	11/30/2007	8:46	8:51	2.16	23	111
IW85-06	TTA-2	10	11/30/2007	8:58	9:03	2.16	23	103
IW92-01	TTA-2	10	11/29/2007	15:49	15:54	2.16	26	109
IW92-02	TTA-2	10	11/29/2007	15:54	15:58	2.16	25	108
IW92-03	TTA-2	10	11/29/2007	16:00	16:05	2.16	26	109
IW92-04	TTA-2	10	11/29/2007	16:07	16:12	2.16	25	110
IW92-05	TTA-2	10	11/30/2007	16:14	7:13	2.16	24	109
IW92-06	TTA-2	10	11/30/2007	7:17	7:23	2.16	23	111
IW92-07	TTA-2	10	11/30/2007	7:27	7:32	2.16	23	110
IW92-08	TTA-2	10	11/30/2007	7:36	7:42	2.16	23	109

INJECTION 30
INJECTION SUMMARIES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)
IW101-01A	TTA-1	15	12/19/2007	10:44	10:55	2.16	24	250
IW101-01B	TTA-1	15	12/19/2007	10:55	11:06	2.16	23	236
IW101-01C	TTA-1	15	12/19/2007	12:10	12:21	2.16	11	24
IW101-02A	TTA-1	15	12/19/2007	11:00	11:09	2.16	28	250
IW101-02B	TTA-1	15	12/19/2007	11:10	11:19	2.16	27	233
IW101-02C	TTA-1	15	12/19/2007	13:06	13:16	2.16	29	250
IW101-03A	TTA-1	15	12/19/2007	12:24	12:36	2:16	23	248
IW101-03B	TTA-1	15	12/19/2007	14:00	14:11	2.16	24	250
IW101-03C	TTA-1	15	12/19/2007	14:12	14:23	2.16	23	236
IW101-04A	TTA-1	15	12/19/2007	16:44	16:54	2:16	29	250
IW101-04B	TTA-1	15	12/19/2007	16:54	17:03	2.16	28	242
IW101-04C	TTA-1	15	12/20/2007	8:02	8:12	2.16	23	250
IW101-05A	TTA-1	15	12/20/2007	9:35	9:46	2.16	23	250
IW101-05B	TTA-1	15	12/20/2007	9:46	9:57	2.16	23	236
IW101-05C	TTA-1	15	12/20/2007	11:14	11:25	2.16	23	250
IW101-06A	TTA-1	15	12/20/2007	11:27	11:38	2.16	23	239
IW101-06B	TTA-1	15	12/20/2007	13:00	13:11	2:16	23	250
IW101-06C	TTA-1	15	12/20/2007	13:12	13:23	2:16	23	243
IW101-07A	TTA-1	15	12/19/2007	13:18	13:28	2:16	28	241
IW101-07B	TTA-1	15	12/19/2007	14:53	15:03	2.16	27	250
IW101-07C	TTA-1	15	12/19/2007	15:03	15:13	2.16	27	240
IW101-08A	TTA-1	15	12/20/2007	14:48	14:59	2:16	23	250
IW101-08B	TTA-1	15	12/20/2007	15:00	15:10	2.16	23	238
IW101-08C	TTA-1	15	12/20/2007	16:12	16:23	2.16	23	246
IW101-09A	TTA-1	15	12/20/2007	15:45	15:56	2.16	24	250
IW101-09B	TTA-1	15	12/20/2007	15:57	16:08	2.16	23	239
IW101-09C	TTA-1	15	12/20/2007	8:16	8:27	2.16	23	238
IW21-01A	TTA-1	10	12/20/2007	8:14	8:33	2.16	28	492
IW21-01B	TTA-1	10	12/20/2007	10:23	10:43	2.16	27	491
IW21-02A	TTA-1	10	12/20/2007	12:06	12:26	2.16	27	494
IW21-02B	TTA-1	10	12/20/2007	14:02	14:19	2.16	27	488
IW21-03A	TTA-1	10	12/20/2007	15:39	15:59	2.16	27	492
IW21-03B	TTA-1	10	12/21/2007	7:21	7:43	2.16	23	493
IW21-04A	TTA-1	10	12/21/2007	8:11	8:30	2.16	27	491
IW21-04B	TTA-1	10	12/21/2007	8;58	9:20	2.16	23	493
IW21-05A	TTA-1	10	12/21/2007	10:12	10:31	2.16	28	495
IW21-05B	TTA-1	10	12/21/2007	11:00	11:22	2.16	23	489
IW85-01	TTA-2	10	12/21/2007	13:35	14:57	2.16	22	114
IW85-02	TTA-2	10	12/21/2007	14:31	14:36	2.16	23	114
IW85-05	TTA-2	10	12/21/2007	14:39	14:44	2.16	23	111
IW85-06	TTA-2	10	12/21/2007	14:48	14:53	2.16	23	111
IW92-01	TTA-2	10	12/21/2007	12:19	12:24	2.16	26	111
IW92-02	TTA-2	10	12/21/2007	12:30	12:35	2.16	24	111
IW92-03	TTA-2	10	12/21/2007	12:37	12:42	2.16	26	111
IW92-04	TTA-2	10	12/21/2007	12:44	12:49	2.16	24	111
IW92-05	TTA-2	10	12/21/2007	12:56	13:07	2.16	26	110
IW92-06	TTA-2	10	12/21/2007	13:10	13:15	2.16	23	109
IW92-07	TTA-2	10	12/21/2007	13:19	13:24	2.16	23	109
IW92-08	TTA-2	10	12/21/2007	13:30	13:35	2.16	23	109

INJECTION 31
INJECTION SUMMARIES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)
IW101-01A	TTA-1	15	1/30/2008	8:03	8:14	2.16	24	239
IW101-01B	TTA-1	15	1/30/2008	7:51	8:02	2.16	24	250
IW101-01C	TTA-1	15	1/30/2008	8:38	8:48	2.16	27	250
IW101-02A	TTA-1	15	1/30/2008	8:50	9:00	2.16	27	244
IW101-02B	TTA-1	15	1/30/2008	9:25	9:36	2.16	24	250
IW101-02C	TTA-1	15	1/30/2008	9:37	9:48	2.16	23	234
IW101-03A	TTA-1	15	1/30/2008	10:23	10:32	2:16	28	250
IW101-03B	TTA-1	15	1/30/2008	10:30	10:43	2.16	27	241
IW101-03C	TTA-1	15	1/30/2008	11:24	11:35	2.16	24	250
IW101-04A	TTA-1	15	1/30/2008	13:58	14:07	2:16	27	250
IW101-04B	TTA-1	15	1/30/2008	14:08	14:18	2.16	28	240
IW101-04C	TTA-1	15	1/30/2008	15:12	15:23	2.16	24	242
IW101-05A	TTA-1	15	1/30/2008	7:40	7:51	2.16	28	301
IW101-05B	TTA-1	15	1/30/2008	7:52	15:19	2.16	28	262
IW101-05C	TTA-1	15	1/30/2008	9:58	10:07	2.16	29	249
IW101-06A	TTA-1	15	1/30/2008	10:08	10:18	2.16	28	244
IW101-06B	TTA-1	15	1/30/2008	11:41	11:50	2:16	28	250
IW101-06C	TTA-1	15	1/30/2008	11:51	12:00	2:16	27	241
IW101-07A	TTA-1	15	1/30/2008	11:37	11:48	2.16	23	239
IW101-07B	TTA-1	15	1/30/2008	12:18	12:28	2.16	27	250
IW101-07C	TTA-1	15	1/30/2008	12:28	12:38	2.16	27	240
IW101-08A	TTA-1	15	1/31/2008	13:36	13:44	2:16	29	250
IW101-08B	TTA-1	15	1/31/2008	13:45	17:54	2.16	28	239
IW101-08C	TTA-1	15	1/31/2008	15:02	15:12	2.16	27	250
IW101-09A	TTA-1	15	1/30/2008	13:07	13:18	2.16	24	250
IW101-09B	TTA-1	15	1/30/2008	13:19	13:30	2.16	24	240
IW101-09C	TTA-1	15	1/30/2008	14:57	15:08	2.16	24	250
IW21-01A	TTA-1	10	1/31/2008	7:36	7:56	2.16	23	491
IW21-01B	TTA-1	10	1/31/2008	9:00	9:26	2.16	24	490
IW21-02A	TTA-1	10	1/31/2008	10:53	11:13	2.16	24	483
IW21-02B	TTA-1	10	1/31/2008	12:38	13:00	2.16	24	489
IW21-03A	TTA-1	10	1/31/2008	14:29	14:51	2.16	23	497
IW21-03B	TTA-1	10	2/4/2008	7:36	7:55	2.16	28	494
IW21-04A	TTA-1	10	2/4/2008	8:30	8:51	2.16	24	492
IW21-04B	TTA-1	10	2/4/2008	9:20	9:38	2.16	28	488
IW21-05A	TTA-1	10	2/4/2008	10:10	10:32	2.16	24	488
IW21-05B	TTA-1	10	2/4/2008	11:07	11:26	2.16	27	489
IW85-01	TTA-2	10	2/4/2008	14:23	14:28	2.16	27	105
IW85-02	TTA-2	10	2/4/2008	14:37	14:42	2.16	24	109
IW85-05	TTA-2	10	2/4/2008	14:45	14:50	2.16	24	111
IW85-06	TTA-2	10	2/4/2008	14:54	14:55	2.16	24	105
IW92-01	TTA-2	10	2/4/2008	12:54	12:58	2.16	25	110
IW92-02	TTA-2	10	2/4/2008	13:03	13:08	2.16	23	110
IW92-03	TTA-2	10	2/4/2008	13:12	13:17	2.16	23	110
IW92-04	TTA-2	10	2/4/2008	13:21	13:26	2.16	23	109
IW92-05	TTA-2	10	2/4/2008	13:30	13:47	2.16	23	110
IW92-06	TTA-2	10	2/4/2008	13:53	13:58	2.16	27	110
IW92-07	TTA-2	10	2/4/2008	14:05	14:10	2.16	27	109
IW92-08	TTA-2	10	2/4/2008	14:15	14:20	2.16	27	109

INJECTION 32
INJECTION SUMMARIES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)
IW101-01A	TTA-1	15	2/28/2008	8:25	8:37	2.16	24	250
IW101-01B	TTA-1	15	2/28/2008	8:38	8:49	2.16	24	236
IW101-01C	TTA-1	15	2/28/2008	9:23	9:32	2.16	28	250
IW101-02A	TTA-1	15	2/28/2008	9:36	9:46	2.16	28	241
IW101-02B	TTA-1	15	2/28/2008	10:16	10:28	2.16	24	250
IW101-02C	TTA-1	15	2/28/2008	10:29	10:40	2.16	24	236
IW101-03A	TTA-1	15	2/28/2008	11:13	11:21	2:16	28	250
IW101-03B	TTA-1	15	2/28/2008	11:24	11:33	2.16	27	235
IW101-03C	TTA-1	15	2/28/2008	12:40	12:51	2.16	24	249
IW101-04A	TTA-1	15	2/29/2008	7:50	8:02	2:16	24	242
IW101-04B	TTA-1	15	2/29/2008	9:13	9:24	2.16	23	249
IW101-04C	TTA-1	15	2/29/2008	9:27	9:38	2.16	23	241
IW101-05A	TTA-1	15	2/29/2008	7:58	8:07	2.16	28	250
IW101-05B	TTA-1	15	2/29/2008	8:09	8:19	2.16	28	234
IW101-05C	TTA-1	15	2/29/2008	10:09	10:19	2.16	29	250
IW101-06A	TTA-1	15	2/29/2008	10:24	10:33	2.16	29	254
IW101-06B	TTA-1	15	2/29/2008	12:00	12:09	2:16	29	250
IW101-06C	TTA-1	15	2/29/2008	12:10	12:20	2:16	27	242
IW101-07A	TTA-1	15	2/28/2008	12:55	13:06	2.16	24	241
IW101-07B	TTA-1	15	2/28/2008	13:33	13:43	2.16	27	250
IW101-07C	TTA-1	15	2/28/2008	13:44	13:54	2.16	27	238
IW101-08A	TTA-1	15	2/29/2008	11:03	11:13	2:16	24	250
IW101-08B	TTA-1	15	2/29/2008	11:15	11:27	2.16	24	235
IW101-08C	TTA-1	15	2/29/2008	12:32	12:43	2.16	24	244
IW101-09A	TTA-1	15	2/28/2008	14:24	14:35	2:16	24	250
IW101-09B	TTA-1	15	2/28/2008	14:36	14:51	2.16	24	240
IW101-09C	TTA-1	15	2/29/2008	7:36	7:47	2.16	24	250
IW21-01A	TTA-1	10	2/29/2008	13:33	13:52	2.16	28	495
IW21-01B	TTA-1	10	2/29/2008	14:27	14:49	2.16	23	493
IW21-02A	TTA-1	10	3/3/2008	7:40	8:00	2.16	28	491
IW21-02B	TTA-1	10	3/3/2008	7:19	7:40	2.16	23	492
IW21-03A	TTA-1	10	3/30/2008	9:34	9:53	2.16	28	488
IW21-03B	TTA-1	10	3/3/2008	8:48	9:10	2.16	23	489
IW21-04A	TTA-1	10	3/3/2008	11:34	11:52	2.16	27	490
IW21-04B	TTA-1	10	3/3/2008	10:33	10:55	2.16	23	490
IW21-05A	TTA-1	10	3/3/2008	13:29	13:48	2.16	28	491
IW21-05B	TTA-1	10	3/3/2008	12:29	12:51	2.16	23	488
IW85-01	TTA-2	10	3/4/2008	8:17	8:22	2.16	25	105
IW85-02	TTA-2	10	3/4/2008	8:39	8:43	2.16	24	110
IW85-05	TTA-2	10	3/4/2008	8:50	8:55	2.16	24	111
IW85-06	TTA-2	10	3/4/2008	9:04	9:09	2.16	23	108
IW92-01	TTA-2	10	3/3/2008	14:22	14:28	2.16	23	107
IW92-02	TTA-2	10	3/3/2008	14:32	14:38	2.16	24	109
IW92-03	TTA-2	10	3/3/2008	14:45	14:51	2.16	24	110
IW92-04	TTA-2	10	3/3/2008	14:58	15:03	2.16	23	108
IW92-05	TTA-2	10	3/4/2008	15:06	7:42	2.16	27	111
IW92-06	TTA-2	10	3/4/2008	7:47	7:51	2.16	27	111
IW92-07	TTA-2	10	3/4/2008	7:58	8:02	2.16	25	111
IW92-08	TTA-2	10	3/4/2008	8:07	8:12	2.16	27	107

INJECTION 33
INJECTION SUMMARIES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)
IW101-01A	TTA-1	15	3/24/2008	8:13	8:22	2.16	28	250
IW101-01B	TTA-1	15	3/24/2008	8:24	8:34	2.16	27	239
IW101-01C	TTA-1	15	3/24/2008	9:20	9:31	2.16	24	250
IW101-02A	TTA-1	15	3/24/2008	9:35	9:46	2.16	24	245
IW101-02B	TTA-1	15	3/24/2008	10:02	10:12	2.16	27	250
IW101-02C	TTA-1	15	3/24/2008	10:13	10:23	2.16	27	235
IW101-03A	TTA-1	15	3/24/2008	10:56	11:07	2:16	24	250
IW101-03B	TTA-1	15	3/24/2008	11:08	11:19	2.16	23	243
IW101-03C	TTA-1	15	3/24/2008	11:58	12:08	2.16	27	251
IW101-04A	TTA-1	15	3/24/2008	14:52	15:03	2:16	24	242
IW101-04B	TTA-1	15	3/25/2008	7:38	7:49	2.16	24	250
IW101-04C	TTA-1	15	3/25/2008	7:50	8:00	2.16	24	243
IW101-05A	TTA-1	15	3/25/2008	8:25	8:35	2.16	28	250
IW101-05B	TTA-1	15	3/25/2008	8:36	8:45	2.16	27	242
IW101-05C	TTA-1	15	3/25/2008	9:15	9:26	2.16	24	250
IW101-06A	TTA-1	15	3/25/2008	9:28	9:39	2.16	24	247
IW101-06B	TTA-1	15	3/25/2008	10:12	10:21	2:16	28	250
IW101-06C	TTA-1	15	3/25/2008	10:22	10:32	2:16	27	242
IW101-07A	TTA-1	15	3/24/2008	12:11	12:20	2.16	27	242
IW101-07B	TTA-1	15	3/24/2008	12:51	13:03	2.16	24	250
IW101-07C	TTA-1	15	3/24/2008	13:04	13:15	2.16	23	239
IW101-08A	TTA-1	15	3/25/2008	11:03	11:14	2:16	24	250
IW101-08B	TTA-1	15	3/25/2008	11:16	11:27	2.16	24	242
IW101-08C	TTA-1	15	3/25/2008	11:52	12:02	2.16	24	245
IW101-09A	TTA-1	15	3/24/2008	13:45	13:55	2:16	28	250
IW101-09B	TTA-1	15	3/24/2008	13:56	14:06	2.16	28	244
IW101-09C	TTA-1	15	3/24/2008	14:37	14:47	2.16	24	250
IW21-01A	TTA-1	10	3/25/2008	12:42	13:03	2.16	24	493
IW21-01B	TTA-1	10	3/25/2008	13:35	13:54	2.16	28	491
IW21-02A	TTA-1	10	3/25/2008	14:30	14:51	2.16	24	489
IW21-02B	TTA-1	10	3/26/2008	7:18	7:39	2.16	24	487
IW21-03A	TTA-1	10	3/26/2008	8:14	8:32	2.16	27	489
IW21-03B	TTA-1	10	3/26/2008	8:52	9:14	2.16	24	494
IW21-04A	TTA-1	10	3/26/2008	9:42	10:00	2.16	27	493
IW21-04B	TTA-1	10	3/26/2008	10:34	10:55	2.16	24	495
IW21-05A	TTA-1	10	3/26/2008	11:26	11:46	2.16	27	492
IW21-05B	TTA-1	10	3/26/2008	12:16	12:38	2.16	22	489
IW85-01	TTA-2	10	3/26/2008	14:23	14:39	2.16	22	109
IW85-02	TTA-2	10	3/26/2008	14:41	14:46	2.16	27	111
IW85-05	TTA-2	10	3/26/2008	14:48	14:52	2.16	27	111
IW85-06	TTA-2	10	3/26/2008	14:54	14:59	2.16	26	116
IW92-01	TTA-2	10	3/26/2008	13:03	13:08	2.16	24	109
IW92-02	TTA-2	10	3/26/2008	13:11	13:16	2.16	25	111
IW92-03	TTA-2	10	3/26/2008	13:17	13:23	2.16	26	116
IW92-04	TTA-2	10	3/26/2008	13:24	13:28	2.16	26	108
IW92-05	TTA-2	10	3/26/2008	13:31	13:57	2.16	22	111
IW92-06	TTA-2	10	3/26/2008	13:59	14:04	2.16	22	110
IW92-07	TTA-2	10	3/26/2008	14:07	14:12	2.16	22	110
IW92-08	TTA-2	10	3/26/2008	14:14	14:19	2.16	22	111

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Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)
IW101-01A	TTA-1	15	4/30/2008	14:32	14:41	2.16	27	250
IW101-01B	TTA-1	15	4/30/2008	14:41	14:51	2.16	27	235
IW101-01C	TTA-1	15	4/30/2008	15:19	15:30	2.16	24	250
IW101-02A	TTA-1	15	4/30/2008	15:32	15:43	2.16	24	250
IW101-02B	TTA-1	15	5/1/2008	7:13	7:22	2.16	27	250
IW101-02C	TTA-1	15	5/1/2008	7:24	7:33	2.16	27	240
IW101-03A	TTA-1	15	5/1/2008	8:32	8:42	2:16	28	250
IW101-03B	TTA-1	15	5/1/2008	8:24	8:52	2.16	27	242
IW101-03C	TTA-1	15	5/1/2008	10:18	10:28	2.16	27	250
IW101-04A	TTA-1	15	5/1/2008	15:48	15:58	2:16	27	244
IW101-04B	TTA-1	15	5/2/2008	8:55	9:05	2.16	27	250
IW101-04C	TTA-1	15	5/2/2008	9:05	9:15	2.16	27	241
IW101-05A	TTA-1	15	5/2/2008	10:56	11:06	2.16	27	250
IW101-05B	TTA-1	15	5/2/2008	11:06	11:16	2.16	27	242
IW101-05C	TTA-1	15	5/2/2008	12:46	12:56	2.16	27	250
IW101-06A	TTA-1	15	5/2/2008	12:57	13:07	2.16	27	251
IW101-06B	TTA-1	15	5/2/2008	15:11	15:21	2:16	27	250
IW101-06C	TTA-1	15	5/2/2008	15:22	15:32	2:16	27	241
IW101-07A	TTA-1	15	5/1/2008	10:29	10:39	2.16	27	243
IW101-07B	TTA-1	15	5/1/2008	12:04	12:14	2.16	27	250
IW101-07C	TTA-1	15	5/1/2008	12:14	12:24	2.16	27	241
IW101-08A	TTA-1	15	5/5/2008	7:35	7:45	2:16	24	250
IW101-08B	TTA-1	15	5/5/2008	7:45	7:58	2.16	23	242
IW101-08C	TTA-1	15	5/5/2008	8:29	8:39	2.16	27	250
IW101-09A	TTA-1	15	5/1/2008	13:50	14:00	2:16	28	250
IW101-09B	TTA-1	15	5/1/2008	14:03	14:13	2.16	27	249
IW101-09C	TTA-1	15	5/1/2008	15:36	15:46	2.16	27	250
IW21-01A	TTA-1	10	4/30/2008	16:17	16:35	2.16	28	488
IW21-01B	TTA-1	10	5/1/2008	7:36	7:57	2.16	23	488
IW21-02A	TTA-1	10	5/1/2008	9:24	9:45	2.16	23	486
IW21-02B	TTA-1	10	5/1/2008	11:13	11:34	2.16	23	491
IW21-03A	TTA-1	10	5/1/2008	12:58	13:33	2.16	23	484
IW21-03B	TTA-1	10	5/1/2008	14:43	15:04	2.16	23	493
IW21-04A	TTA-1	10	5/1/2008	16:27	16:48	2.16	23	488
IW21-04B	TTA-1	10	5/2/2008	8:29	8:50	2.16	23	501
IW21-05A	TTA-1	10	5/2/2008	10:01	10:22	2.16	23	491
IW21-05B	TTA-1	10	5/2/2008	11:58	12:19	2.16	23	487
IW85-01	TTA-2	10	5/5/2008	8:48	8:49	2.16	27	111
IW85-02	TTA-2	10	5/5/2008	8:52	8:56	2.16	27	111
IW85-05	TTA-2	10	5/5/2008	8:59	9:04	2.16	27	112
IW85-06	TTA-2	10	5/5/2008	9:26	9:32	2.16	25	133
IW92-01	TTA-2	10	5/2/2008	13:35	13:40	2.16	24	111
IW92-02	TTA-2	10	5/2/2008	14:59	15:04	2.16	23	111
IW92-03	TTA-2	10	5/2/2008	15:07	15:12	2.16	24	111
IW92-04	TTA-2	10	5/2/2008	15:15	15:20	2.16	23	111
IW92-05	TTA-2	10	5/2/2008	16:20	16:22	2.16	24	111
IW92-06	TTA-2	10	5/2/2008	16:25	16:29	2.16	24	110
IW92-07	TTA-2	10	5/2/2008	16:31	16:36	2.16	24	111
IW92-08	TTA-2	10	5/2/2008	16:38	16:45	2.16	24	111
PMW101-08A	TTA-1	15	5/5/2008	9:59	10:19	2.16	15	250
PMW101-08B	TTA-1	15	5/5/2008	10:21	10:39	2.16	15	241
PMW21-01	TTA-1	15	5/5/2008	11:37	12:00	2.16	28	497
PMW21-02	TTA-1	15	5/5/2008	13:22	13:50	2.16	21	490
PMW21-04	TTA-1	15	5/5/2008	14:25	14:47	2.16	25	494
PMW92-01	TTA-2	10	5/6/2008	15:21	8:24	2.16	2	250
PMW02-05	TTA-2	10	5/6/2008	8:35	9:01	2.16	17	229
PMW85-05	TTA-2	10	5/6/2008	11:01	16:25	2.16	2	242
IW-01	TTA-2	-	5/6/2008	9:23	9:35	2.16	28	250

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Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)
IW101-01A	TTA-1	15	5/29/2008	7:35	7:45	2.16	28	250
IW101-01B	TTA-1	15	5/29/2008	7:45	7:55	2.16	27	246
IW101-01C	TTA-1	15	5/29/2008	8:24	8:34	2.16	25	250
IW101-02A	TTA-1	15	5/29/2008	8:36	8:48	2.16	25	262
IW101-02B	TTA-1	15	5/29/2008	9:17	9:27	2.16	27	250
IW101-02C	TTA-1	15	5/29/2008	9:27	9:38	2.16	27	239
IW101-03A	TTA-1	15	5/29/2008	10:13	10:24	2:16	25	250
IW101-03B	TTA-1	15	5/29/2008	10:24	10:35	2.16	25	239
IW101-03C	TTA-1	15	5/29/2008	11:20	11:30	2.16	28	250
IW101-04A	TTA-1	15	5/29/2008	13:56	14:07	2:16	25	242
IW101-04B	TTA-1	15	5/29/2008	14:38	14:47	2.16	28	250
IW101-04C	TTA-1	15	5/29/2008	14:47	14:57	2.16	28	242
IW101-05A	TTA-1	15	5/30/2008	7:22	7;32	2.16	28	250
IW101-05B	TTA-1	15	5/30/2008	7:32	7:41	2.16	27	238
IW101-05C	TTA-1	15	5/30/2008	8:02	8:12	2.16	25	250
IW101-06A	TTA-1	15	5/30/2008	8:14	8:25	2.16	25	238
IW101-06B	TTA-1	15	5/30/2008	8:50	8:59	2:16	28	250
IW101-06C	TTA-1	15	5/30/2008	9:00	9:10	2:16	27	246
IW101-07A	TTA-1	15	5/29/2008	11:31	11:41	2.16	27	243
IW101-07B	TTA-1	15	5/29/2008	12:03	12:13	2.16	25	250
IW101-07C	TTA-1	15	5/29/2008	12:13	12:24	2.16	25	240
IW101-08A	TTA-1	15	5/30/2008	9:40	9;50	2:16	25	250
IW101-08B	TTA-1	15	5/30/2008	9:52	10:02	2.16	24	239
IW101-08C	TTA-1	15	5/30/2008	10:13	10:24	2.16	27	245
IW101-09A	TTA-1	15	5/29/2008	12:50	13:00	2:16	28	250
IW101-09B	TTA-1	15	5/29/2008	13:00	13:10	2.16	28	247
IW101-09C	TTA-1	15	5/29/2008	13:44	13:54	2.16	25	250
IW21-01A	TTA-1	10	5/30/2008	11:07	11:28	2.16	25	498
IW21-01B	TTA-1	10	5/30/2008	11:54	11:14	2.16	27	497
IW21-02A	TTA-1	10	5/30/2008	5:44	13;04	2.16	25	487
IW21-02B	TTA-1	10	5/30/2008	13:35	13:54	2.16	27	490
IW21-03A	TTA-1	10	5/30/2008	14;25	14:45	2.16	24	491
IW21-03B	TTA-1	10	6/2/2008	7:14	7:34	2.16	24	499
IW21-04A	TTA-1	10	6/2/2008	8:00	8:20	2.16	28	493
IW21-04B	TTA-1	10	6/2/2008	9:00	9:22	2.16	25	491
IW21-05A	TTA-1	10	6/2/2008	10:00	10:19	2.16	26	488
IW21-05B	TTA-1	10	6/2/2008	10:55	11:17	2.16	24	486
IW85-01	TTA-2	10	6/3/2008	8:38	8:43	2.16	27	106
IW85-02	TTA-2	10	6/3/2008	9:04	9:09	2.16	24	108
IW85-05	TTA-2	10	6/3/2008	9:12	9:17	2.16	24	109
IW85-06	TTA-2	10	6/3/2008	9:20	9:25	2.16	24	109
IW92-01	TTA-2	10	6/3/2008	7:19	7:24	2.16	24	110
IW92-02	TTA-2	10	6/3/2008	7:28	7:32	2.16	24	110
IW92-03	TTA-2	10	6/3/2008	7:37	7:42	2.16	24	110
IW92-04	TTA-2	10	6/3/2008	7:46	7:51	2.16	24	109
IW92-05	TTA-2	10	6/3/2008	7:53	8:11	2.16	27	110
IW92-06	TTA-2	10	6/3/2008	8:16	8:21	2.16	26	110
IW92-07	TTA-2	10	6/3/2008	8:24	8:29	2.16	27	109
IW92-08	TTA-2	10	6/3/2008	8:31	8:36	2.16	26	110
PMW101-08A	TTA-1	15	6/2/2008	12:00	12:12	2.16	25	250
PMW101-08B	TTA-1	15	6/2/2008	12:14	12:26	2.16	26	241
PMW21-01	TTA-1	15	6/2/2008	12:55	13:18	2.16	24	493
PMW21-02	TTA-1	15	6/2/2008	13:45	14:12	2.16	21	494
PMW21-04	TTA-1	15	6/2/2008	14:35	14:56	2.16	22	494
PMW92-01	TTA-2	10	6/3/2008	12:30	13:18	2.16	3	110
PMW92-05	TTA-2	10	6/3/2008	12:16	12:21	2.16	26	105
PMW85-05	TTA-2	10	6/3/2008	9:33	11:03	2.16	1	108
IW-01	TTA-2	-	6/3/2008	11:23	12:07	2.16	25	107

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Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)
IW101-01A	TTA-1	15	6/23/2008	7:44	7:55	2.16	25	250
IW101-01B	TTA-1	15	6/23/2008	7:57	8:08	2.16	25	230
IW101-01C	TTA-1	15	6/23/2008	9:15	9:25	2.16	25	250
IW101-02A	TTA-1	15	6/23/2008	8:20	8:29	2.16	27	250
IW101-02B	TTA-1	15	6/23/2008	8:33	8:42	2.16	28	243
IW101-02C	TTA-1	15	6/23/2008	10:13	10:22	2.16	28	250
IW101-03A	TTA-1	15	6/23/2008	9:28	9:40	2:16	25	259
IW101-03B	TTA-1	15	6/23/2008	11:00	11:10	2.16	25	250
IW101-03C	TTA-1	15	6/23/2008	11:10	11:20	2.16	25	236
IW101-04A	TTA-1	15	6/23/2008	13:42	13:51	2:16	28	250
IW101-04B	TTA-1	15	6/23/2008	13:53	14:03	2.16	27	245
IW101-04C	TTA-1	15	6/23/2008	15:25	15:34	2.16	28	250
IW101-05A	TTA-1	15	6/23/2008	14:39	14:49	2.16	25	243
IW101-05B	TTA-1	15	6/23/2008	16:05	16:16	2.16	24	250
IW101-05C	TTA-1	15	6/23/2008	16:18	16:29	2.16	25	236
IW101-06A	TTA-1	15	6/23/2008	15:36	15:46	2.16	28	242
IW101-06B	TTA-1	15	6/24/2008	7:48	7:56	2:16	28	250
IW101-06C	TTA-1	15	6/24/2008	8:48	8:57	2:16	28	250
IW101-07A	TTA-1	15	6/23/2008	10:25	10:34	2.16	27	236
IW101-07B	TTA-1	15	6/23/2008	11:58	12:08	2.16	27	250
IW101-07C	TTA-1	15	6/23/2008	12:10	12:20	2.16	27	240
IW101-08A	TTA-1	15	6/24/2008	7:18	7:28	2:16	25	250
IW101-08B	TTA-1	15	6/24/2008	7:29	7:39	2.16	24	238
IW101-08C	TTA-1	15	6/24/2008	8:46	8:57	2.16	25	250
IW101-09A	TTA-1	15	6/23/2008	12:43	12:53	2:16	25	250
IW101-09B	TTA-1	15	6/23/2008	12:54	13:05	2.16	25	242
IW101-09C	TTA-1	15	6/23/2008	14:26	14:36	2.16	25	250
IW21-01A	TTA-1	10	6/24/2008	9:48	10:06	2.16	28	494
IW21-01B	TTA-1	10	6/24/2008	11:10	11:30	2.16	28	493
IW21-02A	TTA-1	10	6/24/2008	11:59	12:20	2.16	24	485
IW21-02B	TTA-1	10	6/24/2008	13:39	14:00	2.16	24	491
IW21-03A	TTA-1	10	6/24/2008	12:53	13:12	2.16	28	492
IW21-03B	TTA-1	10	6/24/2008	14:32	14:51	2.16	28	492
IW21-04A	TTA-1	10	6/24/2008	15:21	15:42	2.16	24	489
IW21-04B	TTA-1	10	6/24/2008	16:13	16:31	2.16	28	496
IW21-05A	TTA-1	10	6/25/2008	7:13	7:32	2.16	28	492
IW21-05B	TTA-1	10	6/25/2008	7:49	8:11	2.16	24	496
IW85-01	TTA-2	10	6/25/2008	13:09	13:14	2.16	27	106
IW85-02	TTA-2	10	6/25/2008	13:30	13:36	2.16	25	109
IW85-05	TTA-2	10	6/25/2008	13:38	13:43	2.16	25	109
IW85-06	TTA-2	10	6/25/2008	13:45	13:51	2.16	25	109
IW92-01	TTA-2	10	6/25/2008	11:17	11:22	2.16	25	110
IW92-02	TTA-2	10	6/25/2008	11:25	11:30	2.16	25	109
IW92-03	TTA-2	10	6/25/2008	11:37	11:42	2.16	24	111
IW92-04	TTA-2	10	6/25/2008	11:45	11:49	2.16	24	109
IW92-05	TTA-2	10	6/25/2008	11:53	12:44	2.16	28	110
IW92-06	TTA-2	10	6/25/2008	12:48	12:52	2.16	26	110
IW92-07	TTA-2	10	6/25/2008	12:55	13:00	2.16	28	110
IW92-08	TTA-2	10	6/25/2008	13:02	13:06	2.16	28	109
PMW101-08A	TTA-1	15	6/24/2008	10:17	10:27	2.16	25	250
PMW101-08B	TTA-1	15	6/24/2008	10:29	10:40	2.16	24	240
PMW21-01	TTA-1	15	6/25/2008	8:40	8:58	2.16	27	489
PMW21-02	TTA-1	15	6/25/2008	9:43	10:03	2.16	25	490
PMW21-04	TTA-1	15	6/25/2008	10:26	10:45	2.16	28	496
PMW92-01	TTA-2	10	6/25/2008	14:23	14:56	2.16	4	111
PMW92-05	TTA-2	10	6/25/2008	15:10	15:20	2.16	26	110
PMW85-05	TTA-2	10	6/25/2008	14:05	14:50	2.16	3	110
IW-01	TTA-2	-	6/25/2008	15:02	15:27	2.16	27	102

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Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)	ORP (mV)
IW101-01A	TTA-1	15	8/1/2008	7:52	8:03	4.3	28	250	-178
IW101-01B	TTA-1	15	8/1/2008	8:03	8:13	4.3	28	250	-168
IW101-01C	TTA-1	15	8/1/2008	9:35	9:45	4.3	28	250	46
IW101-02A	TTA-1	15	8/1/2008	9:50	10:00	4.3	28	265	-142
IW101-02B	TTA-1	15	8/1/2008	10:26	10:38	4.3	21	250	-141
IW101-02C	TTA-1	15	8/1/2008	10:40	10:51	4.3	22	257	-114
IW101-03A	TTA-1	15	8/1/2008	11:37	11:46	4.3	28	250	-127
IW101-03B	TTA-1	15	8/1/2008	11:46	11:57	4.3	28	261	-149
IW101-03C	TTA-1	15	8/1/2008	12:19	12:31	4.3	23	250	-113
IW101-04A	TTA-1	15	8/4/2008	7:06	7:17	4.3	24	250	-155
IW101-04B	TTA-1	15	8/4/2008	7:18	7:31	4.3	23	252	-113
IW101-04C	TTA-1	15	8/4/2008	7:33	7:42	4.3	28	250	-110
IW101-05A	TTA-1	15	8/4/2008	7:44	7:55	4.3	28	262	-150
IW101-05A*	TTA-1	15	8/4/2008	8:41	8:52	4.3	24	250	-150
IW101-05B	TTA-1	15	8/4/2008	8:53	9:04	4.3	23	246	115
IW101-05C	TTA-1	15	8/4/2008	9:46	9:55	4.3	28	250	-101
IW101-06A	TTA-1	15	8/4/2008	13:32	13:42	8.6	29	250	-130
IW101-06B	TTA-1	15	8/4/2008	13:42	13:53	8.6	27	265	-1
IW101-06C	TTA-1	15	8/4/2008	9:58	10:09	4.3	27	263	-163
IW101-07A	TTA-1	15	8/1/2008	12:33	12:46	4.3	23	263	-114
IW101-07B	TTA-1	15	8/1/2008	13:18	13:28	4.3	29	250	-252
IW101-07C	TTA-1	15	8/1/2008	13:28	13:39	4.3	27	273	-145
IW101-08A	TTA-1	15	8/5/2008	7:03	7:13	8.6	29	250	-106
IW101-08B	TTA-1	15	8/4/2008	11:51	12:00	4.3	29	250	-185
IW101-08C	TTA-1	15	8/4/2008	12:00	12:10	4.3	27	254	-146
IW101-09A	TTA-1	15	8/5/2008	7:16	7:26	8.6	27	256	-132
IW101-09B	TTA-1	15	8/1/2008	14:13	14:24	4.3	23	250	-169
IW101-09C	TTA-1	15	8/1/2008	14:25	14;38	4.3	23	267	-57
IW21-01A	TTA-1	10	7/31/2008	7:34	7:52	4.3	26	499	-183
IW21-01B	TTA-1	10	7/31/2008	7:53	8:18	4.3	24	509	-85
IW21-02A	TTA-1	10	7/31/2008	12:38	12:57	8.6	27	502	25
IW21-02B	TTA-1	10	7/37/08	13:52	14:16	8.6	23	510	-127
IW21-03A	TTA-1	10	7/31/2008	14:26	14:46	8.6	28	509	34
IW21-03B	TTA-1	10	8/1/2008	8:38	9:02	8.6	21	510	-158
IW21-04A	TTA-1	10	7/31/2008	8:59	9:18	4.3	28	504	-173
IW21-04B	TTA-1	10	7/31/2008	9:48	10:12	4.3	24	517	-138
IW21-05A	TTA-1	10	7/31/2008	10:53	11:23	4.3	29	517	-168
IW21-05B	TTA-1	10	7/31/2008	11:52	12:16	4.3	24	513	-91
IW85-01	TTA-2	10	8/5/2008	9:28	9:39	4.3	24	251	-114
IW85-02	TTA-2	10	8/5/2008	9:44	9:55	4.3	22	254	-55
IW85-05	TTA-2	10	8/5/2008	11:28	11:39	4.3	24	250	-185
IW85-06	TTA-2	10	8/5/2008	11:43	11:59	4.3	10	258	-165
IW92-01	TTA-2	10	8/4/2008	10:35	10:50	4.3	20	250	-74
IW92-02	TTA-2	10	8/4/2008	10:52	11:07	4.3	20	257	-165
IW92-03	TTA-2	10	8/4/2008	12:31	12:45	4.3	21	250	-140
IW92-04	TTA-2	10	8/4/2008	12:50	13:06	4.3	10	259	-187
IW92-05	TTA-2	10	8/4/2008	14:26	14:43	4.3	10	250	-255
IW92-06	TTA-2	10	8/4/2008	14:48	15:03	4.3	16	258	-233
IW92-07	TTA-2	10	8/5/2008	7:01	7:12	4.3	22	250	-156
IW92-08	TTA-2	10	8/5/2008	7:17	7:30	4.3	20	254	-150
PMW101-08A	TTA-1	15	8/5/2008	8:44	8:56	4.3	29	250	76
PMW101-08B	TTA-1	15	8/5/2008	8:58	9:08	4.3	28	258	70
PMW21-01	TTA-1	15	8/5/2008	10:41	10:59	4.3	29	503	97
PMW21-02	TTA-1	15	8/5/2008	12:36	13:31	4.3	12	505	87
PMW21-04	TTA-1	15	8/5/2008	14:43	15:05	4.3	26	510	129
PMW92-01**	TTA-2	10	8/6/2008	7:17	7:56	4.3	2	250	-82
PMW92-05	TTA-2	10	8/6/2008	8:26	8:37	4.3	24	231	115
PMW85-05	TTA-2	10	8/6/2008	7:55	12:00	4.3	1	250	-10
IW-01	TTA-2	-	8/6/2008	7:29	7:39	4.3	29	250	-17

Notes: * IW101-05A was injected twice.
** PMW92-01 was started on 8/5 and finished on 8/6

INJECTION 38
INJECTION SUMMARIES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)	ORP (mV)
IW101-01A	TTA-1	15	8/28/2008	7:27	7:37	8.6	24	250	-33
IW101-01B	TTA-1	15	8/27/2008	14:23	14:33	4.3	29	250	-256
IW101-01C	TTA-1	15	8/27/2008	14:33	14:43	4.3	29	252	-123
IW101-02A	TTA-1	15	8/28/2008	9:01	9:13	4.3	29	250	-99
IW101-02B	TTA-1	15	8/28/2008	9:13	9:23	4.3	28	243	-121
IW101-02C	TTA-1	15	8/28/2008	11:29	11:39	4.3	30	250	-284
IW101-03A	TTA-1	15	8/28/2008	7:44	7:57	8.6	23	249	-90
IW101-03B	TTA-1	15	8/28/2008	11:42	11:52	4.3	29	264	-249
IW101-03C	TTA-1	15	8/28/2008	10:01	10:12	8.6	24	250	-76
IW101-04A	TTA-1	15	8/28/2008	7:21	7:30	4.3	28	250	-119
IW101-04B	TTA-1	15	8/28/2008	7:31	7:40	4.3	28	254	-252
IW101-04C	TTA-1	15	8/28/2008	13:17	13:27	4.3	28	259	-135
IW101-05A	TTA-1	15	8/28/2008	13:04	13:13	4.3	28	250	-116
IW101-05B	TTA-1	15	8/28/2008	14:37	14:46	4.3	29	252	-223
IW101-05C	TTA-1	15	8/28/2008	14:47	14:57	4.3	28	247	-126
IW101-06A	TTA-1	15	8/28/2008	10:16	10:28	8.6	24	255	-105
IW101-06B	TTA-1	15	8/29/2008	7:30	7:40	4.3	28	250	-189
IW101-06C	TTA-1	15	8/29/2008	7:40	7:51	4.3	28	258	-161
IW101-07A	TTA-1	15	8/29/2008	8:20	8:31	4.3	23	250	-250
IW101-07B	TTA-1	15	8/29/2008	8:33	8:44	4.3	23	253	-150
IW101-07C	TTA-1	15	8/29/2008	13:38	13:49	8.6	23	253	-90
IW101-08A	TTA-1	15	8/29/2008	9:19	9:28	4.3	30	250	-196
IW101-08B	TTA-1	15	8/29/2008	9:29	9:39	4.3	28	251	-116
IW101-08C	TTA-1	15	8/29/2008	10:09	10:20	4.3	23	250	-182
IW101-09A	TTA-1	15	8/28/2008	12:21	12:33	8.6	23	250	-162
IW101-09B	TTA-1	15	8/29/2008	10:23	10:34	4.3	23	258	-170
IW101-09C	TTA-1	15	8/28/2008	12:23	12:45	8.6	23	252	-64
IW21-01A	TTA-1	10	8/29/2008	12:57	13:16	4.3	27	509	-87
IW21-01B	TTA-1	10	8/29/2008	14:45	15:07	4.3	23	511	-169
IW21-02A	TTA-1	10	8/29/2008	14:00	14:22	8.6	23	504	-51
IW21-02B	TTA-1	10	9/2/2008	7:36	7:59	8.6	24	499	-121
IW21-03A	TTA-1	10	9/2/2008	7:18	7:36	4.3	29	514	-190
IW21-03B	TTA-1	10	9/2/2008	9:00	9:29	4.3	18	500	-177
IW21-04A	TTA-1	10	9/2/2008	10:45	11:04	4.3	28	512	-106
IW21-04B	TTA-1	10	9/2/2008	12:31	12:50	4.3	27	498	-207
IW21-05A	TTA-1	10	9/2/2008	9:47	10:10	8.6	23	506	19
IW21-05B	TTA-1	10	9/2/2008	14:15	14:33	4.3	30	509	-114
IW85-01	TTA-2	10	9/3/2008	11:28	11:36	4.3	25	163	-107
IW85-02	TTA-2	10	9/3/2008	12:42	12:49	4.3	23	169	-135
IW85-05	TTA-2	10	9/3/2008	13:26	13:33	8.6	29	168	-77
IW85-06	TTA-2	10	9/3/2008	12:28	12:35	4.3	21	208	-144
IW92-01	TTA-2	10	9/3/2008	7:29	7:36	4.3	23	167	-317
IW92-02	TTA-2	10	9/3/2008	7:41	7:48	4.3	21	167	-197
IW92-03	TTA-2	10	9/3/2008	7:53	8:00	4.3	22	164	-391
IW92-04	TTA-2	10	9/3/2008	9:01	9:08	4.3	21	167	-381
IW92-05	TTA-2	10	9/3/2008	9:16	9:24	4.3	21	167	-387
IW92-06	TTA-2	10	9/3/2008	9:30	9:37	4.3	22	169	-255
IW92-07	TTA-2	10	9/3/2008	10:41	10:49	4.3	21	166	-108
IW92-08	TTA-2	10	9/3/2008	11:12	11:23	4.3	24	166	-117
PMW101-08A	TTA-1	15	8/29/2008	11:32	11:42	4.3	30	255	-119
PMW101-08B	TTA-1	15	8/29/2008	12:17	12:29	8.6	23	251	-2
PMW21-01	TTA-1	15	9/2/2008	11:38	12:02	8.6	23	507	14
PMW21-02	TTA-1	15	9/2/2008	13:30	14:09	8.6	20	505	-5
PMW21-04	TTA-1	15	9/3/2008	7:42	8:06	8.6	22	504	10
PMW92-01	TTA-2	10	9/2/2008	9:57	10:30	8.6	12	250	-317
PMW92-05	TTA-2	10	9/2/2008	11:20	11:33	8.6	24	249	-387
PMW85-05	TTA-2	10	9/4/2008	13:32	14:45	8.6	2	210	-77
IW-01	TTA-2	-	9/2/2008	13:10	13:21	8.6	23	250	39

INJECTION 39
INJECTION SUMMARIES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)	ORP (mV)
IW101-01A	TTA-1	15	9/25/2008	13:37	13:47	8.6	28	250	-160
IW101-01B	TTA-1	15	9/24/2008	12:54	13:04	4.3	24	250	-270
IW101-01C	TTA-1	15	9/24/2008	13:04	13:17	4.3	24	257	-62
IW101-02A	TTA-1	15	9/24/2008	13:50	13:59	4.3	29	250	-135
IW101-02B	TTA-1	15	9/24/2008	14:00	14:10	4.3	27	243	-313
IW101-02C	TTA-1	15	9/24/2008	14:42	14:54	4.3	24	249	-219
IW101-03A	TTA-1	15	9/24/2008	14:58	15:10	4.3	24	265.6	-240
IW101-03B	TTA-1	15	9/25/2008	7:32	7:43	4.3	24	250	-201
IW101-03C	TTA-1	15	9/25/2008	7:44	7:55	4.3	24	249	-205
IW101-04A	TTA-1	15	9/25/2008	7:45	7:54	4.3	28	250	-161
IW101-04B	TTA-1	15	9/25/2008	7:55	8:06	4.3	28	254	-264
IW101-04C	TTA-1	15	9/25/2008	10:02	10:11	4.3	29	250	-121
IW101-05A	TTA-1	15	9/25/2008	10:14	10:24	4.3	27	253	-204
IW101-05B	TTA-1	15	9/25/2008	12:03	12:12	4.3	28	250	-122
IW101-05C	TTA-1	15	9/25/2008	13:50	14:01	8.6	27	250	-74
IW101-06A	TTA-1	15	9/25/2008	15:05	15:15	8.6	29	250	-140
IW101-06B	TTA-1	15	9/25/2008	12:15	12:25	4.3	29	262	-192
IW101-06C	TTA-1	15	9/25/2008	15:15	15:26	8.6	27	249	-48
IW101-07A	TTA-1	15	9/25/2008	9:06	9:17	4.3	24	250	-172
IW101-07B	TTA-1	15	9/25/2008	9:18	9:29	4.3	23	248	-229
IW101-07C	TTA-1	15	9/26/2008	7:43	7:52	8.6	27	250	-128
IW101-08A	TTA-1	15	9/25/2008	10:49	11:01	4.3	23	250	-221
IW101-08B	TTA-1	15	9/25/2008	11:02	11:14	4.3	23	250	-205
IW101-08C	TTA-1	15	9/25/2008	14:08	14:19	4.3	24	250	-161
IW101-09A	TTA-1	15	9/25/2008	12:56	13:07	4.3	24	250	-273
IW101-09B	TTA-1	15	9/25/2008	13:08	13:18	4.3	24	255	-168
IW101-09C	TTA-1	15	9/26/2008	7:53	8:03	8.6	27	253	-184
IW21-01A	TTA-1	10	9/26/2008	14:32	14:55	4.3	23	498	-223
IW21-01B	TTA-1	10	9/29/2008	7:19	7:43	4.3	21	486	-166
IW21-02A	TTA-1	10	9/29/2008	12:58	13:21	8.6	24	513	-142
IW21-02B	TTA-1	10	9/26/2008	14:02	14:21	17.2	27	503	-68
IW21-03A	TTA-1	10	9/29/2008	8:24	8:44	4.3	27	514	-136
IW21-03B	TTA-1	10	9/29/2008	10:06	10:31	4.3	26	504	-192
IW21-04A	TTA-1	10	9/29/2008	12:56	13:16	4.3	27	509	-204
IW21-04B	TTA-1	10	9/29/2008	14:23	14:43	4.3	25	523	-109
IW21-05A	TTA-1	10	9/29/2008	15:09	15:34	8.6	23	503	-192
IW21-05B	TTA-1	10	9/30/2008	7:32	7:50	4.3	29	512	-175
IW85-01	TTA-2	10	9/30/2008	9:29	9:36	4.3	27	166	-181
IW85-02	TTA-2	10	9/30/2008	9:40	9:47	4.3	27	166	-204
IW85-05	TTA-2	10	9/30/2008	9:51	9:58	4.3	27	169	-215
IW85-06	TTA-2	10	9/26/2008	11:42	11:51	4.3	26	171	-283
IW92-01	TTA-2	10	9/30/2008	10:31	10:39	8.6	23	166	-76
IW92-02	TTA-2	10	9/30/2008	7:06	7:14	4.3	20	166	-165
IW92-03	TTA-2	10	9/30/2008	7:19	7:27	4.3	22	166	-224
IW92-04	TTA-2	10	9/30/2008	7:35	7:44	4.3	20	178	-364
IW92-05	TTA-2	10	9/30/2008	8:40	8:49	4.3	16	166	-244
IW92-06	TTA-2	10	9/30/2008	8:56	9:03	4.3	20	167	-15.5
IW92-07	TTA-2	10	9/30/2008	9:09	9:17	4.3	22	172	-114
IW92-08	TTA-2	10	9/30/2008	14:48	14:58	8.6	25	172	-180
PMW101-08A	TTA-1	15	9/26/2008	8:37	8:49	8.6	24	250	-1
PMW101-08B	TTA-1	15	9/26/2008	11:04	11:29	17.2	10	250	-26
PMW21-01	TTA-1	15	9/29/2008	13:38	13:59	8.6	23	502	72
PMW21-02	TTA-1	15	9/29/2008	9:16	9:58	17.2	14	487	-2
PMW21-04	TTA-1	15	9/29/2008	11:59	12:21	17.2	22	488	55
PMW92-01	TTA-2	10	9/26/2008	9:06	10:20	8.6	7	238	-149
PMW92-05	TTA-2	10	9/26/2008	12:14	12:31	17.2	16	238	-24
PMW85-05	TTA-2	10	9/30/2008	12:42	14:42	8.6	1	75	9
IW-01	TTA-2	-	9/30/2008	11:53	12:47	17.2	23	334	-9

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INJECTION 40
INJECTION SUMMARIES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)	ORP (mV)
IW101-01A	TTA-1	15	10/29/2008	14:12	14:23	8.6	23	250	-45
IW101-01B	TTA-1	15	10/29/2008	7:50	8:00	4.3	28	250	-45
IW101-01C	TTA-1	15	10/29/2008	8:01	8:11	4.3	27	248	16
IW101-02A	TTA-1	15	10/29/2008	14:28	14:40	8.6	23	258	-22
IW101-02B	TTA-1	15	10/29/2008	9:35	9:45	4.3	28	250	-124
IW101-02C	TTA-1	15	10/29/2008	8:12	8:22	4.3	24	250	-1
IW101-03A	TTA-1	15	10/29/2008	8:26	8:36	4.3	25	248.2	-17
IW101-03B	TTA-1	15	10/29/2008	9:47	9:57	4.3	28	258	-46
IW101-03C	TTA-1	15	10/30/2008	7:42	7:54	8.6	23	252	33
IW101-04A	TTA-1	15	10/29/2008	10:23	10:34	4.3	24	251	-67
IW101-04B	TTA-1	15	10/29/2008	10:35	10:47	4.3	24	274	-88
IW101-04C	TTA-1	15	10/29/2008	11:32	11:41	4.3	29	250	-128
IW101-05A	TTA-1	15	10/29/2008	11:44	11:54	4.3	28	260	-71
IW101-05B	TTA-1	15	10/30/2008	7:28	7:39	8.6	22	250	-37
IW101-05C	TTA-1	15	10/30/2008	11:33	11:42	17.2	27	250	3
IW101-06A	TTA-1	15	10/30/2008	9:02	9:13	8.6	22	250	-101
IW101-06B	TTA-1	15	10/29/2008	12:23	12:34	4.3	23	250	-32
IW101-06C	TTA-1	15	10/30/2008	9:14	9:25	8.6	23	245	3
IW101-07A	TTA-1	15	10/29/2008	13:20	13:29	4.3	29	250	-30
IW101-07B	TTA-1	15	10/29/2008	13:29	13:40	4.3	27	255	-17
IW101-07C	TTA-1	15	10/30/2008	11:46	11:56	17.2	28	247	-5
IW101-08A	TTA-1	15	10/29/2008	12:36	12:48	4.3	23	248	-124
IW101-08B	TTA-1	15	10/30/2008	7:57	8:06	4.3	29	250	-98
IW101-08C	TTA-1	15	10/30/2008	8:07	8:17	4.3	28	253	-40
IW101-09A	TTA-1	15	10/30/2008	10:05	10:14	4.3	28	250	-165
IW101-09B	TTA-1	15	10/30/2008	10:15	10:25	4.3	28	254	-94
IW101-09C	TTA-1	15	10/30/2008	10:46	10:57	8.6	22	250	-41
IW21-01A	TTA-1	10	10/31/2008	10:35	11:00	8.6	21	494	-91
IW21-01B	TTA-1	10	10/30/2008	12:44	13:08	4.3	21	503	-111
IW21-02A	TTA-1	10	10/31/2008	9:51	10:10	17.2	26	486	-51
IW21-02B	TTA-1	10	10/31/2008	11:30	11:52	17.2	24	491	11
IW21-03A	TTA-1	10	10/30/2008	16:10	16:32	4.3	23	503	-113
IW21-03B	TTA-1	10	10/30/2008	14:23	14:50	4.3	17	507	-240
IW21-04A	TTA-1	10	10/31/2008	8:50	9:13	4.3	23	510	-110
IW21-04B	TTA-1	10	11/3/2008	8:00	8:23	8.6	22	498	-9
IW21-05A	TTA-1	10	10/31/2008	12:20	12:47	8.6	23	500	-176
IW21-05B	TTA-1	10	11/3/2008	9:30	9:52	8.6	23	497	-87
IW85-01	TTA-2	10	11/3/2008	14:03	14:10	4.3	25	167	-211
IW85-02	TTA-2	10	11/3/2008	14:12	14:19	4.3	24	162	-219
IW85-05	TTA-2	10	11/3/2008	15:02	15:08	4.3	29	168	-135
IW85-06	TTA-2	10	11/3/2008	15:10	15:18	4.3	19	163	-113
IW92-01	TTA-2	10	11/4/2008	7:45	7:52	17.2	21	164	-15
IW92-02	TTA-2	10	11/3/2008	11:15	11:26	8.6	21	167	-54
IW92-03	TTA-2	10	11/3/2008	11:35	11:42	8.6	23	167	2
IW92-04	TTA-2	10	11/3/2008	12:06	12:13	4.3	21	167	-227
IW92-05	TTA-2	10	11/3/2008	12:20	12:28	4.3	20	167	-118
IW92-06	TTA-2	10	11/3/2008	11:50	11:58	8.6	22	157	7
IW92-07	TTA-2	10	11/3/2008	12:31	12:38	4.3	22	159	-151
IW92-08	TTA-2	10	11/3/2008	13:49	13:57	4.3	18	167	-234
PMW101-08A	TTA-1	15	10/30/2008	13:43	13:53	17.2	20	250	74
PMW101-08B	TTA-1	15	10/30/2008	14:00	14:11	17.2	28	239	45
PMW21-01	TTA-1	15	10/31/2008	13:46	14:21	17.2	26	482	69
PMW21-02	TTA-1	15	11/3/2008	7:44	8:41	17.2	10	473	33
PMW21-04	TTA-1	15	11/3/2008	10:31	10:50	8.6	28	491	-173
PMW92-01	TTA-2	10	11/4/2008	8:39	9:33	4.3	5	58	-361
PMW92-05	TTA-2	10	11/4/2008	7:42	8:42	8.6	14	416	-169
PMW85-05	TTA-2	10	11/3/2008	13:12	15:12	8.6	7	63	-169
IW-01	TTA-2	-	10/30/2008	11:23	11:36	8.6	23	251	-169

INJECTION 41
INJECTION SUMMARIES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)	ORP (mV)
IW101-01A	TTA-1	15	11/21/2008	8:06	8:17	4.3	25	250	-234
IW101-01B	TTA-1	15	11/21/2008	8:18	8:28	4.3	25	240	-201
IW101-01C	TTA-1	15	11/21/2008	9:03	9:14	4.3	24	245	-156
IW101-02A	TTA-1	15	11/21/2008	11:00	11:11	8.6	23	250	-178
IW101-02B	TTA-1	15	11/21/2008	11:12	11:24	4.3	23	242	-203
IW101-02C	TTA-1	15	11/21/2008	12:12	12:23	4.3	24	250	0
IW101-03A	TTA-1	15	11/21/2008	13:50	14:01	4.3	23	250	-64
IW101-03B	TTA-1	15	11/21/2008	12:25	12:38	4.3	22	263	-180
IW101-03C	TTA-1	15	11/21/2008	13:08	13:19	4.3	23	250	-138
IW101-04A	TTA-1	15	11/24/2008	7:36	7:47	4.3	23	250	-212
IW101-04B	TTA-1	15	11/24/2008	7:48	8:01	4.3	21	262	-221
IW101-04C	TTA-1	15	11/24/2008	9:27	9:39	4.3	21	252	-137
IW101-05A	TTA-1	15	11/21/2008	9:16	9:27	4.3	23	238	-211
IW101-05B	TTA-1	15	11/21/2008	10:00	10:11	4.3	25	245	-178
IW101-05C	TTA-1	15	11/21/2008	10:12	10:24	4.3	24	247	-190
IW101-06A	TTA-1	15	11/24/2008	9:13	9:24	4.3	21	250	-187
IW101-06B	TTA-1	15	11/24/2008	10:53	11:04	4.3	22	250	-146
IW101-06C	TTA-1	15	11/24/2008	11:05	11:17	4.3	21	240	-143
IW101-07A	TTA-1	15	11/21/2008	13:20	13:32	4.3	23	252	-218
IW101-07B	TTA-1	15	11/24/2008	8:05	8:16	4.3	23	250	-193
IW101-07C	TTA-1	15	11/24/2008	8:18	8:30	4.3	23	251	-132
IW101-08A	TTA-1	15	11/24/2008	12:37	12:49	4.3	21	250	-229
IW101-08B	TTA-1	15	11/24/2008	12:50	13:02	4.3	21	246	-152
IW101-08C	TTA-1	15	11/24/2008	11:47	11:58	4.3	23	250	-219
IW101-09A	TTA-1	15	11/24/2008	10:08	10:19	4.3	23	250	-302
IW101-09B	TTA-1	15	11/24/2008	10:20	10:32	4.3	23	239	-179
IW101-09C	TTA-1	15	11/24/2008	12:00	12:12	4.3	23	257	-199
IW21-01A	TTA-1	10	11/24/2008	14:15	14:38	4.3	22	503	-211
IW21-01B	TTA-1	10	11/24/2008	15:18	15:43	4.3	20	501	-275
IW21-02A	TTA-1	10	11/24/2008	16:07	16:31	4.3	21	498	-144
IW21-02B	TTA-1	10	11/25/2008	9:09	9:35	8.6	19	489	-406
IW21-03A	TTA-1	10	11/25/2008	7:31	7:55	4.3	22	499	-229
IW21-03B	TTA-1	10	11/25/2008	8:04	8:51	4.3	23	491	-347
IW21-04A	TTA-1	10	11/25/2008	10:55	11:16	4.3	25	499	-250
IW21-04B	TTA-1	10	11/25/2008	11:57	12:20	4.3	22	502	-210
IW21-05A	TTA-1	10	11/25/2008	13:13	13:45	4.3	23	500	-292
IW21-05B	TTA-1	10	11/25/2008	13:56	14:22	4.3	21	500	-196
IW85-01	TTA-2	10	12/1/2008	10:24	10:33	4.3	23	168	-388
IW85-02	TTA-2	10	12/1/2008	10:57	11:05	4.3	22	167	-257
IW85-05	TTA-2	10	12/1/2008	11:11	11:18	4.3	22	167	-226
IW85-06	TTA-2	10	12/1/2008	11:24	11:32	4.3	24	154	-197
IW92-01	TTA-2	10	11/26/2008	8:30	8:42	4.3	21	167	-246
IW92-02	TTA-2	10	11/26/2008	8:50	8:59	4.3	24	167	-167
IW92-03	TTA-2	10	11/26/2008	9:06	9:13	4.3	25	163	-160
IW92-04	TTA-2	10	11/26/2008	10:21	10:29	4.3	24	167	-284
IW92-05	TTA-2	10	11/26/2008	10:35	10:43	4.3	25	167	-183
IW92-06	TTA-2	10	11/26/2008	10:48	10:58	4.3	25	169	-376
IW92-07	TTA-2	10	12/1/2008	9:47	9:54	4.3	23	167	-261
IW92-08	TTA-2	10	12/1/2008	10:07	10:16	4.3	22	167	-235
PMW101-08A	TTA-1	15	11/24/2008	13:18	13:40	4.3	16	250	-57
PMW101-08B	TTA-1	15	11/24/2008	13:50	14:03	4.3	22	233	-68
PMW21-01	TTA-1	15	11/25/2008	14:54	15:24	17.2	19	486	-14
PMW21-02	TTA-1	15	11/25/2008	15:46	16:24	17.2	18	481	-40
PMW21-04	TTA-1	15	11/26/2008	10:52	11:18	17.2	23	452	-17
PMW92-01	TTA-2	10	12/1/2008	12:36	13:58	4.3	7	273	-227
PMW92-05	TTA-2	10	12/2/2008	8:00	9:00	8.6	6	246	-227
PMW85-05	TTA-2	10	11/26/2008	8:15	10:15	17.2	3	33	-137
IW-01	TTA-2	-	11/21/2008	14:19	14:30	8.6	24	242	-238

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INJECTION 42
INJECTION SUMMARIES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)	ORP (mV)
IW101-01A	TTA-1	15	12/18/2008	11:29	11:40	4.3	23	250	-149
IW101-01B	TTA-1	15	12/18/2008	11:41	11:52	4.3	23	238	-169
IW101-01C	TTA-1	15	12/18/2008	12:20	12:31	4.3	23	250	-134
IW101-02A	TTA-1	15	12/18/2008	12:34	12:45	4.3	23	247	-157
IW101-02B	TTA-1	15	12/19/2008	7:50	8:01	4.3	23	250	-140
IW101-02C	TTA-1	15	12/19/2008	8:02	8:14	4.3	22	238	-123
IW101-03A	TTA-1	15	12/19/2008	8:46	8:57	4.3	23	250	-129
IW101-03B	TTA-1	15	12/19/2008	8:58	9:10	4.3	23	243	-105
IW101-03C	TTA-1	15	12/22/2008	8:23	8:34	8.6	23	250	-72
IW101-04A	TTA-1	15	12/19/2880	9:21	9:33	4.3	22	250	-199
IW101-04B	TTA-1	15	12/19/2880	9:33	9:46	4.3	20	244	-142
IW101-04C	TTA-1	15	12/19/2880	11:38	11:51	4.3	20	249	-96
IW101-05A	TTA-1	15	12/19/2880	11:22	11:35	4.3	20	250	-153
IW101-05B	TTA-1	15	12/19/2880	13:11	13:23	4.3	23	250	-138
IW101-05C	TTA-1	15	12/19/2880	13:23	13:34	4.3	23	242	-122
IW101-06A	TTA-1	15	12/19/2880	16:37	16:48	4.3	23	245	-116
IW101-06B	TTA-1	15	12/19/2880	12:19	12:30	8.6	23	250	-72
IW101-06C	TTA-1	15	12/19/2880	12:31	12:43	8.6	22	239	-75
IW101-07A	TTA-1	15	12/19/2880	10:33	10:44	4.3	23	250	-100
IW101-07B	TTA-1	15	12/19/2880	14:07	14:18	8.6	23	250	-40
IW101-07C	TTA-1	15	12/19/2880	14:19	14:30	8.6	22	238	-69
IW101-08A	TTA-1	15	12/19/2880	15:09	15:21	4.3	23	250	-146
IW101-08B	TTA-1	15	12/19/2880	15:21	15:31	4.3	23	242	-115
IW101-08C	TTA-1	15	12/22/2008	8:44	8:55	8.6	23	240	-66
IW101-09A	TTA-1	15	12/19/2008	16:09	16:21	8.6	23	250	-26
IW101-09B	TTA-1	15	12/19/2008	10:45	10:57	4.3	23	248	-99
IW101-09C	TTA-1	15	12/19/2008	16:21	16:33	8.6	22	239	-89
IW21-01A	TTA-1	10	12/22/2008	11:00	11:22	8.6	22	483	-73
IW21-01B	TTA-1	10	12/22/2008	12:00	12:27	8.6	18	540	-87
IW21-02A	TTA-1	10	12/22/2008	13:10	13:33	8.6	22	487	-17
IW21-02B	TTA-1	10	12/23/2008	10:15	10:42	17.2	22	570	-52
IW21-03A	TTA-1	10	12/23/2008	8:03	8:26	8.6	25	531	-47
IW21-03B	TTA-1	10	12/23/2008	7:35	8:07	8.6	13	493	-41
IW21-04A	TTA-1	10	12/23/2008	14:40	15:05	4.3	20	494	-168
IW21-04B	TTA-1	10	12/23/2008	12:20	12:42	4.3	21	443	-96
IW21-05A	TTA-1	10	12/23/2008	14:51	15:17	4.3	25	558	-126
IW21-05B	TTA-1	10	12/23/2008	12:50	12:14	4.3	25	557	-160
IW85-01	TTA-2	10	12/29/2008	10:13	10:20	4.3	23	167	-228
IW85-02	TTA-2	10	12/29/2008	10:23	10:31	4.3	22	167	-163
IW85-05	TTA-2	10	12/29/2008	9:23	9:31	8.6	23	157	-24
IW85-06	TTA-2	10	12/29/2008	10:34	10:44	4.3	26	165	-168
IW92-01	TTA-2	10	12/24/2008	9:40	9:48	8.6	23	167	-42
IW92-02	TTA-2	10	12/29/2008	8:23	8:31	8.6	19	167	-22
IW92-03	TTA-2	10	12/29/2008	8:34	8:42	8.6	23	176	-75
IW92-04	TTA-2	10	12/29/2008	8:57	9:06	8.6	20	167	-54
IW92-05	TTA-2	10	12/24/2008	8:44	8:52	4.3	19	167	-170
IW92-06	TTA-2	10	12/24/2008	9:04	9:13	4.3	19	167	-140
IW92-07	TTA-2	10	12/24/2008	9:21	9:28	4.3	22	153	-102
IW92-08	TTA-2	10	12/29/2008	9:10	9:18	8.6	21	167	-71
PMW101-08A	TTA-1	15	12/22/2008	10:16	10:30	17.2	23	242	-5
PMW101-08B	TTA-1	15	12/22/2008	9:58	10:10	17.2	22	250	-94
PMW21-01	TTA-1	15	12/23/2008	16:28	16:55	17.2	21	490	-32
PMW21-02	TTA-1	15	12/23/2008	17:00	17:52	17.2	15	532	-25
PMW21-04	TTA-1	15	12/24/2008	7:44	8:10	17.2	23	539	-33
PMW92-01	TTA-2	10	12/29/2008	13:49	15:13	4.3	4	237	-337
PMW92-05	TTA-2	10	12/29/2008	13:11	13:48	17.2	7	250	-80
PMW85-05	TTA-2	10	12/23/2008	9:36	11:36	4.3	4	53	-387
IW-01	TTA-2	-	12/29/2008	13:59	14:09	17.2	23	242	-54

INJECTION 43
INJECTION SUMMARIES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)	ORP (mV)
IW101-01A	TTA-1	15	1/23/2009	9:17	9:28	4.3	23	250	-181
IW101-01B	TTA-1	15	1/23/2009	9:30	9:41	4.3	24	235	-200
IW101-01C	TTA-1	15	1/23/2009	11:03	11:14	4.3	22	250	-133
IW101-02A	TTA-1	15	1/23/2009	10:20	10:30	4.3	26	250	-226
IW101-02B	TTA-1	15	1/23/2009	10:31	10:40	4.3	25	231	-344
IW101-02C	TTA-1	15	1/23/2009	14:01	14:12	4.3	25	250	-215
IW101-03A	TTA-1	15	1/23/2009	11:18	11:29	4.3	23	246.1	-191
IW101-03B	TTA-1	15	1/23/2009	14:14	14:25	4.3	25	257	-214
IW101-03C	TTA-1	15	1/27/2009	8:34	8:44	8.6	26	250	-155
IW101-04A	TTA-1	15	1/26/2009	8:48	9:00	4.3	22	250	-220
IW101-04B	TTA-1	15	1/26/2009	9:00	9:13	4.3	22	249	-243
IW101-04C	TTA-1	15	1/26/2009	10:33	10:44	4.3	23	250	-134
IW101-05A	TTA-1	15	1/26/2009	9:25	9:35	4.3	25	250	-212
IW101-05B	TTA-1	15	1/26/2009	9:36	9:46	4.3	25	236	-171
IW101-05C	TTA-1	15	1/26/2009	11:30	11:40	4.3	25	250	-208
IW101-06A	TTA-1	15	1/26/2009	11:42	11:53	4.3	25	253	-208
IW101-06B	TTA-1	15	1/26/2009	10:46	10:58	8.6	22	249	-189
IW101-06C	TTA-1	15	1/27/2009	8:46	8:56	8.6	25	240	-147
IW101-07A	TTA-1	15	1/26/2009	14:44	14:54	4.3	26	246	-205
IW101-07B	TTA-1	15	1/27/2009	9:18	9:29	8.6	22	250	-186
IW101-07C	TTA-1	15	1/27/2009	9:30	9:42	8.6	22	245	-139
IW101-08A	TTA-1	15	1/26/2009	12:25	12:36	4.3	23	250	-229
IW101-08B	TTA-1	15	1/26/2009	12:37	12:49	4.3	23	249	-215
IW101-08C	TTA-1	15	1/27/2009	10:10	10:21	8.6	25	250	-173
IW101-09A	TTA-1	15	1/26/2009	13:20	13:30	4.3	25	256	-315
IW101-09B	TTA-1	15	1/26/2009	13:31	13:41	4.3	25	244	-155
IW101-09C	TTA-1	15	1/27/2009	10:23	10:34	8.6	26	245	-188
IW21-01A	TTA-1	10	1/27/2009	12:32	12:53	8.6	24	488	-205
IW21-01B	TTA-1	10	1/27/2009	12:54	13:21	8.6	17	489	-119
IW21-02A	TTA-1	10	1/27/2009	13:57	14:18	8.6	23	485	-139
IW21-02B	TTA-1	10	1/27/2009	14:39	15:04	8.6	19	488	-231
IW21-03A	TTA-1	10	1/28/2009	7:54	8:17	8.6	22	498	-162
IW21-03B	TTA-1	10	1/28/2009	8:38	9:06	8.6	17	494	-187
IW21-04A	TTA-1	10	1/26/2009	14:07	14:30	4.3	23	499	-230
IW21-04B	TTA-1	10	1/27/2009	7:50	8:15	4.3	23	496	-226
IW21-05A	TTA-1	10	1/28/2009	9:33	9:56	4.3	22	493	-152
IW21-05B	TTA-1	10	1/28/2009	10:21	10:41	4.3	25	494	-193
IW85-01	TTA-2	10	1/29/2009	9:04	9:11	4.3	23	167	-261
IW85-02	TTA-2	10	1/29/2009	9:14	9:20	4.3	25	167	-167
IW85-05	TTA-2	10	1/29/2009	10:32	10:40	8.6	23	167.2	-187
IW85-06	TTA-2	10	1/29/2009	9:37	9:47	4.3	17	169	-202
IW92-01	TTA-2	10	1/28/2009	13:56	14:04	4.3	22	167	-354
IW92-02	TTA-2	10	1/28/2009	14:07	14:14	4.3	20	167	-320
IW92-03	TTA-2	10	1/28/2009	14:17	14:25	4.3	21	161	-292
IW92-04	TTA-2	10	1/29/2009	12:37	12:45	8.6	21	167	-188
IW92-05	TTA-2	10	1/29/2009	12:51	13:00	8.6	25	162	-75
IW92-06	TTA-2	10	1/29/2009	7:31	7:39	4.3	19	167	-223
IW92-07	TTA-2	10	1/29/2009	7:45	7:52	4.3	21	167	-194
IW92-08	TTA-2	10	1/29/2009	7:55	8:03	4.3	20	161	-197
PMW101-08A	TTA-1	15	1/27/2009	11:00	11:15	17.2	16	250	-110
PMW101-08B	TTA-1	15	1/27/2009	11:21	11:40	17.2	14	233	-103
PMW21-01	TTA-1	15	1/28/2009	11:06	11:34	17.2	19	480	-44
PMW21-02	TTA-1	15	1/28/2009	13:00	14:10	17.2	7	486	-44
PMW21-04	TTA-1	15	1/28/2009	12:09	13:27	17.2	23	483	24
PMW92-01	TTA-2	10	1/29/2009	12:58	13:37	17.2	10	240	-97
PMW92-05	TTA-2	10	1/29/2009	14:42	15:03	17.2	12	240	33
PMW85-05	TTA-2	10	1/29/2009	8:08	9:31	17.2	3	167	60
IW-01	TTA-2	-	1/29/2009	10:47	10:58	17.2	23	230	-129

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INJECTION 44
INJECTION SUMMARIES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Well ID	Area	Screen Length	Date Injected	Start Time	End Time	Percent Sodium Lactate	Flow Rate (gpm)	Volume Injected (gallons)	ORP (mV)
IW101-01A	TTA-1	15	2/19/2009	11:23	11:34	4.3	23	250	-184
IW101-01B	TTA-1	15	2/19/2009	11:37	11:48	4.3	23	242	-244
IW101-01C	TTA-1	15	2/19/2009	13:20	13:31	4.3	23	250	-200
IW101-02A	TTA-1	15	2/19/2009	12:22	12:32	4.3	20	250	-284
IW101-02B	TTA-1	15	2/19/2009	12:33	12:45	4.3	23	246	-278
IW101-02C	TTA-1	15	2/19/2009	14:19	14:30	4.3	24	243	-211
IW101-03A	TTA-1	15	2/19/2009	13:35	13:46	4.3	23	255.8	-239
IW101-03B	TTA-1	15	2/19/2009	14:06	14:16	4.3	24	250	-198
IW101-03C	TTA-1	15	2/20/2009	14:53	15:05	8.6	22	250	-138
IW101-04A	TTA-1	15	2/20/2009	7:22	7:33	4.3	23	250	-315
IW101-04B	TTA-1	15	2/20/2009	7:34	7:46	4.3	23	246	-222
IW101-04C	TTA-1	15	2/20/2009	8:59	9:10	4.3	23	250	-185
IW101-05A	TTA-1	15	2/20/2009	9:49	10:00	4.3	23	250	-213
IW101-05B	TTA-1	15	2/20/2009	10:01	10:21	4.3	23	239	-268
IW101-05C	TTA-1	15	2/20/2009	11:23	11:35	4.3	23	250	-178
IW101-06A	TTA-1	15	2/20/2009	10:33	10:45	4.3	23	250	-325
IW101-06B	TTA-1	15	2/20/2009	12:09	12:21	8.6	22	245	-198
IW101-06C	TTA-1	15	2/20/2009	12:22	12:32	8.6	22	264	-165
IW101-07A	TTA-1	15	2/20/2009	10:46	10:58	4.3	23	246	-249
IW101-07B	TTA-1	15	2/20/2009	13:42	13:54	8.6	22	250	-203
IW101-07C	TTA-1	15	2/20/2009	13:54	14:06	8.6	22	242	-133
IW101-08A	TTA-1	15	2/20/2009	11:36	11:48	4.3	23	250	-225
IW101-08B	TTA-1	15	2/20/2009	12:57	13:08	4.3	22	250	-217
IW101-08C	TTA-1	15	2/20/2009	13:09	13:20	4.3	23	229	-380
IW101-09A	TTA-1	15	2/20/2009	7:20	7:32	4.3	23	249	-339
IW101-09B	TTA-1	15	2/20/2009	7:52	8:03	4.3	23	240	-184
IW101-09C	TTA-1	15	2/20/2009	9:13	9:24	4.3	23	251	-315
IW21-01A	TTA-1	10	2/23/2009	7:13	7:36	17.2	23	502	-267
IW21-01B	TTA-1	10	2/23/2009	14:08	14:35	8.6	17	474	-101
IW21-02A	TTA-1	10	2/23/2009	7:51	8:13	8.6	22	486	-234
IW21-02B	TTA-1	10	2/23/2009	9:27	9:51	8.6	20	486	-265
IW21-03A	TTA-1	10	2/23/2009	11:02	11:23	8.6	23	486	-222
IW21-03B	TTA-1	10	2/23/2009	12:33	12:53	4.3	17	485	-186
IW21-04A	TTA-1	10	2/23/2009	8:42	9:05	4.3	22	501	-275
IW21-04B	TTA-1	10	2/23/2009	10:18	10:40	4.3	23	496	-239
IW21-05A	TTA-1	10	2/23/2009	11:51	12:14	4.3	22	498	-244
IW21-05B	TTA-1	10	2/23/2009	13:22	13:44	4.3	23	469	-264
IW85-01	TTA-2	10	2/24/2009	10:56	11:03	8.3	23	167	-383
IW85-02	TTA-2	10	2/24/2009	11:06	11:13	8.3	23	167	-227
IW85-05	TTA-2	10	2/24/2009	12:22	12:29	13.5	24	177	-199
IW85-06	TTA-2	10	2/24/2009	11:17	11:24	8.3	20	162	-222
IW92-01	TTA-2	10	2/24/2009	7:53	8:02	8.3	19	167	-246
IW92-02	TTA-2	10	2/24/2009	8:06	8:15	8.3	20	167	-142
IW92-03	TTA-2	10	2/24/2009	12:32	12:40	13.5	22	177	-94
IW92-04	TTA-2	10	2/24/2009	8:21	8:29	8.3	20	156	-379
IW92-05	TTA-2	10	2/24/2009	14:57	15:22	14.8	18	449	-365
IW92-06	TTA-2	10	2/24/2009	9:09	9:18	8.3	19	167	-163
IW92-07	TTA-2	10	2/24/2009	9:25	9:32	8.3	21	167	-197
IW92-08	TTA-2	10	2/24/2009	9:38	9:46	8.3	27	153	-163
PMW101-08A	TTA-1	15	2/20/2009	14:30	14:47	17.2	22	250	31
PMW101-08B	TTA-1	15	2/20/2009	14:56	15:07	17.2	22	228	-82
PMW21-01	TTA-1	15	2/23/2009	14:50	15:13	17.2	21	482	-46
PMW21-02	TTA-1	15	2/24/2009	7:28	8:10	17.2	11	477	-26
PMW21-04	TTA-1	15	2/24/2009	8:30	8:57	17.2	12	472	5
PMW92-01	TTA-2	10	2/24/2009	12:55	13:41	13.5	3	181	-333
PMW92-05	TTA-2	10	2/24/2009	10:09	10:29	17.2	7	167	-156
PMW85-05	TTA-2	10	2/24/2009	10:51	12:53	17.2	2	167	-11
IW-01	TTA-2	-	2/24/2009	14:47	14:50	17.2	13	167	-241

APPENDIX B

PRE-INJECTION FIELD MEASUREMENTS

INJECTION 27
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 10-Sep-07 END: 20-Sep-07

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	4.9	-23	6.0	21.9	4.60	89.6
2	IW101-01B	10.4	-68	6.4	22.9	0.56	89.3
3	IW101-01C	1.5	-86	5.8	21.2	0.29	89.4
4	IW101-02A	7.0	-20	6.1	21.9	0.47	89.7
5	IW101-02B	1.9	110	6.3	20.8	0.27	89.9
6	IW101-02C	2.7	-96	6.4	21.5	0.42	90.3
7	IW101-03A	3.6	-68	6.3	22.2	0.45	90.6
8	IW101-03B	1.6	33	6.1	22.1	0.22	90.6
9	IW101-03C	1.2	-27	6.1	22.1	0.27	90.6
10	IW101-04A	5.5	-27	6.2	24.4	7.66	90.5
11	IW101-04B	1.9	-102	6.5	22.0	0.86	90.5
12	IW101-04C	1.4	-123	6.8	21.9	0.60	90.3
13	IW101-05A	1.2	-156	6.1	21.8	1.92	90.4
14	IW101-05B	0.3	-33	6.2	21.7	1.00	90.3
15	IW101-05C	2.1	-104	6.2	22.0	1.00	90.3
16	IW101-06A	11.0	-66	6.4	21.2	1.00	90.9
17	IW101-06B	0.5	62	6.0	20.9	1.00	91.0
18	IW101-06C	0.4	-83	6.0	21.0	1.00	91.0
19	IW101-07A	1.0	-56	6.1	21.9	0.35	91.4
20	IW101-07B	0.9	-105	6.2	20.9	0.28	91.5
21	IW101-07C	1.1	-41	6.0	21.4	0.25	91.4
22	IW101-08A	5.5	-81	6.3	22.0	1.00	91.0
23	IW101-08B	0.4	-118	6.2	22.4	1.00	91.0
24	IW101-08C	2.0	-81	6.1	22.9	1.93	91.5
25	IW101-09A	3.9	-24	6.3	21.4	0.47	91.3
26	IW101-09B	7.8	-69	6.2	21.7	2.96	91.0
27	IW101-09C	6.3	-15	6.1	21.8	1.08	91.1
28	PMW101-01A	0.0	-166	6.4	21.2	9.99	89.8
29	PMW101-01B	0.0	-181	6.3	20.1	1.00	89.9
30	PMW101-02A	0.0	-181	6.7	21.2	0.90	90.5
31	PMW101-02B	0.0	-143	6.5	21.0	0.91	90.7
32	PMW101-03A	2.8	106	6.0	20.3	0.73	90.8
33	PMW101-03B	2.0	-77	6.4	20.6	1.00	90.8
34	PMW101-04A	0.8	-157	6.8	20.8	1.01	90.1
35	PMW101-04B	1.4	-87	6.1	21.4	1.00	90.7
36	PMW101-05A	0.7	-137	6.4	21.5	1.00	90.3
37	PMW101-05B	1.3	-12	6.1	20.6	0.58	90.7
38	PMW101-06A	2.5	95	5.9	20.5	0.87	91.0
39	PMW101-06B	1.2	-135	6.6	20.7	1.00	91.0
40	PMW101-07A	2.1	-56	6.1	22.6	1.00	91.0
41	PMW101-07B	1.4	119	5.7	22.6	1.00	91.1
42	PMW101-08A	1.7	26	6.1	25.2	2.76	91.6
43	PMW101-08B	1.7	150	5.7	21.9	0.80	91.8
44	MW-101T	4.8	104	5.9	21.6	0.24	89.9
45	MW-101B	1.0	33	5.8	21.0	0.25	89.9
46	DR1-3	1.3	-96	6.5	20.8	1.00	91.5

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INJECTION 27
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 10-Sep-07 END: 20-Sep-07

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area							
47	IW21-01A	6.3	-54	6.4	21.8	1.57	91.7
48	IW21-01B	2.8	-78	6.3	21.3	1.30	91.7
49	IW21-02A	2.0	75	5.8	19.1	0.90	91.9
50	IW21-02B	2.3	4	5.9	19.9	0.33	92.0
51	IW21-03A	8.7	72	6.0	21.3	0.29	90.5
52	IW21-03B	4.0	-88	6.1	21.8	0.38	90.4
53	IW21-04A	7.8	12	6.5	21.4	0.52	90.5
54	IW21-04B	2.6	103	6.2	21.0	0.37	90.8
55	IW21-05A	0.4	26	5.8	19.7	2.38	90.0
56	IW21-05B	0.8	-10	5.8	20.3	0.39	90.0
57	PMW21-01	2.8	154	5.9	20.5	1.00	91.9
58	PMW21-02	4.7	176	5.9	20.3	1.00	91.0
59	PMW21-03	5.4	242	5.9	20.0	1.00	90.4
60	PMW21-04	0.7	158	5.9	20.4	1.00	90.2
61	PMW21-05	7.9	202	5.9	20.0	1.00	88.5
62	MW-21	3.0	195	5.8	19.6	1.00	92.2
63	MW-115	0.0	-107	6.1	20.5	1.00	90.0
	TTA-2						
64	IW92-01	2.6	39	6.2	23.3	0.39	87.2
65	IW92-02	1.1	17	6.1	29.3	0.60	88.3
66	IW92-03	1.3	13	5.9	25.2	0.88	TOP
67	IW92-04	0.7	-58	6.4	26.8	1.99	92.2
68	IW92-05	0.2	-45	6.3	23.0	11.34	92.0
69	IW92-06	0.1	-69	6.7	26.0	13.96	91.9
70	IW92-07	2.0	-64	6.1	24.7	5.91	93.5
71	IW92-08	4.6	-92	6.8	26.7	2.13	94.0
72	IW85-01	0.0	-74	6.1	19.9	0.61	94.2
73	IW85-02	0.5	-77	6.4	23.0	2.60	95.4
74	IW85-05	3.4	-30	6.4	22.7	0.42	96.0
75	IW85-06	4.5	-38	6.6	23.6	0.96	96.4
76	PMW92-01	2.6	184	6.1	24.2	0.30	94.1
77	PMW92-02	0.1	-86	6.6	23.5	3.05	93.8
78	PMW92-03	0.8	41	6.5	22.0	0.46	93.2
79	PMW92-04	0.2	-40	6.4	23.4	0.51	94.3
80	PMW92-05	3.1	217	5.8	23.3	0.24	TOP
81	PMW92-06	0.6	-27	6.2	22.7	0.40	95.0
82	PMW85-01	1.6	22	5.9	24.0	0.33	98.0
83	PMW85-04	0.2	-102	6.4	25.8	1.62	97.9
84	PMW85-05	3.4	225	5.4	23.7	0.19	96.5
85	MW-85	1.1	-8	6.4	23.4	0.61	98.4
86	DR2-1	0.3	-1	6.4	24.7	0.87	88.2
87	DR2-5	6.7	214	6.1	23.4	0.18	95.9
88	IW-01	0.8	168	5.3	23.9	0.26	94.9

INJECTION 28
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 22-Oct-07 END: 23-Oct-07

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	0.5	-132	6.0	18.4	3.24	89.7
2	IW101-01B	0.0	-187	6.3	18.3	0.90	89.6
3	IW101-01C	0.0	-13	6.0	18.3	0.90	89.7
4	IW101-02A	0.2	-153	6.2	18.5	0.94	89.9
5	IW101-02B	0.1	-137	6.4	18.5	0.90	90.0
6	IW101-02C	0.0	-172	6.2	18.7	0.90	90.4
7	IW101-03A	0.0	-176	6.4	18.7	0.90	90.7
8	IW101-03B	0.4	3	5.9	18.7	0.90	90.7
9	IW101-03C	0.0	-115	6.0	18.7	0.90	90.7
10	IW101-04A	0.0	-166	6.2	18.5	0.90	90.5
11	IW101-04B	0.0	-149	6.6	18.6	1.05	90.6
12	IW101-04C	0.0	-40	6.5	18.7	0.90	90.5
13	IW101-05A	3.1	-155	6.2	18.6	1.00	90.4
14	IW101-05B	0.0	-136	6.3	18.6	0.90	90.2
15	IW101-05C	0.0	-103	6.3	18.6	0.90	90.1
16	IW101-06A	0.0	-106	8.1	19.2	6.62	90.9
17	IW101-06B	0.0	39	6.1	18.9	0.90	90.9
18	IW101-06C	0.0	-112	6.2	19.0	0.90	90.9
19	IW101-07A	0.0	-181	6.4	18.9	0.90	91.5
20	IW101-07B	0.0	-208	6.8	18.8	1.00	91.5
21	IW101-07C	0.0	-154	6.4	18.9	0.90	91.5
22	IW101-08A	0.0	-129	8.4	19.3	4.45	90.9
23	IW101-08B	0.0	-158	6.5	19.0	1.00	91.0
24	IW101-08C	0.0	-137	6.4	19.0	0.90	91.5
25	IW101-09A	0.0	-200	6.6	20.0	1.39	91.4
26	IW101-09B	0.0	-85	6.2	19.0	1.57	91.2
27	IW101-09C	0.0	-52	6.1	19.0	1.04	91.1
28	PMW101-01A	13.9	-159	6.7	20.3	5.09	89.8
29	PMW101-01B	3.3	-98	6.5	20.3	1.36	90.0
30	PMW101-02A	5.8	-113	6.9	21.2	0.81	90.7
31	PMW101-02B	6.9	129	6.6	20.5	0.72	90.8
32	PMW101-03A	6.5	121	6.3	19.9	0.45	90.9
33	PMW101-03B	2.9	-75	6.6	19.8	0.67	91.0
34	PMW101-04A	16.2	-129	7.0	20.3	0.85	90.3
35	PMW101-04B	5.6	-99	6.5	19.7	0.60	90.8
36	PMW101-05A	3.2	-122	6.7	20.0	0.51	90.6
37	PMW101-05B	4.5	-5	6.3	19.3	0.24	90.8
38	PMW101-06A	4.5	137	6.1	20.0	0.33	91.1
39	PMW101-06B	1.6	-120	6.6	20.3	0.42	91.2
40	PMW101-07A	5.3	-72	6.3	20.9	0.46	91.2
41	PMW101-07B	2.2	165	6.0	20.5	0.19	91.2
42	PMW101-08A	5.4	95	6.3	21.3	0.57	91.9
43	PMW101-08B	7.7	156	6.0	20.7	0.12	91.7
44	MW-101T	4.0	38	6.0	18.6	0.90	90.1
45	MW-101B	3.8	84	6.0	18.3	1.00	90.1
46	DR1-3	8.9	-86	6.6	19.7	0.52	91.6

INJECTION 28
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 22-Oct-07 END: 23-Oct-07

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area							
47	IW21-01A	0.0	-187	6.3	17.9	0.93	91.7
48	IW21-01B	0.0	-158	6.6	18.0	5.81	91.8
49	IW21-02A	0.0	-37	5.2	17.9	0.90	91.9
50	IW21-02B	0.0	-107	6.0	17.9	0.90	92.0
51	IW21-03A	0.0	9	6.0	17.8	0.90	90.7
52	IW21-03B	0.0	-171	6.2	17.9	1.00	90.4
53	IW21-04A	0.2	-167	7.9	18.2	0.26	90.7
54	IW21-04B	0.0	-205	6.4	17.4	1.00	90.8
55	IW21-05A	4.2	-138	5.9	17.9	9.00	90.3
56	IW21-05B	1.0	-121	6.1	17.5	0.90	90.2
57	PMW21-01	6.3	2	6.0	19.1	0.32	91.9
58	PMW21-02	7.1	202	6.0	17.6	0.27	91.0
59	PMW21-03	8.1	216	6.0	16.5	0.25	90.4
60	PMW21-04	4.9	211	6.0	16.3	0.33	90.3
61	PMW21-05	11.0	202	6.0	20.1	0.27	88.6
62	MW-21	7.8	211	5.9	19.4	0.24	92.1
63	MW-115	3.9	-18	6.1	17.8	0.28	90.1
TTA-2							
64	IW92-01	0.0	-152	6.2	19.8	0.90	86.9
65	IW92-02	0.0	-53	5.2	16.6	1.00	88.4
66	IW92-03	0.6	-136	5.9	19.8	8.84	91.7
67	IW92-04	0.8	-122	6.0	19.4	1.00	92.4
68	IW92-05	0.4	-177	6.7	20.0	15.00	92.0
69	IW92-06	1.2	-119	6.4	20.3	15.20	92.2
70	IW92-07	1.3	-88	6.1	20.3	9.00	93.7
71	IW92-08	0.0	-82	6.3	20.3	0.90	94.1
72	IW85-01	0.0	-75	6.0	20.2	0.90	94.4
73	IW85-02	0.0	18	5.8	20.6	1.00	95.6
74	IW85-05	0.0	21	5.8	20.2	1.00	96.2
75	IW85-06	0.0	-117	6.4	19.9	1.12	96.7
76	PMW92-01	4.2	17	6.2	19.9	0.28	94.3
77	PMW92-02	4.2	-159	6.7	21.0	2.74	94.2
78	PMW92-03	6.5	-95	10.2	20.7	0.25	92.6
79	PMW92-04	5.4	31	6.0	21.1	0.28	94.1
80	PMW92-05	4.5	153	5.8	21.0	0.24	93.6
81	PMW92-06	3.5	-7	6.3	19.8	0.48	95.4
82	PMW85-01	4.0	73	5.8	19.8	0.22	97.4
83	PMW85-04	5.2	-135	6.6	19.9	1.23	97.8
84	PMW85-05	5.4	147	5.8	21.0	0.20	96.7
85	MW-85	1.8	-6	6.4	17.1	0.44	98.6
86	DR2-1	3.0	98	5.9	14.1	0.29	88.1
87	DR2-5	3.7	105	6.0	19.2	0.19	96.2
88	IW-01	5.8	135	5.3	20.3	0.29	95.3

INJECTION 29
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 26-Nov-07 END: 29-Nov-07

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	0.8	-127	6.1	18.1	2.07	89.6
2	IW101-01B	0.5	-193	6.5	18.3	0.90	89.6
3	IW101-01C	1.2	-30	6.0	18.2	1.00	89.7
4	IW101-02A	0.6	-143	6.3	18.4	0.90	89.9
5	IW101-02B	8.3	-83	6.5	18.2	0.21	89.9
6	IW101-02C	0.8	-186	6.2	18.4	1.00	90.5
7	IW101-03A	0.7	-182	6.3	18.5	1.00	91.8
8	IW101-03B	2.3	-3	5.9	18.6	0.90	90.7
9	IW101-03C	1.0	-125	6.0	18.5	0.90	90.8
10	IW101-04A	0.4	-141	6.1	18.3	8.98	90.8
11	IW101-04B	0.5	-151	6.4	18.3	1.00	90.7
12	IW101-04C	0.5	-146	6.7	18.4	0.90	90.7
13	IW101-05A	0.5	-117	6.0	18.4	2.88	90.5
14	IW101-05B	6.9	15	6.7	18.5	0.08	90.3
15	IW101-05C	0.6	-46	6.2	18.3	0.90	90.2
16	IW101-06A	0.2	-187	6.4	18.7	1.46	91.4
17	IW101-06B	0.2	-30	6.0	18.8	1.00	91.5
18	IW101-06C	0.1	-163	6.1	18.8	1.00	91.5
19	IW101-07A	0.9	-184	6.2	18.7	0.90	91.7
20	IW101-07B	0.8	-199	6.7	18.7	1.00	91.7
21	IW101-07C	0.9	-151	6.4	18.6	0.90	91.6
22	IW101-08A	0.1	-181	6.5	18.8	0.90	91.5
23	IW101-08B	0.2	-185	6.4	18.9	0.90	91.6
24	IW101-08C	0.1	-176	6.1	18.8	1.00	91.1
25	IW101-09A	0.9	-188	6.5	18.7	1.00	91.5
26	IW101-09B	0.6	-146	6.1	18.8	1.04	91.4
27	IW101-09C	0.4	-101	5.9	18.8	1.00	91.4
28	PMW101-01A	0.0	-158	6.8	17.9	3.73	90.1
29	PMW101-01B	1.7	-29	6.4	17.9	1.48	90.2
30	PMW101-02A	2.1	69	6.8	18.3	0.82	90.8
31	PMW101-02B	0.6	-126	6.6	18.2	0.61	90.0
32	PMW101-03A	1.3	92	6.4	17.7	0.52	91.1
33	PMW101-03B	1.5	-6	6.5	17.8	0.70	91.1
34	PMW101-04A	2.5	-137	7.0	17.8	0.81	90.4
35	PMW101-04B	1.4	-13	6.4	17.9	0.61	91.0
36	PMW101-05A	1.8	-35	6.5	17.6	0.49	90.7
37	PMW101-05B	3.6	-36	6.4	17.7	0.27	91.0
38	PMW101-06A	4.0	185	6.0	16.5	0.34	91.2
39	PMW101-06B	2.0	-27	6.5	17.7	0.40	91.3
40	PMW101-07A	2.9	63	6.2	17.7	0.47	91.2
41	PMW101-07B	2.4	150	5.9	18.0	0.19	91.4
42	PMW101-08A	2.4	189	6.2	17.9	0.54	91.9
43	PMW101-08B	3.5	203	5.9	18.5	0.12	91.9
44	MW-101T	5.5	3	6.0	18.4	1.00	90.2
45	MW-101B	3.3	50	6.0	18.2	1.00	90.2
46	DR1-3	2.0	-14	6.7	16.6	0.49	92.2

INJECTION 29
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 26-Nov-07 END: 29-Nov-07

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area							
47	IW21-01A	0.3	-205	6.1	17.7	1.00	92.3
48	IW21-01B	0.1	-206	6.3	17.8	1.20	92.5
49	IW21-02A	0.3	-31	5.9	17.8	0.90	92.5
50	IW21-02B	1.6	16	5.7	17.8	0.90	92.6
51	IW21-03A	0.0	39	5.9	17.7	0.90	91.3
52	IW21-03B	0.4	-202	6.1	17.8	0.90	91.0
53	IW21-04A	0.6	-105	7.0	17.2	1.00	91.0
54	IW21-04B	0.0	-35	6.3	16.6	1.00	91.3
55	IW21-05A	0.1	-234	6.3	17.9	1.00	90.4
56	IW21-05B	0.1	-147	5.9	17.9	1.00	90.6
57	PMW21-01	4.0	213	6.1	16.9	0.30	92.4
58	PMW21-02	5.9	231	6.1	17.4	0.25	91.6
59	PMW21-03	6.2	227	3.1	18.8	0.25	91.0
60	PMW21-04	3.1	209	6.1	17.6	0.32	90.9
61	PMW21-05	7.1	187	6.1	18.3	0.27	89.2
62	MW-21	3.9	222	6.0	16.5	0.25	92.8
63	MW-115	2.0	158	6.1	19.0	0.24	90.5
	TTA-2						
64	IW92-01	0.0	-83	6.3	19.8	6.44	87.0
65	IW92-02	0.1	-89	6.2	19.7	4.06	88.3
66	IW92-03	0.1	-52	6.2	19.7	9.22	91.9
67	IW92-04	0.1	-70	6.2	20.1	6.62	92.6
68	IW92-05	7.1	-103	6.3	20.2	9.07	92.3
69	IW92-06	7.4	-147	6.4	20.2	9.01	92.4
70	IW92-07	2.5	-139	6.1	20.0	2.67	93.9
71	IW92-08	1.6	-126	6.2	20.3	8.09	94.3
72	IW85-01	7.9	-197	6.1	20.3	8.54	94.4
73	IW85-02	0.1	-183	6.1	20.4	1.09	95.8
74	IW85-05	0.3	-6	5.8	20.3	1.00	96.4
75	IW85-06	0.0	-181	6.4	20.3	1.00	96.9
76	PMW92-01	4.1	180	6.4	21.0	0.31	94.5
77	PMW92-02	0.8	-79	6.9	21.2	2.32	94.5
78	PMW92-03	2.3	101	6.6	20.8	0.50	93.8
79	PMW92-04	5.6	-4	6.6	20.5	0.54	94.9
80	PMW92-05	2.0	147	6.1	20.8	0.23	93.5
81	PMW92-06	2.2	-2	6.5	20.3	0.61	95.6
82	PMW85-01	6.8	60	6.1	19.3	0.19	97.7
83	PMW85-04	1.3	-117	6.6	19.1	0.96	97.9
84	PMW85-05	4.0	127	5.8	21.0	0.20	96.8
85	MW-85	2.6	-94	6.6	19.5	0.99	98.8
86	DR2-1	1.6	157	6.0	19.4	0.27	88.1
87	DR2-5	6.9	103	6.1	20.2	0.18	96.3
88	IW-01	1.8	194	5.2	20.2	0.20	95.5

INJECTION 30
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 10-Dec-07 END: 19-Dec-07

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	1.9	-104	6.1	17.9	9.68	90.1
2	IW101-01B	0.9	-132	6.5	17.9	0.90	90.0
3	IW101-01C	0.4	-118	6.2	18.0	0.90	90.0
4	IW101-02A	1.6	-163	6.2	18.0	3.27	90.2
5	IW101-02B	2.2	-86	6.3	18.9	0.90	90.2
6	IW101-02C	0.7	-150	6.1	19.7	1.00	90.7
7	IW101-03A	6.9	-80	6.0	20.7	1.05	90.8
8	IW101-03B	2.2	43	6.0	20.6	0.90	90.8
9	IW101-03C	3.0	-96	5.9	17.9	0.90	90.0
10	IW101-04A	0.0	-102	6.0	18.0	9.86	90.9
11	IW101-04B	2.5	-96	6.3	17.7	0.90	90.8
12	IW101-04C	1.9	-86	6.5	18.4	1.00	90.8
13	IW101-05A	2.0	-32	6.6	16.9	3.71	89.9
14	IW101-05B	4.0	25	6.2	18.2	0.47	90.6
15	IW101-05C	0.5	-86	6.2	19.0	0.54	90.5
16	IW101-06A	7.8	-23	6.3	21.1	1.09	91.2
17	IW101-06B	2.3	12	6.1	20.2	0.34	91.1
18	IW101-06C	5.3	-61	6.1	21.0	0.45	91.1
19	IW101-07A	7.6	-42	6.3	20.4	0.43	91.4
20	IW101-07B	2.8	-90	6.5	18.3	0.39	91.8
21	IW101-07C	3.2	-67	6.2	18.4	0.93	91.8
22	IW101-08A	4.0	-52	6.3	17.9	0.90	91.2
23	IW101-08B	2.8	-116	6.6	19.0	0.68	91.2
24	IW101-08C	1.0	-58	6.1	18.7	1.68	91.9
25	IW101-09A	3.0	-6	6.2	18.6	0.90	91.7
26	IW101-09B	1.2	-34	6.1	18.4	9.34	91.6
27	IW101-09C	3.2	-15	6.2	18.3	1.01	91.6
28	PMW101-01A	3.4	-155	6.8	17.6	3.37	96.1
29	PMW101-01B	0.9	-95	6.4	18.3	0.48	90.2
30	PMW101-02A	0.6	-146	6.8	17.1	0.68	90.9
31	PMW101-02B	0.5	-126	6.5	18.3	0.65	91.2
32	PMW101-03A	2.6	40	6.5	16.2	0.62	91.1
33	PMW101-03B	1.1	-105	6.6	17.8	0.71	91.2
34	PMW101-04A	0.6	-175	7.0	17.7	0.80	90.5
35	PMW101-04B	0.7	-102	6.4	17.9	0.47	91.1
36	PMW101-05A	0.1	-121	6.6	17.9	0.42	90.7
37	PMW101-05B	0.9	-65	6.4	18.1	0.31	91.1
38	PMW101-06A	1.9	58	6.1	17.7	0.27	91.4
39	PMW101-06B	0.6	-129	6.5	17.4	0.43	91.4
40	PMW101-07A	2.0	-64	6.3	18.7	0.39	91.4
41	PMW101-07B	1.9	105	5.9	17.6	0.15	91.5
42	PMW101-08A	3.0	52	6.3	14.8	0.44	92.3
43	PMW101-08B	3.4	78	6.0	19.5	0.12	92.2
44	MW-101T	6.0	124	5.9	21.0	0.90	90.3
45	MW-101B	4.2	87	6.0	20.5	0.90	90.3
46	DR1-3	1.1	-30	6.5	17.1	0.50	91.0

INJECTION 30
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 10-Dec-07 END: 19-Dec-07

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area							
47	IW21-01A	6.2	-94	6.4	17.2	1.69	92.2
48	IW21-01B	1.5	-103	6.4	18.3	0.90	92.4
49	IW21-02A	2.1	-25	6.0	17.9	0.29	92.4
50	IW21-02B	2.6	-76	5.8	17.8	0.24	92.5
51	IW21-03A	5.8	39	6.3	16.0	0.38	91.3
52	IW21-03B	3.8	-129	6.3	17.8	1.00	91.0
53	IW21-04A	1.9	-46	6.0	16.7	0.18	91.0
54	IW21-04B	2.7	-22	6.6	18.0	0.57	91.3
55	IW21-05A	2.7	2	6.2	17.2	5.88	90.8
56	IW21-05B	1.5	-110	6.2	17.0	0.84	90.5
57	PMW21-01	6.0	177	6.1	16.7	0.32	92.2
58	PMW21-02	5.7	158	6.0	17.3	0.34	91.3
59	PMW21-03	9.4	190	6.1	17.1	0.24	90.6
60	PMW21-04	1.6	173	6.0	16.7	0.42	90.5
61	PMW21-05	9.7	87	6.0	18.1	0.21	88.7
62	MW-21	3.5	150	6.0	16.5	0.36	92.5
63	MW-115	3.4	78	6.0	17.8	0.26	90.2
	TTA-2						
64	IW92-01	4.0	-45	6.1	20.2	0.96	87.2
65	IW92-02	4.8	4	6.3	10.7	1.05	88.7
66	IW92-03	9.2	20	6.0	14.0	2.41	91.7
67	IW92-04	14.8	15	6.4	14.5	6.54	92.4
68	IW92-05	0.2	-112	6.8	17.9	11.07	92.3
69	IW92-06	2.6	-81	6.7	19.3	11.06	92.3
70	IW92-07	8.8	-13	6.4	19.7	3.79	93.9
71	IW92-08	12.6	2	6.3	14.2	5.84	94.5
72	IW85-01	9.1	25	6.2	20.5	0.82	94.5
73	IW85-02	0.8	-77	6.4	15.5	3.61	95.8
74	IW85-05	3.0	-40	6.4	20.5	0.34	96.4
75	IW85-06	5.8	-35	6.3	19.5	0.85	97.2
76	PMW92-01	4.3	146	6.2	17.6	0.32	94.6
77	PMW92-02	3.6	-108	6.8	18.0	2.44	94.4
78	PMW92-03	2.4	107	6.4	17.8	0.44	93.8
79	PMW92-04	1.8	-29	6.5	18.4	0.56	94.9
80	PMW92-05	5.7	191	5.9	16.9	0.24	93.56 (TOP)
81	PMW92-06	2.1	-81	6.4	23.2	1.04	95.5
82	PMW85-01	9.5	99	6.1	18.7	0.19	97.4
83	PMW85-04	3.4	-105	6.4	20.9	3.23	98.0
84	PMW85-05	3.2	106	5.8	23.1	0.20	97.0
85	MW-85	3.0	-68	6.6	17.1	1.00	98.9
86	DR2-1	8.3	116	6.0	16.4	0.27	88.2
87	DR2-5	9.4	104	6.1	17.9	0.18	96.4
88	IW-01	2.4	110	5.3	22.2	0.28	95.4

INJECTION 31
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 28-Jan-08 END: 30-Jan-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	0.2	-109	5.8	18.4	1.14	89.8
2	IW101-01B	0.1	-204	6.6	18.5	0.49	89.9
3	IW101-01C	0.4	48	5.8	18.4	0.36	89.8
4	IW101-02A	0.2	-175	6.5	18.6	0.16	90.0
5	IW101-02B	0.6	16	5.9	18.6	0.43	90.1
6	IW101-02C	0.9	-86	5.5	18.6	0.34	90.6
7	IW101-03A	0.4	-154	5.8	18.7	0.68	90.8
8	IW101-03B	0.0	169	5.9	18.4	0.41	90.8
9	IW101-03C	0.4	-127	6.0	18.6	0.36	90.7
10	IW101-04A	0.0	-138	6.0	18.6	1.16	90.5
11	IW101-04B	0.3	-147	6.3	18.4	0.71	90.5
12	IW101-04C	0.3	-134	6.6	18.7	0.58	90.5
13	IW101-05A	0.0	-133	5.8	18.6	2.63	90.7
14	IW101-05B	0.1	-43	6.0	18.7	0.05	90.4
15	IW101-05C	0.1	10	5.7	18.6	0.39	90.4
16	IW101-06A	0.2	-177	6.3	18.9	0.86	90.9
17	IW101-06B	0.0	118	5.9	18.7	0.37	90.9
18	IW101-06C	0.3	-123	6.0	18.8	0.49	90.9
19	IW101-07A	0.3	-114	5.6	18.9	0.27	91.6
20	IW101-07B	0.0	5	7.1	18.5	0.36	91.6
21	IW101-07C	0.4	-148	6.1	18.7	0.82	91.5
22	IW101-08A	0.0	-141	6.9	18.8	0.68	90.8
23	IW101-08B	0.0	-138	7.1	18.3	0.79	90.9
24	IW101-08C	0.0	-116	6.6	18.8	0.54	91.5
25	IW101-09A	0.0	-153	6.7	19.1	0.60	91.2
26	IW101-09B	0.0	-108	6.6	18.7	0.90	91.1
27	IW101-09C	0.0	-60	6.3	18.5	0.87	91.1
28	PMW101-01A	6.0	-127	6.7	14.2	2.68	90.0
29	PMW101-01B	1.6	-75	6.6	16.8	1.55	90.2
30	PMW101-02A	0.7	-104	6.8	16.6	0.68	90.8
31	PMW101-02B	5.8	-88	6.5	16.0	0.60	91.0
32	PMW101-03A	6.2	3	6.4	16.3	0.53	91.1
33	PMW101-03B	0.6	-77	6.6	17.2	0.72	91.1
34	PMW101-04A	0.7	-96	6.9	17.2	0.65	90.5
35	PMW101-04B	3.9	-80	6.4	17.3	0.55	91.0
36	PMW101-05A	-0.8	-89	6.6	17.1	0.50	90.7
37	PMW101-05B	2.7	-21	6.3	16.8	0.22	91.1
38	PMW101-06A	2.9	50	6.0	17.3	0.31	91.2
39	PMW101-06B	-0.6	-86	6.5	18.1	0.40	91.3
40	PMW101-07A	1.2	-10	6.3	17.3	0.43	91.2
41	PMW101-07B	2.8	110	5.8	18.6	0.17	91.3
42	PMW101-08A	1.2	46	6.3	18.9	0.55	91.9
43	PMW101-08B	5.2	139	5.8	19.1	0.13	91.9
44	MW-101T	5.2	69	6.2	18.6	0.36	90.3
45	MW-101B	5.4	124	5.5	18.4	0.35	90.3
46	DR1-3	2.9	-65	6.4	16.5	0.42	91.4

INJECTION 31
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 28-Jan-08 END: 30-Jan-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area							
47	IW21-01A	0.0	-184	6.4	18.0	0.51	91.7
48	IW21-01B	0.0	-136	6.7	17.6	0.83	91.8
49	IW21-02A	0.0	45	6.1	17.8	0.27	91.9
50	IW21-02B	0.3	116	6.0	17.8	0.28	92.0
51	IW21-03A	0.0	95	5.8	17.9	0.24	90.6
52	IW21-03B	0.0	-129	6.3	17.7	0.41	90.3
53	IW21-04A	0.0	-150	6.7	17.6	0.80	90.5
54	IW21-04B	0.0	-137	6.4	18.2	0.65	90.6
55	IW21-05A	0.0	-122	6.2	18.1	1.22	90.0
56	IW21-05B	0.0	-43	6.3	17.7	0.35	90.0
57	PMW21-01	4.9	164	6.0	17.1	0.32	91.9
58	PMW21-02	7.6	183	6.0	17.4	0.25	91.0
59	PMW21-03	8.7	182	6.2	15.6	0.25	90.3
60	PMW21-04	3.8	184	6.0	17.4	0.31	90.2
61	PMW21-05	7.4	1167	6.0	17.7	0.26	88.3
62	MW-21	6.2	177	5.9	17.1	0.23	92.2
63	MW-115	1.5	167	6.0	18.0	0.24	89.9
TTA-2							
64	IW92-01	0.0	-167	6.3	19.8	2.46	86.0
65	IW92-02	0.0	-134	6.5	19.5	0.40	87.8
66	IW92-03	0.0	-118	6.1	19.5	0.43	91.7
67	IW92-04	0.0	-156	6.6	19.9	2.93	92.5
68	IW92-05	0.0	-179	7.2	20.4	13.50	92.3
69	IW92-06	0.0	-153	7.1	20.3	12.30	92.2
70	IW92-07	0.6	-102	6.2	20.3	2.38	94.1
71	IW92-08	0.2	-101	6.6	20.3	5.97	94.5
72	IW85-01	3.5	-45	6.1	19.4	4.47	94.6
73	IW85-02	0.0	-66	6.0	20.3	0.54	95.8
74	IW85-05	1.6	-22	6.0	19.8	0.26	96.8
75	IW85-06	4.7	-74	6.1	20.2	8.04	97.0
76	PMW92-01	3.5	48	6.2	18.5	0.31	94.4
77	PMW92-02	5.3	-136	6.8	19.0	2.19	94.2
78	PMW92-03	4.5	37	6.4	20.1	0.39	93.8
79	PMW92-04	2.5	-66	6.5	20.1	0.53	94.7
80	PMW92-05	9.7	153	6.0	11.5	0.23	93.5
81	PMW92-06	4.3	-74	6.5	16.5	1.20	96.0
82	PMW85-01	6.7	17	6.2	17.6	0.24	98.0
83	PMW85-04	3.9	-57	6.5	13.6	0.83	98.4
84	PMW85-05	3.5	106	5.7	18.2	0.20	97.4
85	MW-85	4.3	32	6.2	15.3	0.29	99.1
86	DR2-1	5.9	63	6.1	18.6	0.27	88.2
87	DR2-5	7.5	63	5.9	16.3	0.20	96.3
88	IW-01	3.4	131	5.2	20.6	0.27	95.4

INJECTION 32
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 25-Feb-08 END: 28-Feb-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	1.0	-178	5.8	18.5	3.12	89.8
2	IW101-01B	2.4	-181	5.8	18.5	0.49	89.7
3	IW101-01C	2.4	52	5.5	18.5	0.36	89.8
4	IW101-02A	3.3	-207	6.6	18.7	0.38	90.2
5	IW101-02B	3.0	-242	10.4	18.7	0.60	90.3
6	IW101-02C	3.3	-198	5.5	18.6	0.39	90.7
7	IW101-03A	0.7	-184	6.3	18.4	0.49	91.1
8	IW101-03B	2.7	210	5.5	18.7	0.30	91.0
9	IW101-03C	5.6	-174	5.5	18.8	0.24	91.9
10	IW101-04A	2.8	-196	5.6	18.6	1.72	90.5
11	IW101-04B	2.8	-170	5.8	18.7	0.51	90.5
12	IW101-04C	0.9	-56	6.5	18.4	0.42	90.8
13	IW101-05A	0.3	-163	5.6	18.7	3.37	90.9
14	IW101-05B	1.0	39	5.9	18.6	0.06	90.6
15	IW101-05C	0.3	15	5.7	18.5	0.49	90.6
16	IW101-06A	4.7	-224	6.2	18.8	0.99	91.9
17	IW101-06B	0.0	40	6.2	18.5	0.39	91.4
18	IW101-06C	1.0	-188	6.2	18.8	0.56	91.4
19	IW101-07A	0.9	-209	6.4	18.4	0.47	92.0
20	IW101-07B	4.9	-344	7.4	18.9	0.30	91.9
21	IW101-07C	3.4	-157	6.0	18.8	0.69	91.9
22	IW101-08A	4.2	-208	6.5	18.8	0.68	91.4
23	IW101-08B	0.7	-179	6.6	18.8	0.67	91.6
24	IW101-08C	0.7	-162	6.2	18.7	0.77	91.9
25	IW101-09A	1.2	-207	6.6	18.5	0.91	91.8
26	IW101-09B	1.2	-138	6.2	19.0	1.21	91.7
27	IW101-09C	2.0	-98	5.4	19.0	0.95	91.7
28	PMW101-01A	23.7	-94	6.5	18.1	3.25	90.0
29	PMW101-01B	1.4	-47	6.3	17.9	1.49	90.2
30	PMW101-02A	5.7	-47	6.3	18.1	0.54	90.9
31	PMW101-02B	2.6	-67	6.5	18.1	0.62	91.1
32	PMW101-03A	2.5	3	6.6	17.7	0.55	91.1
33	PMW101-03B	3.9	-76	6.5	18.0	0.81	91.1
34	PMW101-04A	2.9	0	6.5	15.9	0.49	90.6
35	PMW101-04B	7.2	-129	7.1	15.8	0.82	91.2
36	PMW101-05A	1.3	-14	6.5	16.2	0.43	90.9
37	PMW101-05B	3.8	-4	6.4	16.7	0.25	91.2
38	PMW101-06A	0.9	120	6.0	15.7	0.27	91.5
39	PMW101-06B	4.0	-53	6.5	15.4	0.35	91.5
40	PMW101-07A	4.4	2	6.3	15.9	0.40	91.6
41	PMW101-07B	0.2	146	5.9	16.4	0.16	91.8
42	PMW101-08A	3.2	120	6.3	18.5	0.56	92.8
43	PMW101-08B	6.1	143	6.0	19.0	0.17	92.3
44	MW-101T	5.7	43	5.9	18.8	0.35	90.5
45	MW-101B	5.9	113	5.4	18.4	0.35	90.5
46	DR1-3	0.0	15	6.5	16.0	0.38	92.0

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INJECTION 32
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 25-Feb-08 END: 28-Feb-08

Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area						
47 IW21-01A	6.4	-207	5.8	17.9	0.77	92.4
48 IW21-01B	0.8	-164	6.2	17.6	0.55	91.5
49 IW21-02A	0.5	49	6.0	17.6	0.37	92.7
50 IW21-02B	1.4	96	5.9	17.8	0.27	92.7
51 IW21-03A	0.0	122	6.3	17.6	0.36	91.5
52 IW21-03B	6.6	-209	5.9	17.8	0.58	91.2
53 IW21-04A	0.8	-215	6.5	17.8	0.76	91.3
54 IW21-04B	7.1	-209	6.3	18.2	0.64	91.5
55 IW21-05A	4.1	-167	5.8	18.1	3.22	90.8
56 IW21-05B	1.6	-186	6.2	17.7	0.36	90.9
57 PMW21-01	0.4	163	6.0	14.5	0.26	92.5
58 PMW21-02	32.6	192	6.0	16.0	0.27	91.7
59 PMW21-03	20.2	192	6.0	15.1	0.26	91.1
60 PMW21-04	12.3	193	6.1	15.3	0.33	91.0
61 PMW21-05	0.5	148	6.0	17.1	0.23	89.0
62 MW-21	0.3	181	5.9	15.5	0.21	92.8
63 MW-115	2.5	188	6.0	16.5	0.25	90.7
TTA-2						
64 IW92-01	1.4	-238	6.4	19.4	6.37	86.5
65 IW92-02	1.2	-209	6.3	19.6	4.36	88.3
66 IW92-03	5.0	-196	6.4	19.6	9.50	91.7
67 IW92-04	2.8	-177	6.4	19.2	10.40	92.5
68 IW92-05	0.9	-160	6.8	20.2	11.60	92.2
69 IW92-06	0.9	-144	6.7	20.0	13.50	92.3
70 IW92-07	1.3	-139	6.4	20.2	6.03	94.1
71 IW92-08	0.8	-147	6.9	20.2	13.50	94.6
72 IW85-01	1.3	-158	6.0	20.2	0.67	94.5
73 IW85-02	1.1	-103	6.1	20.3	0.52	96.0
74 IW85-05	1.2	-183	6.2	20.2	0.39	96.8
75 IW85-06	0.6	-150	6.5	20.2	0.91	97.0
76 PMW92-01	2.3	151	6.2	18.1	0.32	94.8
77 PMW92-02	2.6	-104	7.0	18.6	2.31	94.8
78 PMW92-03	6.3	79	6.4	17.8	0.45	94.0
79 PMW92-04	5.5	-30	6.5	17.9	0.57	95.2
80 PMW92-05	16.8	97	6.0	13.8	0.26	93.5
81 PMW92-06	-0.1	-60	6.5	16.8	2.01	96.0
82 PMW85-01	4.3	86	6.1	18.6	0.28	98.0
83 PMW85-04	5.3	-38	6.6	16.7	1.33	98.3
84 PMW85-05	5.6	151	5.7	18.7	0.21	97.4
85 MW-85	6.2	-18	6.5	17.2	0.56	99.1
86 DR2-1	2.3	112	6.1	19.4	0.24	88.3
87 DR2-5	5.8	126	6.0	18.1	0.19	96.5
88 IW-01	7.9	142	5.2	17.5	0.31	95.7

INJECTION 33
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 10-Mar-08 END: 19-Mar-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	3.0	-73	5.8	18.3	1.70	90.1
2	IW101-01B	2.4	-116	6.2	19.1	0.56	90.2
3	IW101-01C	2.7	-137	5.9	19.2	0.46	90.1
4	IW101-02A	1.9	-142	6.0	19.8	1.23	90.3
5	IW101-02B	1.4	69	6.0	18.3	0.36	90.3
6	IW101-02C	0.0	-177	5.9	18.4	0.75	90.8
7	IW101-03A	4.2	-124	5.9	18.4	0.90	91.1
8	IW101-03B	2.3	-106	5.9	18.9	0.34	91.0
9	IW101-03C	3.1	-121	5.8	19.2	0.91	91.0
10	IW101-04A	2.8	-14	6.2	21.0	5.77	90.6
11	IW101-04B	2.8	-110	6.4	20.4	0.75	90.6
12	IW101-04C	2.6	-128	6.9	19.0	0.59	91.0
13	IW101-05A	2.0	-124	6.1	19.6	4.50	90.8
14	IW101-05B	2.6	60	6.2	19.5	0.39	90.5
15	IW101-05C	3.5	-142	6.3	20.6	0.46	90.4
16	IW101-06A	6.4	-20	6.5	19.1	1.09	90.9
17	IW101-06B	0.2	-107	5.9	18.5	0.49	91.0
18	IW101-06C	1.5	-154	5.9	19.3	0.49	91.0
19	IW101-07A	2.6	-109	5.9	20.5	0.50	91.9
20	IW101-07B	3.5	-127	6.5	19.4	0.55	91.8
21	IW101-07C	1.1	-121	6.2	18.6	0.77	91.8
22	IW101-08A	3.8	-113	6.2	19.6	0.73	91.1
23	IW101-08B	3.4	-75	6.8	20.3	0.46	91.1
24	IW101-08C	1.3	-101	5.9	19.6	0.94	91.6
25	IW101-09A	4.4	-124	6.3	19.5	0.59	91.6
26	IW101-09B	3.7	-33	6.1	20.2	2.47	91.5
27	IW101-09C	1.0	-87	5.9	20.1	1.50	91.5
28	PMW101-01A	1.3	-99	6.2	17.2	2.49	90.4
29	PMW101-01B	0.9	-69	6.5	19.0	1.03	90.6
30	PMW101-02A	1.6	-74	6.5	20.1	0.54	91.2
31	PMW101-02B	1.1	-83	6.6	19.4	0.57	91.3
32	PMW101-03A	1.6	-11	6.7	17.0	0.65	91.4
33	PMW101-03B	0.9	-16	6.7	18.3	0.70	91.4
34	PMW101-04A	0.5	-138	7.1	19.2	0.91	90.6
35	PMW101-04B	0.8	-65	6.6	19.0	0.52	90.1
36	PMW101-05A	6.4	-28	6.5	16.8	0.59	90.7
37	PMW101-05B	5.8	34	6.3	17.8	0.32	91.1
38	PMW101-06A	5.7	48	6.1	20.4	0.38	91.3
39	PMW101-06B	4.7	-18	6.3	20.8	0.49	91.3
40	PMW101-07A	2.2	12	6.5	18.2	0.48	91.4
41	PMW101-07B	2.0	117	6.1	19.5	0.20	91.6
42	PMW101-08A	3.2	84	6.5	20.8	0.56	92.2
43	PMW101-08B	2.5	108	6.1	20.7	0.15	92.0
44	MW-101T	4.1	71	6.4	19.5	0.37	90.2
45	MW-101B	3.0	-110	6.5	19.9	0.41	90.2
46	DR1-3	5.8	-41	6.5	17.3	0.46	92.2

INJECTION 33
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 10-Mar-08 END: 19-Mar-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area							
47	IW21-01A	2.7	-136	6.6	17.1	2.42	92.5
48	IW21-01B	0.6	-75	6.1	17.4	0.19	92.7
49	IW21-02A	4.1	-157	6.4	18.6	0.32	92.6
50	IW21-02B	3.9	-106	6.3	19.0	0.31	92.7
51	IW21-03A	2.9	12	6.3	19.6	0.32	91.2
52	IW21-03B	5.4	-131	6.4	18.9	1.01	90.9
53	IW21-04A	4.5	-184	6.8	18.3	0.54	91.0
54	IW21-04B	0.4	-146	6.3	18.2	0.84	91.2
55	IW21-05A	1.8	-142	6.5	19.9	1.32	90.5
56	IW21-05B	0.4	-175	6.4	18.3	0.63	91.5
57	PMW21-01	5.9	74	6.0	18.2	0.33	92.2
58	PMW21-02	11.9	129	6.1	16.4	0.27	91.7
59	PMW21-03	18.4	130	6.0	18.2	0.27	91.0
60	PMW21-04	8.4	110	6.0	19.9	0.34	90.8
61	PMW21-05	7.8	82	6.0	19.8	0.28	88.6
62	MW-21	6.6	98	5.9	18.0	0.27	92.4
63	MW-115	7.2	97	6.0	20.3	0.26	90.4
TTA-2							
64	IW92-01	4.3	-74	6.9	22.2	0.63	85.9
65	IW92-02	27.6	-46	6.9	18.3	1.23	87.7
66	IW92-03	18.8	-41	6.8	21.3	3.26	91.5
67	IW92-04	5.2	-7	6.5	18.8	5.14	92.5
68	IW92-05	4.8	-73	6.4	22.1	2.85	91.2
69	IW92-06	0.6	-44	6.8	16.5	12.83	92.3
70	IW92-07	8.1	-89	6.5	20.1	2.36	94.2
71	IW92-08	1.6	-86	7.0	24.0	13.13	94.6
72	IW85-01	4.1	-20	6.1	21.0	0.99	94.5
73	IW85-02	5.4	-32	6.1	21.6	1.54	96.1
74	IW85-05	7.5	15	6.4	18.2	0.67	96.7
75	IW85-06	5.1	-72	7.0	18.9	2.28	97.2
76	PMW92-01	6.6	102	6.1	19.6	0.22	94.6
77	PMW92-02	18.4	-120	6.9	15.6	1.12	94.5
78	PMW92-03	18.1	107	6.3	17.9	0.40	92.9
79	PMW92-04	1.0	-73	6.4	20.1	0.46	95.1
80	PMW92-05	4.9	127	5.7	21.1	0.24	TOP(94.9)
81	PMW92-06	0.5	-125	6.5	20.9	1.67	95.8
82	PMW85-01	24.0	-70	6.6	19.2	0.68	97.9
83	PMW85-04	7.2	-123	6.6	20.9	1.00	98.0
84	PMW85-05	11.5	154	5.7	19.6	0.21	97.1
85	MW-85	4.3	-115	6.6	21.8	1.07	98.9
86	DR2-1	1.3	27	5.9	19.2	0.26	88.2
87	DR2-5	13.0	84	6.1	20.8	0.19	96.4
88	IW-01	0.5	114	5.3	20.6	0.26	95.6

INJECTION 34
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 28-Apr-08 END: 30-Apr-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	0.9	-70	6.2	17.9	1.92	90.0
2	IW101-01B	-0.2	-120	6.6	17.9	0.69	89.9
3	IW101-01C	-0.1	-150	6.9	18.1	1.07	90.0
4	IW101-02A	0.0	-197	8.2	17.9	0.12	90.3
5	IW101-02B	0.1	-131	6.7	17.9	0.65	90.4
6	IW101-02C	0.0	-140	6.9	18.2	0.45	90.8
7	IW101-03A	-0.5	-95	6.2	17.9	0.56	91.2
8	IW101-03B	6.4	-178	7.0	18.5	0.51	91.2
9	IW101-03C	-0.5	-94	6.2	18.2	5.95	91.3
10	IW101-04A	-0.2	-83	6.4	18.0	4.37	91.0
11	IW101-04B	1.8	-41	6.3	17.9	0.44	91.1
12	IW101-04C	0.0	-106	6.8	18.4	0.90	91.0
13	IW101-05A	-0.2	-78	6.2	18.0	4.59	91.9
14	IW101-05B	-0.2	-78	6.2	18.0	4.59	90.7
15	IW101-05C	0.0	-99	6.6	18.3	0.89	90.6
16	IW101-06A	-0.3	-107	6.4	18.0	1.22	91.4
17	IW101-06B	3.3	77	6.0	18.8	0.46	91.5
18	IW101-06C	0.1	-98	6.4	18.4	2.75	91.4
19	IW101-07A	6.5	-141	6.3	18.7	0.46	92.1
20	IW101-07B	-0.1	-135	6.9	18.1	2.01	92.1
21	IW101-07C	-0.1	-32	6.0	18.5	7.83	92.1
22	IW101-08A	-0.3	-95	6.4	18.2	0.49	91.5
23	IW101-08B	5.9	-183	6.6	18.8	0.48	91.6
24	IW101-08C	-0.3	-124	6.8	18.5	3.47	92.0
25	IW101-09A	8.2	-202	6.8	18.8	0.93	91.9
26	IW101-09B	-0.5	-71	6.4	18.3	2.73	91.8
27	IW101-09C	0.1	-5	6.0	18.5	4.95	91.8
28	PMW101-01A	11.0	-88	6.8	19.6	2.81	90.2
29	PMW101-01B	7.6	-34	6.5	19.2	1.98	90.4
30	PMW101-02A	6.2	-22	6.5	19.6	0.58	91.0
31	PMW101-02B	5.9	-58	6.5	19.3	0.70	91.2
32	PMW101-03A	5.9	4	6.6	19.1	0.73	91.3
33	PMW101-03B	1.4	-76	6.6	19.1	0.84	91.3
34	PMW101-04A	6.8	9	6.6	20.3	0.61	90.6
35	PMW101-04B	2.0	-35	6.4	19.9	2.49	91.1
36	PMW101-05A	2.1	-56	6.5	19.4	0.53	90.8
37	PMW101-05B	1.9	5	6.3	19.3	0.32	91.2
38	PMW101-06A	3.8	51	6.1	20.4	0.36	91.4
39	PMW101-06B	1.6	-49	6.4	20.1	0.43	91.5
40	PMW101-07A	4.3	85	6.2	18.6	0.44	91.7
41	PMW101-07B	1.6	126	6.2	19.1	0.24	91.8
42	PMW101-08A	3.5	105	6.3	19.4	0.54	92.4
43	PMW101-08B	3.2	134	6.0	19.4	0.13	92.4
44	MW-101T	0.2	-35	6.4	18.7	0.36	90.5
45	MW-101B	0.1	-17	6.3	17.9	0.37	90.5
46	DR1-3	2.4	26	6.4	17.7	0.43	92.0

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INJECTION 34
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 28-Apr-08 END: 30-Apr-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area							
47	IW21-01A	0.3	-75	6.4	17.9	7.60	92.4
48	IW21-01B	5.3	-157	6.4	17.9	0.90	92.5
49	IW21-02A	0.9	-18	6.0	17.9	0.29	92.6
50	IW21-02B	3.6	62	5.8	17.9	0.27	92.7
51	IW21-03A	4.2	85	6.0	17.8	0.38	91.3
52	IW21-03B	0.0	-93	6.2	18.0	5.46	91.0
53	IW21-04A	4.2	-29	6.1	18.0	0.50	91.2
54	IW21-04B	1.1	-91	6.5	18.2	0.75	91.3
55	IW21-05A	0.1	-153	7.0	17.9	4.03	90.6
56	IW21-05B	4.4	-20	6.0	17.9	0.41	90.7
57	PMW21-01	3.4	151	6.0	17.6	0.30	92.6
58	PMW21-02	4.5	172	6.0	18.9	0.26	91.6
59	PMW21-03	5.6	174	6.0	19.9	0.25	91.0
60	PMW21-04	4.1	176	6.0	19.6	0.31	90.8
61	PMW21-05	6.2	141	6.1	19.7	0.27	89.1
62	MW-21	5.8	167	6.0	19.7	0.26	92.8
63	MW-115	2.8	170	6.0	19.3	0.25	90.5
	TTA-2						
64	IW92-01	16.4	-75	6.2	19.9	3.54	86.0
65	IW92-02	7.7	-56	6.0	19.7	3.13	86.1
66	IW92-03	1.7	-45	6.2	19.8	9.42	91.7
67	IW92-04	1.9	-59	6.2	19.7	9.65	92.7
68	IW92-05	1.6	-99	6.6	20.3	3.30	T.O.C
69	IW92-06	1.0	-110	6.8	20.3	10.37	92.4
70	IW92-07	5.8	-38	6.1	20.4	1.38	94.2
71	IW92-08	1.2	-85	6.4	20.9	11.63	94.6
72	IW85-01	16.6	-35	5.8	20.6	0.63	94.5
73	IW85-02	0.0	-103	6.2	20.5	9.51	96.1
74	IW85-05	36.7	-122	6.1	20.6	0.33	96.7
75	IW85-06	4.3	-92	6.2	20.6	1.10	97.0
76	PMW92-01	1.9	132	6.2	21.7	0.30	94.6
77	PMW92-02	1.3	-63	7.0	21.9	1.85	94.7
78	PMW92-03	8.0	167	6.0	20.7	0.36	94.0
79	PMW92-04	4.1	116	6.0	21.7	0.26	95.1
80	PMW92-05	5.7	179	5.3	22.1	0.21	93.3
81	PMW92-06	6.1	0	6.3	23.3	1.82	95.8
82	PMW85-01	6.0	101	6.0	23.3	0.25	97.9
83	PMW85-04	5.0	14	6.2	21.2	1.16	98.1
84	PMW85-05	4.4	162	5.4	23.9	0.18	97.0
85	MW-85	4.1	29	6.1	23.2	0.48	98.9
86	DR2-1	1.7	108	6.2	23.4	0.42	88.3
87	DR2-5	6.5	178	5.7	23.8	0.16	96.4
88	IW-01	6.5	200	5.0	22.6	0.26	95.6

INJECTION 35
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 27-May-08 END: 29-May-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	1.3	-66	6.3	18.0	3.52	89.9
2	IW101-01B	-0.1	-106	6.6	17.9	0.49	89.9
3	IW101-01C	0.1	-131	6.8	18.5	1.05	89.9
4	IW101-02A	0.3	-119	7.3	18.4	0.23	90.6
5	IW101-02B	0.2	-319	11.6	18.4	0.71	90.3
6	IW101-02C	0.1	-117	6.7	18.5	0.35	90.7
7	IW101-03A	0.1	-100	6.3	18.1	0.64	91.0
8	IW101-03B	0.1	.24.8	6.2	18.1	0.28	91.0
9	IW101-03C	0.0	-92	6.2	18.6	2.86	91.1
10	IW101-04A	-0.1	-101	6.3	18.2	3.88	90.9
11	IW101-04B	0.0	-98	6.5	18.1	0.43	90.8
12	IW101-04C	0.0	-125	6.7	18.6	0.94	90.8
13	IW101-05A	0.1	-118	6.7	18.5	1.02	90.5
14	IW101-05B	0.1	-137	6.5	18.5	0.30	90.6
15	IW101-05C	0.0	-76	6.1	18.5	4.14	90.6
16	IW101-06A	0.0	-118	6.3	18.4	1.32	91.2
17	IW101-06B	0.1	-27	6.2	18.3	0.26	91.2
18	IW101-06C	0.1	-104	6.4	18.8	2.89	91.1
19	IW101-07A	0.4	-107	6.3	18.5	0.27	91.9
20	IW101-07B	0.1	-139	7.0	18.5	0.23	91.9
21	IW101-07C	0.0	-37	6.0	18.8	7.10	91.8
22	IW101-08A	1.0	-98	6.6	18.3	0.62	91.4
23	IW101-08B	-0.3	-120	6.8	18.3	0.91	91.6
24	IW101-08C	-0.1	-87	7.0	18.7	4.05	92.0
25	IW101-09A	0.3	-186	6.8	18.7	0.60	91.7
26	IW101-09B	-0.1	-128	6.5	18.9	2.06	91.6
27	IW101-09C	0.1	-33	6.0	18.9	1.06	91.6
28	PMW101-01A	3.4	-45	6.8	21.1	2.75	90.1
29	PMW101-01B	10.0	-6	6.4	21.5	1.35	90.3
30	PMW101-02A	5.2	53	6.5	22.5	0.41	90.8
31	PMW101-02B	1.4	-18	6.6	21.5	0.67	91.2
32	PMW101-03A	1.4	7	6.8	22.1	0.67	91.2
33	PMW101-03B	2.1	-43	6.7	21.7	0.64	91.2
34	PMW101-04A	6.5	99	6.6	22.9	0.44	90.5
35	PMW101-04B	1.0	26	6.4	21.6	0.40	91.1
36	PMW101-05A	0.5	-4	6.5	21.7	0.44	90.8
37	PMW101-05B	1.5	73	6.3	21.6	0.24	91.2
38	PMW101-06A	4.6	111	6.3	23.2	0.29	91.3
39	PMW101-06B	8.6	38	6.4	19.4	0.40	91.6
40	PMW101-07A	4.4	109	6.3	19.8	0.45	91.6
41	PMW101-07B	4.7	0	8.1	19.8	0.23	91.8
42	PMW101-08A	9.1	20	6.5	20.3	0.70	92.4
43	PMW101-08B	3.4	117	6.2	20.4	0.15	92.3
44	MW-101T	1.0	-16	6.4	19.1	0.33	90.5
45	MW-101B	-89.0	11	6.3	17.9	0.32	90.5
46	DR1-3	5.8	86	6.4	19.3	0.44	92.0

INJECTION 35
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 27-May-08 END: 29-May-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area							
47	IW21-01A	0.5	-62	6.6	17.9	4.63	92.4
48	IW21-01B	2.4	-60	6.5	18.1	1.19	91.5
49	IW21-02A	4.8	54	6.2	18.0	0.30	92.6
50	IW21-02B	-0.1	-14	6.1	18.1	9.83	92.7
51	IW21-03A	4.1	34	6.2	17.9	0.33	91.4
52	IW21-03B	-0.1	-86	6.5	18.1	4.55	91.1
53	IW21-04A	4.9	-92	6.5	18.1	0.47	91.2
54	IW21-04B	0.4	-106	6.7	18.2	1.35	91.4
55	IW21-05A	0.2	-74	6.3	18.2	2.53	90.8
56	IW21-05B	2.5	-98	6.5	18.1	1.81	90.8
57	PMW21-01	3.0	108	6.1	19.8	0.34	92.6
58	PMW21-02	8.3	160	6.5	19.8	0.34	91.6
59	PMW21-03	6.7	178	6.2	20.6	0.26	91.0
60	PMW21-04	2.8	182	6.0	19.6	0.33	90.9
61	PMW21-05	6.8	165	6.0	19.8	0.28	89.0
62	MW-21	7.6	169	6.0	21.0	0.26	92.9
63	MW-115	2.6	184	6.1	19.9	0.25	90.6
	TTA-2						
64	IW92-01	-0.7	-146	6.5	20.1	8.34	85.6
65	IW92-02	8.1	-88	6.4	20.2	0.45	85.7
66	IW92-03	4.7	-56	6.2	20.2	0.88	91.5
67	IW92-04	1.0	-100	6.8	20.3	3.24	92.6
68	IW92-05	-1.1	-152	7.1	20.9	11.38	92.0
69	IW92-06	0.1	-119	7.0	20.4	10.48	91.9
70	IW92-07	1.3	-36	6.2	20.6	1.18	94.0
71	IW92-08	-0.5	-98	6.9	20.7	13.77	94.4
72	IW85-01	8.4	26	6.3	20.6	7.74	94.4
73	IW85-02	7.9	40	6.4	21.3	11.52	96.1
74	IW85-05	1.7	58	6.2	20.6	0.73	96.7
75	IW85-06	6.5	26	6.2	20.9	7.34	96.9
76	PMW92-01	11.7	68	6.5	22.2	2.86	94.4
77	PMW92-02	8.7	-54	7.0	22.3	2.73	94.7
78	PMW92-03	3.4	77	6.6	22.6	0.48	93.9
79	PMW92-04	2.5	89	6.4	23.2	0.28	95.0
80	PMW92-05	3.4	152	5.8	26.8	0.28	93.2
81	PMW92-06	10.1	-18	6.6	24.4	2.58	95.7
82	PMW85-01	5.7	86	6.5	23.2	0.41	97.8
83	PMW85-04	7.7	-21	6.4	27.7	2.04	98.1
84	PMW85-05	5.2	88	6.1	24.8	0.53	97.0
85	MW-85	1.9	60	6.3	25.0	0.48	98.8
86	DR2-1	9.9	190	6.3	23.4	0.34	88.2
87	DR2-5	4.7	115	5.8	0.2	24.68	96.3
88	IW-01	4.7	121	5.7	24.0	0.90	95.5

INJECTION 36
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 9-Jun-08 END: 18-Jun-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	1.5	-13	6.2	21.5	3.97	89.8
2	IW101-01B	0.2	-42	6.3	23.9	0.54	84.8
3	IW101-01C	0.0	-50	6.1	23.2	0.50	89.8
4	IW101-02A	0.0	-128	6.2	23.9	1.13	90.0
5	IW101-02B	0.8	-103	6.3	24.2	0.74	90.9
6	IW101-02C	0.5	-35	6.1	23.8	0.78	90.7
7	IW101-03A	3.2	-30	6.1	23.1	1.03	90.9
8	IW101-03B	2.5	-107	6.3	21.8	1.11	90.9
9	IW101-03C	1.7	-44	6.0	21.8	1.10	91.0
10	IW101-04A	0.0	-51	6.2	21.5	3.91	91.0
11	IW101-04B	6.5	-20	6.4	20.8	0.67	90.8
12	IW101-04C	1.3	-20	6.6	21.3	0.57	90.8
13	IW101-05A	3.5	32	6.1	23.3	4.06	90.8
14	IW101-05B	7.1	155	6.2	20.8	0.39	90.4
15	IW101-05C	4.0	-31	6.4	20.4	0.53	90.4
16	IW101-06A	0.3	18	6.2	21.3	1.56	91.1
17	IW101-06B	3.0	64	6.2	21.3	0.39	91.2
18	IW101-06C	0.9	0	6.2	20.8	0.46	91.1
19	IW101-07A	1.5	-75	6.2	23.9	0.50	91.8
20	IW101-07B	0.7	-55	6.6	25.5	0.48	91.7
21	IW101-07C	5.8	16	6.2	24.4	0.66	91.8
22	IW101-08A	2.4	-21	6.5	21.6	0.63	91.1
23	IW101-08B	8.0	-126	6.7	19.9	0.66	91.4
24	IW101-08C	1.4	-40	6.4	21.3	1.14	91.9
25	IW101-09A	4.7	11	6.2	24.4	0.52	91.7
26	IW101-09B	0.3	-20	6.2	23.4	3.34	91.6
27	IW101-09C	4.0	73	5.8	22.8	1.42	91.5
28	PMW101-01A	20.9	-109	6.5	22.6	2.66	89.9
29	PMW101-01B	3.8	-68	6.2	21.4	0.84	90.1
30	PMW101-02A	4.6	-45	6.4	22.3	0.53	90.7
31	PMW101-02B	0.8	-103	6.3	24.2	0.74	90.9
32	PMW101-03A	6.5	-67	6.9	21.1	0.80	92.2
33	PMW101-03B	5.0	-87	6.7	20.7	0.77	91.2
34	PMW101-04A	16.5	-38	7.1	20.5	0.67	90.5
35	PMW101-04B	1.8	-32	6.5	21.0	0.46	91.0
36	PMW101-05A	4.6	43	6.5	21.1	0.58	90.7
37	PMW101-05B	5.5	50	6.6	20.9	0.55	91.1
38	PMW101-06A	6.3	102	6.2	20.5	0.38	91.3
39	PMW101-06B	8.3	47	6.4	23.9	0.49	91.3
40	PMW101-07A	11.4	87	6.3	22.7	0.51	91.4
41	PMW101-07B	2.2	147	6.0	21.9	0.23	91.6
42	PMW101-08A	4.1	16	6.4	23.8	0.65	92.1
43	PMW101-08B	4.5	94	6.2	21.6	0.42	92.1
44	MW-101T	1.2	158	6.1	23.8	0.39	90.4
45	MW-101B	0.9	47	6.2	21.5	0.40	90.4
46	DR1-3	4.4	44	6.4	20.9	0.47	92.8

INJECTION 36
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 9-Jun-08 END: 18-Jun-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area							
47	IW21-01A	7.1	-31	6.4	22.7	1.78	92.4
48	IW21-01B	6.7	-28	6.7	20.4	1.22	92.5
49	IW21-02A	8.5	-8	6.2	20.2	0.33	92.5
50	IW21-02B	10.1	8	6.0	19.0	0.26	92.5
51	IW21-03A	3.1	2	6.2	18.8	0.32	91.2
52	IW21-03B	0.4	-84	6.3	19.3	1.45	90.7
53	IW21-04A	0.0	-89	6.4	19.3	1.00	91.0
54	IW21-04B	0.0	-22	6.5	20.3	0.97	91.1
55	IW21-05A	0.0	-30	6.1	20.9	4.54	90.7
56	IW21-05B	0.0	-122	6.5	20.1	0.59	90.5
57	PMW21-01	4.7	161	6.1	20.0	0.31	92.3
58	PMW21-02	3.8	162	6.0	22.9	0.28	91.3
59	PMW21-03	5.3	168	6.0	22.8	0.27	90.7
60	PMW21-04	3.2	148	6.0	22.5	0.35	90.6
61	PMW21-05	6.8	204	6.0	23.9	0.30	88.7
62	MW-21	7.5	199	5.9	21.1	0.29	92.5
63	MW-115	1.9	137	6.0	21.6	0.28	90.5
TTA-2							
64	IW92-01	7.1	-31	6.4	22.7	1.78	92.4
65	IW92-02	3.4	-228	13.0	24.9	2.43	94.4
66	IW92-03	4.5	-182	13.1	28.3	9.14	91.3
67	IW92-04	2.5	-160	12.0	27.0	10.10	92.2
68	IW92-05	5.5	-191	10.8	24.8	9.90	91.5
69	IW92-06	4.3	-230	12.9	27.9	9.00	92.3
70	IW92-07	0.5	-151	6.3	24.4	9.00	94.0
71	IW92-08	2.0	-108	6.3	31.2	5.91	94.2
72	IW85-01	0.3	-88	6.2	23.4	3.41	94.3
73	IW85-02	0.0	-98	6.3	23.1	1.60	95.8
74	IW85-05	1.6	-69	6.2	23.5	1.00	96.2
75	IW85-06	0.0	-95	6.3	24.1	2.06	96.7
76	PMW92-01	4.7	161	6.1	20.0	0.31	92.3
77	PMW92-02	3.4	-228	13.0	24.9	2.43	94.4
78	PMW92-03	6.0	89	6.2	24.2	0.31	93.7
79	PMW92-04	3.9	-136	10.3	25.8	0.38	94.8
80	PMW92-05	4.1	112	5.9	27.8	0.19	93.7
81	PMW92-06	0.0	-174	6.3	27.9	1.06	95.5
82	PMW85-01	7.2	35	6.2	23.4	0.17	97.7
83	PMW85-04	1.6	-103	6.4	27.7	2.90	97.9
84	PMW85-05	2.7	-46	6.0	24.7	0.36	96.9
85	MW-85	0.0	-111	6.2	26.9	0.37	98.7
86	DR2-1	3.1	70	6.7	27.5	99.90	88.0
87	DR2-5	6.5	106	6.1	25.6	0.15	96.2
88	IW-01	0.0	-74	5.7	25.2	0.55	95.4

INJECTION 37
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 28-Jul-08 END: 31-Aug-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	1.3	-178	6.4	18.3	4.42	89.9
2	IW101-01B	0.2	-168	6.8	18.3	0.24	89.8
3	IW101-01C	0.0	46	6.4	18.3	0.19	90.8
4	IW101-02A	0.0	-142	6.2	18.6	0.38	90.1
5	IW101-02B	0.0	-141	7.0	18.5	0.25	90.2
6	IW101-02C	0.0	-114	6.4	18.9	0.17	90.6
7	IW101-03A	1.2	-127	6.4	18.2	0.82	90.9
8	IW101-03B	0.0	-149	6.3	18.7	0.18	90.8
9	IW101-03C	0.0	-113	6.1	18.8	0.11	90.9
10	IW101-04A	5.2	-155	6.2	18.5	4.73	90.8
11	IW101-04B	1.1	-113	7.1	18.0	0.44	90.7
12	IW101-04C	0.0	-110	6.9	18.7	0.19	90.7
13	IW101-05A	0.0	-149	6.2	18.6	4.95	90.8
14	IW101-05B	2.5	115	6.0	18.0	0.38	90.5
15	IW101-05C	1.2	-101	6.5	18.5	0.86	90.4
16	IW101-06A	1.7	-130	6.4	18.1	1.48	91.2
17	IW101-06B	0.9	-1	6.0	18.2	0.28	91.2
18	IW101-06C	0.6	-163	6.5	19.1	0.25	91.2
19	IW101-07A	1.2	-114	6.4	18.3	0.31	91.7
20	IW101-07B	0.0	-252	11.3	18.9	0.31	91.8
21	IW101-07C	0.0	-145	6.2	19.0	0.39	91.7
22	IW101-08A	1.3	-106	6.2	18.3	0.42	91.2
23	IW101-08B	1.4	-185	6.7	19.1	0.17	91.3
24	IW101-08C	1.2	-146.3	6.7	18.9	3.92	91.8
25	IW101-09A	1.0	-132	7.2	18.4	0.57	90.1
26	IW101-09B	1.0	-169	6.3	19.0	2.51	91.4
27	IW101-09C	1.9	-57	5.8	18.9	1.11	91.4
28	PMW101-01A	1.7	-81	6.9	23.4	2.72	90.0
29	PMW101-01B	1.2	-128	6.7	21.8	1.56	90.1
30	PMW101-02A	1.0	-55	6.3	23.9	0.50	90.7
31	PMW101-02B	0.6	-92	6.6	23.9	0.70	90.9
32	PMW101-03A	1.2	-73	6.9	23.5	0.75	91.1
33	PMW101-03B	0.6	-104	6.7	23.7	0.74	91.1
34	PMW101-04A	4.8	-33	7.1	28.7	0.63	90.3
35	PMW101-04B	1.4	-47	5.3	21.9	0.42	90.9
36	PMW101-05A	0.3	-68	5.0	23.5	0.47	90.6
37	PMW101-05B	0.4	-21	7.6	21.1	0.25	90.9
38	PMW101-06A	0.7	31	3.8	25.1	0.33	91.2
39	PMW101-06B	0.2	-73	4.2	24.6	0.39	91.2
40	PMW101-07A	15.1	57	7.9	22.8	0.47	91.3
41	PMW101-07B	12.4	91	4.4	22.1	0.23	91.5
42	PMW101-08A	6.4	76	4.0	24.3	0.56	92.0
43	PMW101-08B	5.6	70	3.9	24.4	0.19	92.0
44	MW-101T	4.2	121	6.4	19.9	0.38	90.3
45	MW-101B	1.6	81	6.3	17.9	0.38	90.3
46	DR1-3	2.1	7	6.3	22.7	0.45	91.7

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INJECTION 37
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 28-Jul-08 END: 31-Aug-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area							
47	IW21-01A	2.2	-183	6.4	18.0	0.23	92.1
48	IW21-01B	2.4	-85	6.2	18.5	5.82	92.2
49	IW21-02A	5.2	25	6.0	18.1	0.12	92.4
50	IW21-02B	2.6	-127	6.0	17.9	0.25	92.5
51	IW21-03A	1.4	34	6.1	17.9	0.11	91.1
52	IW21-03B	2.1	-158	6.2	17.9	0.14	90.8
53	IW21-04A	2.1	-173	6.5	18.2	0.22	91.0
54	IW21-04B	4.3	-138	6.2	18.2	0.18	91.1
55	IW21-05A	3.2	-168	6.5	18.2	0.64	90.5
56	IW21-05B	1.5	-91	6.2	18.2	0.12	90.5
57	PMW21-01	1.2	97	3.9	22.0	0.34	92.2
58	PMW21-02	5.6	87	5.8	23.9	0.25	91.2
59	PMW21-03	4.9	96	5.7	29.0	0.26	90.6
60	PMW21-04	6.7	129	6.5	21.9	0.31	90.5
61	PMW21-05	4.6	94	2.9	24.2	0.30	88.7
62	MW-21	4.7	127	5.7	24.8	0.25	92.4
63	MW-115	3.0	62	6.6	21.7	0.30	90.2
TTA-2							
64	IW92-01	1.5	-74	6.1	20.1	0.13	84.8
65	IW92-02	5.0	-165	6.1	20.0	0.63	85.0
66	IW92-03	7.5	-140	6.2	20.1	3.58	91.2
67	IW92-04	4.5	-187	6.6	20.3	4.56	92.1
68	IW92-05	1.7	-255	7.4	20.7	9.00	91.7
69	IW92-06	0.5	-233	7.2	20.4	9.00	91.8
70	IW92-07	0.4	-156	6.5	20.5	0.56	93.7
71	IW92-08	0.5	-150	6.7	20.9	5.42	93.9
72	IW85-01	0.5	-114	6.0	20.5	0.32	94.1
73	IW85-02	0.0	-55	5.6	22.5	6.06	95.6
74	IW85-05	0.0	-185	6.4	20.4	0.25	95.9
75	IW85-06	0.0	-165	6.5	20.8	0.67	96.6
76	PMW92-01	4.6	-82	7.0	25.6	12.12	94.0
77	PMW92-02	2.3	-140	7.8	24.3	2.57	94.3
78	PMW92-03	2.3	31	7.0	23.7	0.47	93.5
79	PMW92-04	2.2	-67	7.0	24.5	0.48	94.6
80	PMW92-05	4.2	115	6.2	28.0	0.24	93.4
81	PMW92-06	1.7	-115	7.2	27.7	1.08	95.3
82	PMW85-01	4.6	92	6.4	25.5	0.22	97.4
83	PMW85-04	1.6	-101	6.9	29.7	1.75	97.7
84	PMW85-05	1.5	-10	6.4	25.4	0.26	98.6
85	MW-85	1.9	1	6.7	27.9	0.31	98.5
86	DR2-1	4.1	99	6.4	30.1	0.30	87.7
87	DR2-5	6.2	57	6.1	26.5	0.08	96.0
88	IW-01	2.6	-17	6.2	24.3	0.65	95.2

INJECTION 38
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 25-Aug-08 END: 27-Aug-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	1.6	-33	6.1	18.1	4.03	89.9
2	IW101-01B	6.1	-256	6.1	18.9	1.54	89.8
3	IW101-01C	0.2	-123	6.4	18.3	9.88	89.8
4	IW101-02A	3.1	-99	6.2	18.0	0.11	90.0
5	IW101-02B	0.6	-121	6.0	18.4	8.79	90.1
6	IW101-02C	0.0	-284	5.9	19.0	0.79	90.5
7	IW101-03A	7.8	-90	5.8	18.1	1.22	90.8
8	IW101-03B	0.0	-249	5.9	19.0	1.08	90.8
9	IW101-03C	0.0	-76	6.0	18.6	2.63	90.8
10	IW101-04A	0.1	-119	6.1	18.1	7.60	90.9
11	IW101-04B	0.0	-252	6.4	18.9	7.16	90.7
12	IW101-04C	0.1	-135	6.2	18.5	5.58	90.7
13	IW101-05A	0.6	-116	6.0	18.2	5.99	90.8
14	IW101-05B	0.0	-223	5.6	19.0	0.10	90.4
15	IW101-05C	5.9	-126	5.9	18.7	3.59	90.4
16	IW101-06A	0.9	-105	5.9	18.1	2.37	91.0
17	IW101-06B	0.0	-189	5.5	19.3	1.63	91.1
18	IW101-06C	0.0	-161	5.6	19.4	1.26	91.1
19	IW101-07A	0.0	-250	5.8	19.1	0.90	91.6
20	IW101-07B	0.0	-150	6.3	18.3	18.01	91.7
21	IW101-07C	0.0	-90	5.8	19.3	1.76	91.6
22	IW101-08A	0.0	-196	6.3	19.3	1.84	91.2
23	IW101-08B	3.6	-116	5.9	18.4	6.01	91.3
24	IW101-08C	0.0	-182	6.1	19.4	2.13	91.7
25	IW101-09A	4.1	-162	6.4	18.3	0.64	91.5
26	IW101-09B	0.0	-170	6.3	19.3	4.64	91.4
27	IW101-09C	0.2	-64	5.9	18.7	1.86	91.4
28	PMW101-01A	3.2	-97	7.1	22.0	2.74	90.0
29	PMW101-01B	5.4	-71	6.7	21.4	1.60	90.1
30	PMW101-02A	3.3	-32	6.4	22.9	0.49	90.8
31	PMW101-02B	3.1	-81	6.6	22.2	0.67	91.0
32	PMW101-03A	3.2	-75	7.0	20.9	0.76	91.1
33	PMW101-03B	2.9	-95	6.8	21.2	0.68	91.1
34	PMW101-04A	8.2	-5	7.5	22.6	0.46	90.4
35	PMW101-04B	2.4	-28	6.5	21.6	0.42	91.0
36	PMW101-05A	2.5	-73	6.6	21.9	0.60	90.7
37	PMW101-05B	1.9	55	6.5	21.0	0.22	91.1
38	PMW101-06A	2.3	-49	6.4	22.1	0.41	91.3
39	PMW101-06B	0.0	-147	6.6	22.0	0.20	91.3
40	PMW101-07A	0.9	-74	6.4	23.5	0.21	91.3
41	PMW101-07B	2.2	134	6.2	22.5	0.23	91.5
42	PMW101-08A	1.7	-119	5.8	22.2	1.00	92.0
43	PMW101-08B	2.6	-2	5.9	22.7	5.19	92.0
44	MW-101T	0.0	89	5.8	18.9	0.47	90.3
45	MW-101B	0.0	72	6.1	18.6	0.47	90.3
46	DR1-3	2.9	-40	6.5	21.7	0.47	91.7

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INJECTION 38
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 25-Aug-08 END: 27-Aug-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area							
47	IW21-01A	3.4	-87	6.4	18.0	8.93	92.0
48	IW21-01B	7.4	-169	5.9	18.4	8.80	92.2
49	IW21-02A	13.9	-51	5.4	18.1	1.93	92.3
50	IW21-02B	8.6	-121	5.6	18.3	4.05	92.4
51	IW21-03A	1.6	-190	5.4	18.2	0.90	91.0
52	IW21-03B	0.0	-177	5.9	18.5	27.49	90.7
53	IW21-04A	1.5	-106	6.1	18.1	5.86	90.9
54	IW21-04B	2.6	-207	6.2	18.6	6.60	91.1
55	IW21-05A	0.3	19	7.6	18.8	0.16	90.4
56	IW21-05B	0.1	-114	6.2	18.4	6.28	91.5
57	PMW21-01	2.2	14	5.6	19.6	0.54	92.2
58	PMW21-02	1.7	-5	6.1	20.3	0.30	91.3
59	PMW21-03	3.8	97	6.2	21.4	0.27	90.7
60	PMW21-04	1.5	10	6.0	20.4	0.35	90.6
61	PMW21-05	6.0	185	6.1	22.1	0.30	88.7
62	MW-21	4.5	134	6.0	20.3	0.27	92.5
63	MW-115	0.7	81	6.1	20.2	0.28	90.3
TTA-2							
64	IW92-01	0.6	-317	6.3	20.5	10.49	85.6
65	IW92-02	0.6	-197	6.2	20.3	4.44	81.9
66	IW92-03	0.4	-391	6.5	20.3	10.41	91.1
67	IW92-04	0.3	-381	6.4	20.5	16.76	91.4
68	IW92-05	0.3	-387	6.7	20.8	17.93	91.5
69	IW92-06	0.0	-255	6.9	20.5	12.60	91.6
70	IW92-07	0.0	-108	6.4	20.6	8.52	93.5
71	IW92-08	0.0	-117	6.6	20.8	7.51	93.7
72	IW85-01	0.0	-107	6.5	20.6	8.00	94.0
73	IW85-02	0.0	-135	6.7	20.7	9.00	95.5
74	IW85-05	0.0	-77	6.2	20.6	0.52	95.5
75	IW85-06	0.0	-144	6.6	20.7	9.00	96.8
76	PMW92-01	6.4	-96	6.7	23.2	14.96	94.0
77	PMW92-02	3.7	-117	7.3	23.9	2.91	94.3
78	PMW92-03	3.3	38	6.6	22.9	0.56	93.4
79	PMW92-04	0.9	17	6.3	23.8	0.38	94.6
80	PMW92-05	2.1	-43	6.1	25.7	0.31	93.5
81	PMW92-06	11.9	-105	6.8	24.4	1.44	95.3
82	PMW85-01	3.8	-63	6.3	23.6	0.37	97.3
83	PMW85-04	6.0	-58	6.6	26.3	2.28	97.8
84	PMW85-05	6.0	135	4.5	24.8	0.41	96.7
85	MW-85	2.9	60	6.2	24.6	0.25	98.7
86	DR2-1	2.4	161	6.1	25.3	0.30	87.7
87	DR2-5	7.1	118	6.2	24.1	0.19	95.6
88	IW-01	1.0	39	5.4	25.3	0.26	95.2

INJECTION 39
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 22-Sep-08 END: 24-Sep-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	0.4	-160	5.9	18.3	9.99	90.3
2	IW101-01B	9.5	-270	6.0	18.7	3.91	90.1
3	IW101-01C	0.2	-62	5.2	18.5	0.56	90.1
4	IW101-02A	0.4	-135	5.7	18.5	0.26	90.3
5	IW101-02B	0.0	-313	11.6	19.0	2.47	90.4
6	IW101-02C	2.6	-219	5.5	18.9	2.59	90.7
7	IW101-03A	0.0	-240	5.7	18.8	2.17	91.2
8	IW101-03B	7.1	-201	6.4	18.7	2.59	91.1
9	IW101-03C	10.2	-205	5.8	19.1	4.86	91.1
10	IW101-04A	0.0	-161	5.8	18.6	9.99	91.2
11	IW101-04B	1.3	-264	6.3	18.7	1.05	91.1
12	IW101-04C	0.0	-121	5.8	18.7	3.75	91.0
13	IW101-05A	7.7	-204	6.0	19.0	9.82	91.0
14	IW101-05B	0.0	-122	5.5	18.8	2.46	90.8
15	IW101-05C	0.0	-74	5.2	19.1	0.35	90.7
16	IW101-06A	0.0	-140	5.7	18.9	2.92	91.4
17	IW101-06B	9.2	-192	5.7	19.2	4.13	91.3
18	IW101-06C	3.3	-48	5.0	19.0	0.63	91.3
19	IW101-07A	4.3	-172	6.1	18.9	0.66	91.9
20	IW101-07B	7.3	-229	6.1	19.1	10.00	91.9
21	IW101-07C	4.3	-128	6.2	19.0	2.86	91.9
22	IW101-08A	0.8	-221	6.4	19.1	0.59	91.5
23	IW101-08B	0.3	-205	5.7	19.4	1.41	91.5
24	IW101-08C	0.7	-161	5.7	19.4	2.82	91.9
25	IW101-09A	0.9	-273	6.7	19.0	0.94	91.8
26	IW101-09B	0.3	-168	6.3	19.2	13.40	91.8
27	IW101-09C	2.7	-184	6.0	18.9	3.04	91.7
28	PMW101-01A	3.6	-121	6.9	20.9	2.06	90.3
29	PMW101-01B	1.2	-71	6.4	21.3	1.18	90.4
30	PMW101-02A	0.9	-18	6.2	22.1	0.43	91.1
31	PMW101-02B	0.6	-54	6.6	21.3	0.51	91.3
32	PMW101-03A	1.1	-64	7.0	20.4	0.62	91.4
33	PMW101-03B	1.2	-87	6.5	21.1	0.60	91.4
34	PMW101-04A	1.7	21	6.4	22.2	0.41	90.7
35	PMW101-04B	0.8	-19	6.4	20.6	0.35	91.3
36	PMW101-05A	0.5	-56	6.6	23.8	0.49	91.0
37	PMW101-05B	0.7	-6	6.2	20.5	0.25	91.3
38	PMW101-06A	1.2	-17	6.3	21.5	0.33	91.5
39	PMW101-06B	0.0	-74	6.4	21.9	0.43	91.6
40	PMW101-07A	1.4	9	6.2	23.1	0.41	91.5
41	PMW101-07B	1.3	131	6.1	22.0	0.20	91.7
42	PMW101-08A	2.1	-1	5.5	22.8	0.73	92.3
43	PMW101-08B	0.8	-26	6.0	22.0	4.58	92.3
44	MW-101T	0.0	-206	5.9	19.1	0.49	90.5
45	MW-101B	0.0	-149	6.1	18.6	0.48	90.5
46	DR1-3	1.3	-24	6.4	22.9	0.40	92.0

INJECTION 39
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 22-Sep-08 END: 24-Sep-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area							
47	IW21-01A	0.0	-223	6.3	18.3	12.80	92.2
48	IW21-01B	0.0	-166	6.1	18.1	9.36	92.3
49	IW21-02A	0.0	-142	5.3	18.4	3.43	92.4
50	IW21-02B	0.0	-68	5.6	18.2	6.98	92.5
51	IW21-03A	0.0	-136	5.4	18.0	1.54	90.7
52	IW21-03B	0.0	-192	6.3	18.6	8.70	91.2
53	IW21-04A	0.0	-204	6.2	18.3	8.92	91.1
54	IW21-04B	0.0	-109	6.3	18.8	10.40	91.2
55	IW21-05A	0.0	-192	6.1	18.7	2.75	90.4
56	IW21-05B	0.0	-175	6.8	18.4	9.46	90.6
57	PMW21-01	4.5	72	5.7	19.3	1.95	92.4
58	PMW21-02	1.2	-2	5.8	21.9	0.63	91.5
59	PMW21-03	4.0	138	6.1	20.9	0.23	90.9
60	PMW21-04	9.8	55	5.3	20.9	1.50	91.8
61	PMW21-05	6.0	163	6.0	23.1	0.24	89.0
62	MW-21	5.3	87	6.0	19.6	0.33	92.7
63	MW-115	1.1	11	6.2	21.4	0.28	90.5
	TTA-2						
64	IW92-01	0.0	-76	6.5	20.9	13.13	85.0
65	IW92-02	9.5	-165	6.5	20.2	0.54	83.7
66	IW92-03	o/r	-224	6.4	20.5	16.50	91.1
67	IW92-04	9.4	-364	6.2	20.5	48.20	91.4
68	IW92-05	4.8	-244	7.0	20.8	34.50	91.5
69	IW92-06	8.0	-114	6.8	20.5	9.00	91.7
70	IW92-07	0.0	-180	6.6	20.8	23.80	93.4
71	IW92-08	-0.4	-16	6.0	21.0	8.24	93.9
72	IW85-01	o/r	-181	6.7	20.4	10.00	95.5
73	IW85-02	9.9	-204	7.2	20.6	10.40	95.5
74	IW85-05	0.0	-215	6.1	21.0	2.66	94.1
75	IW85-06	4.0	-283	6.6	21.0	33.20	96.5
76	PMW92-01	0.0	-149	6.8	24.7	20.64	94.0
77	PMW92-02	0.0	-132	7.2	24.9	2.79	94.5
78	PMW92-03	0.9	65	6.6	25.1	0.44	93.5
79	PMW92-04	0.9	-2	6.5	25.0	0.42	94.6
80	PMW92-05	1.4	-24	6.0	27.9	0.62	93.5
81	PMW92-06	0.0	-118	6.7	23.9	1.25	95.3
82	PMW85-01	0.3	37	6.2	23.6	0.42	97.3
83	PMW85-04	-0.4	-66	6.2	23.8	2.70	97.8
84	PMW85-05	0.0	9	5.4	23.4	2.95	96.6
85	MW-85	1.7	120	5.8	23.2	0.24	98.2
86	DR2-1	2.3	163	6.0	27.4	0.25	87.7
87	DR2-5	5.3	120	5.8	24.1	0.17	95.2
88	IW-01	0.0	-9	6.3	28.0	6.00	95.2

INJECTION 40
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 23-Oct-08 END: 28-Oct-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	0.0	-45	6.4	18.4	10.16	90.1
2	IW101-01B	0.0	-45	6.2	18.5	6.32	90.0
3	IW101-01C	0.0	16	5.8	18.7	2.01	89.9
4	IW101-02A	0.0	-22	6.0	18.4	1.93	90.3
5	IW101-02B	0.0	-124	7.4	18.7	0.32	90.4
6	IW101-02C	0.0	-1	5.7	18.8	3.05	90.7
7	IW101-03A	0.0	-17	5.9	18.6	1.89	91.2
8	IW101-03B	0.0	-46	6.2	18.7	3.64	91.2
9	IW101-03C	0.0	33	5.9	19.0	2.75	91.2
10	IW101-04A	0.0	-67	6.2	18.3	9.01	91.1
11	IW101-04B	0.0	-88	6.3	18.3	1.50	90.9
12	IW101-04C	0.0	-128	6.4	18.4	17.25	90.9
13	IW101-05A	0.0	-71	6.3	18.9	10.02	91.0
14	IW101-05B	0.0	-37	6.1	18.4	0.55	90.6
15	IW101-05C	0.2	3	5.7	18.6	4.07	90.5
16	IW101-06A	0.0	-101	6.0	18.6	2.13	91.3
17	IW101-06B	0.0	-32	5.8	18.7	2.44	91.6
18	IW101-06C	0.0	3	6.7	18.8	2.08	91.3
19	IW101-07A	0.0	-30	6.1	18.9	1.21	92.0
20	IW101-07B	0.0	-17	6.1	18.9	4.75	91.8
21	IW101-07C	0.0	-5	6.1	19.1	2.87	91.6
22	IW101-08A	0.0	-124	6.0	18.7	9.84	91.5
23	IW101-08B	0.0	-98	6.0	18.8	1.32	91.6
24	IW101-08C	0.0	-40	6.1	18.8	6.29	92.0
25	IW101-09A	0.0	-165	6.5	18.9	0.82	91.8
26	IW101-09B	0.0	-94	6.3	19.0	7.87	91.8
27	IW101-09C	0.0	-41	6.1	19.0	5.08	91.5
28	PMW101-01A	4.9	-72	7.4	18.7	2.80	90.2
29	PMW101-01B	7.1	-51	7.0	18.8	0.67	90.3
30	PMW101-02A	8.5	0	6.7	19.4	0.50	90.9
31	PMW101-02B	3.9	-34	7.5	19.3	0.24	91.2
32	PMW101-03A	4.5	-37	7.6	18.5	0.70	91.3
33	PMW101-03B	4.1	-46	7.3	19.0	0.64	91.3
34	PMW101-04A	3.8	38	7.8	19.1	0.24	90.6
35	PMW101-04B	5.1	17	6.8	19.1	0.41	91.2
36	PMW101-05A	13.7	-4	6.6	15.2	0.47	91.3
37	PMW101-05B	8.8	67	6.2	16.9	0.24	91.6
38	PMW101-06A	12.7	28	6.3	17.2	0.36	91.9
39	PMW101-06B	6.4	-17	6.7	17.2	0.39	92.0
40	PMW101-07A	4.0	62	6.4	17.8	0.43	91.9
41	PMW101-07B	2.5	177	6.0	17.8	0.22	92.1
42	PMW101-08A	0.5	74	5.1	18.7	0.95	92.7
43	PMW101-08B	-1.0	45	5.8	19.3	4.71	92.6
44	MW-101T	0.0	1	6.3	18.8	0.38	90.6
45	MW-101B	0.0	48	6.2	18.0	0.37	90.6
46	DR1-3	4.7	12	6.5	19.4	0.52	92.4

INJECTION 40
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 23-Oct-08 END: 28-Oct-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area							
47	IW21-01A	0.0	-91	6.0	17.7	10.96	91.1
48	IW21-01B	0.0	-111	6.0	18.1	9.63	92.4
49	IW21-02A	0.0	-51	5.3	18.0	1.60	92.4
50	IW21-02B	0.9	11	5.6	17.9	6.31	92.8
51	IW21-03A	0.0	-113	5.9	17.9	11.23	91.6
52	IW21-03B	0.0	-240	6.3	18.2	13.32	91.3
53	IW21-04A	0.0	-110	6.2	18.3	5.74	91.4
54	IW21-04B	0.0	-9	6.3	17.9	4.92	91.5
55	IW21-05A	0.5	-176	6.0	18.4	7.81	91.1
56	IW21-05B	1.1	-87	6.3	18.6	4.63	91.1
57	PMW21-01	1.9	69	5.1	17.5	1.91	92.7
58	PMW21-02	9.4	33	5.8	19.4	1.19	91.8
59	PMW21-03	7.1	77	6.2	16.9	0.29	91.1
60	PMW21-04	0.0	-173	5.3	17.0	1.00	91.1
61	PMW21-05	8.1	181	6.1	19.1	0.30	89.4
62	MW-21	8.8	146	5.8	17.0	0.39	92.9
63	MW-115	0.0	-87	6.0	-	0.43	90.6
	TTA-2						
64	IW92-01	4.7	-15	5.7	20.1	0.74	85.5
65	IW92-02	1.3	-54	6.4	20.2	0.59	84.6
66	IW92-03	0.0	2	6.0	19.7	3.09	91.0
67	IW92-04	0.0	-227	6.4	20.2	8.46	91.2
68	IW92-05	0.0	-118	6.9	20.5	0.13	91.4
69	IW92-06	0.0	7	6.4	20.4	11.21	91.7
70	IW92-07	8.9	-151	5.9	20.2	9.99	91.7
71	IW92-08	17.1	-234	6.2	20.4	12.80	94.3
72	IW85-01	0.0	-211	6.2	20.2	10.70	93.6
73	IW85-02	o/r	-219	6.3	20.4	11.70	95.3
74	IW85-05	0.8	-135	5.5	20.5	0.27	95.8
75	IW85-06	0.2	-113	5.9	20.6	8.59	96.8
76	PMW92-01	14.5	-361	6.7	20.6	42.40	94.0
77	PMW92-02	0.0	-180	7.1	21.8	99.90	94.5
78	PMW92-03	0.0	-28	6.2	19.5	o/r	93.6
79	PMW92-04	0.0	-70	6.4	20.5	99.90	94.8
80	PMW92-05	0.2	-169	5.9	21.2	2.00	93.4
81	PMW92-06	0.0	-143	6.7	20.7	40.30	95.4
82	PMW85-01	2.7	-106	6.0	20.6	0.15	97.5
83	PMW85-04	0.0	-138	6.5	21.1	26.70	98.9
84	PMW85-05	4.5	-97	5.5	21.5	1.74	96.6
85	MW-85	4.3	108	5.7	18.3	1.06	98.8
86	DR2-1	8.4	136	6.1	14.3	0.36	87.8
87	DR2-5	5.2	68	6.1	21.6	0.26	95.9
88	IW-01	12.5	-301	6.7	20.7	37.20	95.3

INJECTION 41
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 17-Nov-08 END: 19-Nov-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	0.0	-234	6.6	18.2	9.99	90.7
2	IW101-01B	1.6	-201	6.3	18.1	8.96	90.4
3	IW101-01C	3.8	-156	6.0	18.4	4.48	90.2
4	IW101-02A	0.9	-178	6.1	18.5	0.09	94.8
5	IW101-02B	2.9	-203	6.3	18.6	0.84	90.6
6	IW101-02C	7.7	0	5.9	19.0	4.29	91.0
7	IW101-03A	0.8	-64	6.0	18.5	0.13	91.3
8	IW101-03B	9.4	-180	6.1	18.9	5.25	91.3
9	IW101-03C	10.8	-138	6.1	18.8	5.65	91.2
10	IW101-04A	13.9	-212	6.5	18.4	9.60	91.8
11	IW101-04B	4.0	-221	6.4	18.5	4.62	91.4
12	IW101-04C	3.7	-137	6.1	18.7	5.64	91.3
13	IW101-05A	11.1	-211	6.7	18.5	9.99	91.4
14	IW101-05B	11.4	-178	5.9	18.7	5.96	91.0
15	IW101-05C	7.8	-190	5.7	19.2	2.54	90.8
16	IW101-06A	3.5	-187	6.1	18.8	3.16	91.7
17	IW101-06B	3.7	-146	5.6	18.9	2.76	91.8
18	IW101-06C	0.0	-143	5.7	18.9	2.55	91.7
19	IW101-07A	0.0	-218	5.9	19.0	1.84	92.4
20	IW101-07B	0.0	-193	5.9	19.0	4.04	92.3
21	IW101-07C	0.0	-132	6.0	19.2	5.87	92.3
22	IW101-08A	0.0	-229	6.3	19.2	4.95	91.6
23	IW101-08B	0.0	-152	5.8	19.0	1.92	91.8
24	IW101-08C	0.0	-219	6.4	19.3	9.58	92.2
25	IW101-09A	0.0	-302	6.3	19.1	0.93	92.1
26	IW101-09B	0.0	-179	6.4	19.2	11.60	92.1
27	IW101-09C	0.0	-199	6.2	19.2	8.43	91.9
28	PMW101-01A	4.6	-122	7.4	19.0	3.56	90.5
29	PMW101-01B	6.0	-136	7.0	19.0	0.69	90.6
30	PMW101-02A	5.0	-90	6.9	19.6	0.53	91.3
31	PMW101-02B	3.2	-127	7.1	20.0	0.42	91.5
32	PMW101-03A	4.9	135	7.5	19.2	0.72	91.5
33	PMW101-03B	3.8	-141	7.3	18.5	0.71	91.5
34	PMW101-04A	6.6	-78	7.4	18.7	0.59	90.8
35	PMW101-04B	2.9	-43	6.9	18.8	0.39	91.4
36	PMW101-05A	4.1	-59	7.0	18.1	0.59	91.1
37	PMW101-05B	1.4	-9	6.7	18.1	0.28	91.4
38	PMW101-06A	1.5	-68	6.4	16.8	0.41	91.8
39	PMW101-06B	1.3	-70	6.5	11.3	0.42	91.9
40	PMW101-07A	1.8	-42	6.4	17.9	0.45	91.8
41	PMW101-07B	0.8	90	6.0	17.6	0.20	92.0
42	PMW101-08A	4.9	-57	5.8	18.0	1.07	92.5
43	PMW101-08B	1.7	-68	6.0	18.7	6.75	92.5
44	MW-101T	0.8	-225	6.1	18.8	0.55	90.8
45	MW-101B	0.1	-273	6.1	18.5	0.52	90.8
46	DR1-3	3.4	-72	6.5	16.7	0.47	92.3

INJECTION 41
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 17-Nov-08 END: 19-Nov-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area							
47	IW21-01A	0.0	-211	6.1	17.9	9.99	92.3
48	IW21-01B	0.0	-275	5.9	18.3	10.70	92.4
49	IW21-02A	0.0	-144	5.3	17.8	-	92.4
50	IW21-02B	0.0	-406	6.3	18.3	19.00	92.6
51	IW21-03A	0.0	-229	6.5	17.8	0.26	91.2
52	IW21-03B	0.0	-347	6.3	18.2	10.70	90.9
53	IW21-04A	0.0	-250	6.4	18.2	9.60	91.1
54	IW21-04B	0.0	-210	6.3	18.5	9.30	91.2
55	IW21-05A	0.0	-292	6.4	18.8	0.92	90.2
56	IW21-05B	0.0	-196	6.2	18.4	9.99	90.6
57	PMW21-01	4.4	-14	5.6	18.3	2.20	92.6
58	PMW21-02	9.9	-40	5.7	12.3	2.06	91.4
59	PMW21-03	1.6	-50	6.4	16.6	0.32	90.7
60	PMW21-04	9.9	-17	5.7	17.5	3.12	90.6
61	PMW21-05	5.3	78	6.1	18.2	0.31	89.2
62	MW-21	5.7	152	6.2	15.4	0.27	92.6
63	MW-115	1.5	-74	6.5	18.3	0.41	90.3
	TTA-2						
64	IW92-01	0.0	-246	6.5	19.9	12.50	86.3
65	IW92-02	0.0	-167	6.1	20.1	2.53	97.3
66	IW92-03	0.0	-160	6.0	19.8	21.00	91.3
67	IW92-04	0.3	-284	6.5	20.4	15.70	91.7
68	IW92-05	0.0	-183	6.8	20.5	20.40	91.6
69	IW92-06	0.0	-376	6.7	20.6	30.90	91.6
70	IW92-07	0.0	-261	6.3	20.6	16.00	93.6
71	IW92-08	0.0	-235	6.8	20.9	24.10	94.4
72	IW85-01	0.0	-388	6.6	20.6	17.50	94.0
73	IW85-02	0.0	-257	6.8	20.9	18.50	95.4
74	IW85-05	0.0	-226	6.1	20.7	3.65	95.4
75	IW85-06	0.0	-197	6.4	20.9	9.84	97.0
76	PMW92-01	-0.4	-227	6.8	20.7	21.36	93.8
77	PMW92-02	0.0	-160	7.3	20.3	2.46	94.3
78	PMW92-03	0.5	24	6.5	19.5	0.44	93.4
79	PMW92-04	0.1	-37	6.5	18.9	0.46	94.6
80	PMW92-05	-1.2	-137	6.1	19.9	6.55	93.4
81	PMW92-06	-0.5	-102	7.0	19.9	1.32	95.3
82	PMW85-01	-0.2	-81	6.6	19.2	0.37	97.3
83	PMW85-04	0.6	-96	6.7	18.5	1.99	97.8
84	PMW85-05	-0.3	-68	6.1	19.7	3.53	96.6
85	MW-85	0.3	97	6.1	19.4	0.23	98.7
86	DR2-1	7.0	-19	6.8	17.9	0.28	87.5
87	DR2-5	6.7	112	6.2	18.8	0.17	95.9
88	IW-01	-0.5	-238	7.2	17.8	20.70	95.2

INJECTION 42
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 8-Dec-08 END: 17-Dec-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	0.6	-149	6.4	17.7	14.20	90.2
2	IW101-01B	0.9	-169	6.3	17.8	9.40	90.0
3	IW101-01C	0.6	-134	6.2	18.3	12.00	90.1
4	IW101-02A	2.6	-157	6.2	18.4	2.63	90.0
5	IW101-02B	1.5	-140	6.0	19.1	6.88	89.9
6	IW101-02C	1.2	-123	6.0	19.4	5.61	90.5
7	IW101-03A	1.6	-129	6.0	16.0	2.60	91.2
8	IW101-03B	0.4	-105	6.1	17.2	6.44	90.9
9	IW101-03C	0.8	-72	6.0	18.0	5.26	91.2
10	IW101-04A	0.0	-199	6.4	15.3	19.90	91.6
11	IW101-04B	0.4	-142	6.2	16.0	7.47	91.4
12	IW101-04C	0.3	-96	6.4	17.3	19.60	91.3
13	IW101-05A	0.0	-153	6.5	19.3	16.90	91.4
14	IW101-05B	0.5	-138	6.0	18.6	2.25	90.9
15	IW101-05C	9.8	-122	5.6	17.6	2.69	90.9
16	IW101-06A	0.8	-116	6.0	18.8	4.52	91.7
17	IW101-06B	0.9	-72	5.9	19.0	5.79	91.7
18	IW101-06C	1.1	-75	6.2	19.7	3.25	91.7
19	IW101-07A	0.9	-100	6.0	16.5	4.39	92.1
20	IW101-07B	0.8	-40	6.0	13.0	5.83	91.7
21	IW101-07C	0.0	-69	6.2	17.6	12.70	91.6
22	IW101-08A	0.0	-146	6.3	17.1	10.00	91.3
23	IW101-08B	0.8	-115	6.2	19.1	3.40	91.7
24	IW101-08C	0.7	-66	6.4	19.5	33.80	92.2
25	IW101-09A	1.1	-26	6.3	17.1	0.78	91.5
26	IW101-09B	0.0	-99	6.5	17.8	33.90	91.4
27	IW101-09C	0.4	-89	6.5	18.6	11.90	91.5
28	PMW101-01A	2.3	-17	6.8	16.0	4.22	90.1
29	PMW101-01B	3.1	-93	6.5	17.1	0.53	90.3
30	PMW101-02A	2.5	-84	6.7	15.3	0.60	90.9
31	PMW101-02B	2.3	-101	6.8	18.0	0.49	91.1
32	PMW101-03A	2.7	-100	7.3	16.9	0.66	91.1
33	PMW101-03B	6.3	-82	7.0	17.9	0.61	91.1
34	PMW101-04A	2.5	-122	7.4	17.7	0.58	90.3
35	PMW101-04B	2.1	-40	6.3	15.0	0.40	91.2
36	PMW101-05A	1.7	-74	6.5	15.5	0.62	91.0
37	PMW101-05B	1.7	-36	6.3	15.9	0.31	91.3
38	PMW101-06A	1.9	-61	6.5	15.2	0.46	91.6
39	PMW101-06B	1.5	-73	6.7	14.6	0.53	91.6
40	PMW101-07A	2.1	-42	6.6	12.2	0.46	91.6
41	PMW101-07B	2.4	-14	6.7	15.1	0.26	91.7
42	PMW101-08A	5.6	-5	5.6	13.3	1.28	92.0
43	PMW101-08B	5.1	-94	6.0	15.8	9.36	92.1
44	MW-101T	5.5	-212	6.4	12.1	0.64	90.5
45	MW-101B	2.9	-173	6.3	16.8	0.74	90.5
46	DR1-3	10.5	-51	6.6	13.6	0.48	91.7

INJECTION 42
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 8-Dec-08 END: 17-Dec-08

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area							
47	IW21-01A	1.0	-73	5.8	12.1	9.20	92.6
48	IW21-01B	1.8	-87	5.6	15.0	6.21	92.6
49	IW21-02A	2.0	-17	5.5	11.7	4.86	92.9
50	IW21-02B	3.5	-52	5.8	11.8	6.47	92.8
51	IW21-03A	5.4	-47	6.6	14.1	1.23	91.2
52	IW21-03B	2.4	-41	6.4	15.7	9.65	90.9
53	IW21-04A	0.0	-168	6.4	15.2	16.70	91.1
54	IW21-04B	0.0	-96	6.4	17.0	12.50	91.4
55	IW21-05A	0.2	-126	6.0	16.1	2.27	90.7
56	IW21-05B	0.0	-160	6.5	17.2	10.90	90.7
57	PMW21-01	13.7	-32	5.6	15.6	2.42	92.2
58	PMW21-02	4.8	-25	5.8	15.5	1.14	91.8
59	PMW21-03	3.6	-57	6.2	15.2	0.34	91.2
60	PMW21-04	5.6	-33	5.5	16.5	4.07	91.0
61	PMW21-05	10.5	41	6.4	13.0	0.29	88.7
62	MW-21	8.3	68	6.3	15.3	0.29	92.4
63	MW-115	4.2	-55	6.2	16.7	0.37	90.7
	TTA-2						
64	IW92-01	0.9	-42	6.5	16.9	5.09	86.3
65	IW92-02	0.6	-22	6.5	14.1	1.30	84.4
66	IW92-03	0.0	-75	6.3	14.2	4.54	91.1
67	IW92-04	0.0	-54	6.6	12.7	8.16	92.2
68	IW92-05	0.4	-170	7.1	10.8	17.73	92.2
69	IW92-06	0.1	-140	7.2	12.2	20.02	91.6
70	IW92-07	0.0	-102	6.5	15.9	20.00	93.6
71	IW92-08	0.1	-71	6.4	11.6	20.60	94.2
72	IW85-01	0.0	-228	7.1	8.0	16.70	93.9
73	IW85-02	0.0	-163	7.2	19.8	15.35	95.4
74	IW85-05	1.7	-24	6.4	16.5	4.79	95.6
75	IW85-06	0.0	-168	7.1	16.8	17.23	97.1
76	PMW92-01	0.0	-337	7.2	16.0	20.43	93.8
77	PMW92-02	3.0	-115	8.2	17.7	2.66	94.1
78	PMW92-03	1.6	54	7.1	16.5	0.49	93.5
79	PMW92-04	0.7	-39	7.1	17.7	0.47	98.0
80	PMW92-05	1.8	-80	6.5	11.6	1.11	93.7
81	PMW92-06	3.3	-120	7.4	19.3	0.64	95.2
82	PMW85-01	4.4	-100	7.2	17.0	0.72	97.3
83	PMW85-04	5.7	-98	7.3	16.2	1.94	97.7
84	PMW85-05	1.1	-387	6.8	19.1	3.37	97.0
85	MW-85	4.2	-60	6.2	16.6	0.25	98.8
86	DR2-1	4.3	63	6.5	13.5	0.25	88.6
87	DR2-5	7.9	139	6.2	17.8	0.24	95.8
88	IW-01	2.8	-54	6.5	14.8	2.46	95.2

INJECTION 43
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 19-Jan-09 END: 22-Jan-09

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-101 Area							
1	IW101-01A	0.0	-181	6.6	18.4	7.74	89.8
2	IW101-01B	0.0	-200	6.4	18.6	7.72	89.8
3	IW101-01C	0.0	-133	6.1	18.5	7.33	89.7
4	IW101-02A	0.0	-226	6.3	18.6	2.30	90.0
5	IW101-02B	0.6	-344	7.8	18.7	2.36	90.0
6	IW101-02C	0.0	-215	6.4	19.0	3.66	90.5
7	IW101-03A	0.0	-191	6.1	18.7	0.19	90.8
8	IW101-03B	0.0	-241	6.4	18.7	3.51	91.1
9	IW101-03C	0.0	-155	6.2	19.0	5.98	91.1
10	IW101-04A	0.0	-220	6.5	18.8	14.00	91.2
11	IW101-04B	0.0	-243	6.6	18.5	5.82	91.0
12	IW101-04C	0.0	-134	6.3	19.0	7.21	90.9
13	IW101-05A	0.0	-212	6.6	18.8	15.90	90.8
14	IW101-05B	0.0	-171	6.1	18.8	0.94	90.3
15	IW101-05C	0.0	-208	6.3	18.8	1.84	90.2
16	IW101-06A	0.0	-208	6.1	18.9	3.96	91.5
17	IW101-06B	0.0	-189	6.0	18.6	2.94	91.5
18	IW101-06C	0.0	-147	6.0	19.2	2.44	91.3
19	IW101-07A	0.0	-205	6.2	18.9	1.38	92.0
20	IW101-07B	0.0	-186	6.3	18.7	4.52	92.0
21	IW101-07C	0.0	-139	6.5	19.1	5.29	91.9
22	IW101-08A	0.0	-229	6.5	19.2	1.41	91.5
23	IW101-08B	0.0	-215	6.5	18.9	2.59	91.5
24	IW101-08C	0.0	-173	6.7	19.3	12.30	92.0
25	IW101-09A	0.0	-315	6.6	19.1	0.83	91.9
26	IW101-09B	0.0	-155	6.8	18.7	23.50	91.8
27	IW101-09C	0.0	-188	6.4	19.2	11.00	91.8
28	PMW101-01A	0.0	-108	6.9	14.4	5.17	89.9
29	PMW101-01B	15.3	-127	6.5	15.0	0.52	90.0
30	PMW101-02A	36.4	-124	6.8	15.1	1.16	90.7
31	PMW101-02B	4.8	-62	6.6	14.4	0.63	90.9
32	PMW101-03A	5.7	-82	7.0	13.6	0.73	91.0
33	PMW101-03B	5.6	-81	6.7	14.1	0.62	91.0
34	PMW101-04A	10.4	9	6.9	11.2	0.55	90.3
35	PMW101-04B	6.7	-10	6.4	12.9	0.42	90.9
36	PMW101-05A	6.6	-68	6.6	15.2	0.57	90.6
37	PMW101-05B	3.8	6	6.2	12.5	0.25	91.3
38	PMW101-06A	4.0	-25	6.3	12.2	0.39	91.5
39	PMW101-06B	2.9	-62	6.5	12.3	0.46	91.6
40	PMW101-07A	4.4	11	6.4	9.9	0.49	41.6
41	PMW101-07B	3.0	120	6.0	14.6	0.22	91.8
42	PMW101-08A	3.4	-110	6.2	12.2	0.67	92.3
43	PMW101-08B	0.3	-103	6.3	17.7	5.87	92.3
44	MW-101T	0.0	-18	6.3	19.0	0.84	90.2
45	MW-101B	0.0	16	6.4	18.8	0.05	90.2
46	DR1-3	4.3	-22	6.5	13.2	0.52	92.0

INJECTION 43
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 19-Jan-09 END: 22-Jan-09

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
TTA-1, MW-21 Area							
47	IW21-01A	0.0	-205	6.0	17.8	9.97	92.5
48	IW21-01B	0.0	-119	5 3	18.1	5.98	92.4
49	IW21-02A	3.0	-139	5.1	17.9	0.84	92.5
50	IW21-02B	0.0	-231	6.3	18.1	18.60	92.5
51	IW21-03A	0.0	-162	6.5	17.7	0.37	91.3
52	IW21-03B	0.0	-187	6.3	18.3	14.20	91.1
53	IW21-04A	0.0	-230	6.6	18.3	9.16	91.1
54	IW21-04B	0.6	-226	6.7	18.2	6.32	91.3
55	IW21-05A	2.8	-152	5.9	18.4	3.37	90.6
56	IW21-05B	0.0	-193	6.3	18.1	9.68	90.7
57	PMW21-01	2.5	-44	5.7	14.3	1.21	92.6
58	PMW21-02	2.7	-44	5.7	14.4	1.54	91.6
59	PMW21-03	1.2	-64	6.3	12.3	0.45	91.0
60	PMW21-04	1.2	27	5.6	15.4	2.98	90.9
61	PMW21-05	6.7	64	6.2	12.0	0.82	89.1
62	MW-21	4.5	61	6.0	12.3	0.28	92.8
63	MW-115	0.2	-9	6.2	16.4	0.37	90.5
TTA-2							
64	IW92-01	0.0	-354	6.3	20.2	30.70	86.1
65	IW92-02	0.0	-320	5.9	20.3	3.57	85.4
66	IW92-03	0.0	-292	5.2	20.2	44.80	91.0
67	IW92-04	0.0	-188	5.1	20.3	43.80	91.8
68	IW92-05	0.0	-75	5.7	20.5	12.20	91.3
69	IW92-06	0.0	-223	6.2	20.5	26.60	91.7
70	IW92-07	0.0	-194	6.3	20.5	19.50	93.4
71	IW92-08	0.0	-197	6.4	20.8	14.40	94.1
72	IW85-01	0.0	-164	6.3	20.2	20.70	93.8
73	IW85-02	0.0	-167	6.7	20.7	17.90	95.2
74	IW85-05	0.0	-187	5.9	20.8	3.03	95.2
75	IW85-06	0.0	-202	6.6	20.8	15.10	96.7
76	PMW92-01	-1.1	-97	6.7	18.1	18.61	93.9
77	PMW92-02	-0.2	-88	7.2	17.4	2.97	94.4
78	PMW92-03	0.4	20	6.2	18.0	0.58	93.4
79	PMW92-04	0.9	-14	6.2	18.2	0.52	94.7
80	PMW92-05	0.6	33	5.2	18.4	2.90	93.8
81	PMW92-06	3.2	7	6.2	15.9	3.07	95.2
82	PMW85-01	2.6	-16	6.2	18.7	0.44	97.2
83	PMW85-04	0.7	-94	6.3	20.0	2.73	97.7
84	PMW85-05	0.0	60	4.9	21.6	0.70	96.4
85	MW-85	9.2	106	5.8	20.4	0.26	98.6
86	DR2-1	2.8	37	6.2	15.1	0.30	86.9
87	DR2-5	3.4	166	5.5	19.7	0.19	95.8
88	IW-01	0.0	-129	6.8	12.1	18.57	95.3

INJECTION 44
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 16-Feb-09 END: 20-Feb-09

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
	TTA-1, MW-101 Area						
1	IW101-01A	0.0	-184	6.5	18.2	9.79	90.4
2	IW101-01B	0.0	-244	6.4	18.6	8.81	90.1
3	IW101-01C	0.0	-200	6.4	18.5	9.60	90.2
4	IW101-02A	0.0	-284	6.2	18.6	0.74	90.5
5	IW101-02B	0.0	-278	6.6	18.5	77.90	90.6
6	IW101-02C	0.0	-211	6.2	18.6	99.90	91.0
7	IW101-03A	1.4	-239	6.0	18.7	3.18	91.3
8	IW101-03B	0.0	-198	6.3	18.6	5.35	91.3
9	IW101-03C	0.0	-138	6.3	18.8	99.90	91.2
10	IW101-04A	0.2	-315	6.4	18.8	18.00	91.7
11	IW101-04B	0.0	-222	6.5	18.6	8.81	90.9
12	IW101-04C	0.0	-185	6.3	18.7	8.83	90.8
13	IW101-05A	0.0	-213	6.4	18.4	9.00	91.4
14	IW101-05B	0.0	-268	6.1	18.8	4.73	91.0
15	IW101-05C	0.0	-178	5.8	18.7	4.80	90.8
16	IW101-06A	0.0	-325	6.0	18.9	6.86	91.2
17	IW101-06B	0.2	-198	6.0	18.8	3.97	91.2
18	IW101-06C	0.0	-165	5.9	19.2	4.67	91.1
19	IW101-07A	0.0	-249	6.2	18.9	1.86	92.1
20	IW101-07B	0.0	-203	6.3	18.7	99.90	92.1
21	IW101-07C	0.9	-133	6.3	19.1	10.50	92.0
22	IW101-08A	0.0	-225	6.3	18.9	1.95	91.2
23	IW101-08B	0.0	-217	6.1	19.2	2.59	91.2
24	IW101-08C	0.0	-380	6.7	19.3	15.00	91.7
25	IW101-09A	0.0	-339	6.5	19.1	0.95	91.9
26	IW101-09B	0.0	-184	6.7	18.8	73.70	92.0
27	IW101-09C	0.0	-315	6.3	19.2	9.75	91.4
28	PMW101-01A	3.3	-104	6.7	16.2	5.01	90.1
29	PMW101-01B	1.7	-99	6.3	17.0	0.64	90.2
30	PMW101-02A	4.0	-81	6.7	9.2	0.96	90.9
31	PMW101-02B	1.9	-87	6.4	16.8	0.55	91.1
32	PMW101-03A	3.5	-82	6.8	16.1	0.72	91.5
33	PMW101-03B	2.8	-95	6.6	16.5	0.64	91.5
34	PMW101-04A	2.7	-65	6.7	16.8	0.58	90.9
35	PMW101-04B	2.1	-71	6.4	17.3	0.50	91.4
36	PMW101-05A	1.5	-76	6.5	16.5	0.57	91.1
37	PMW101-05B	1.5	-25	6.4	17.3	0.31	91.4
38	PMW101-06A	1.9	-30	6.3	16.8	0.40	91.7
39	PMW101-06B	1.1	-71	6.6	17.2	0.49	91.7
40	PMW101-07A	1.7	-44	6.5	17.6	0.52	91.7
41	PMW101-07B	1.7	-55	6.0	17.5	0.23	91.8
42	PMW101-08A	2.0	31	5.8	11.8	1.78	92.1
43	PMW101-08B	2.8	-82	5.9	17.2	0.55	92.2
44	MW-101T	0.0	-211	6.3	19.0	0.55	90.7
45	MW-101B	0.0	-228	6.3	18.5	0.56	90.7
46	DR1-3	1.6	55	6.4	15.4	0.53	91.7

INJECTION 44
PRE-INJECTION FIELD MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

START: 16-Feb-09 END: 20-Feb-09

	Well ID	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mv)	pH	Temperature (Celsius)	Conductivity (mS/cm)	Preinjection Water Depth (ft, btoc)
	TTA-1, MW-21 Area						
47	IW21-01A	0.0	-267	6.1	18.1	10.20	92.0
48	IW21-01B	5.7	-101	4.6	17.8	0.40	92.3
49	IW21-02A	0.0	-234	5.6	18.1	4.01	92.1
50	IW21-02B	0.0	-265	6.5	18.2	9.60	92.5
51	IW21-03A	1.6	-222	6.3	18.0	1.50	90.6
52	IW21-03B	0.0	-186	6.2	18.4	10.70	90.4
53	IW21-04A	2.9	-275	6.6	18.2	9.00	90.6
54	IW21-04B	0.0	-239	6.9	18.6	9.60	90.8
55	IW21-05A	0.7	-244	6.3	18.6	4.28	90.0
56	IW21-05B	0.0	-264	6.2	18.7	3.99	90.2
57	PMW21-01	1.6	-46	5.8	16.1	2.96	92.1
58	PMW21-02	4.1	-26	5.6	16.4	3.54	91.2
59	PMW21-03	1.5	-14	6.3	18.2	0.65	90.3
60	PMW21-04	2.9	5	5.7	18.6	3.71	90.2
61	PMW21-05	6.2	38	6.0	16.0	0.28	88.7
62	MW-21	4.7	95	6.0	17.7	0.29	92.2
63	MW-115	2.5	-21	6.3	19.5	0.45	89.9
	TTA-2						
64	IW92-01	0.0	-246	5.9	20.1	4.29	86.3
65	IW92-02	0.0	-142	5.4	20.0	2.47	85.7
66	IW92-03	0.0	-94	5.1	19.9	34.40	91.1
67	IW92-04	0.0	-379	6.2	20.0	23.30	91.8
68	IW92-05	0.0	-365	6.7	20.6	36.40	91.4
69	IW92-06	0.0	-163	6.5	20.5	14.50	91.3
70	IW92-07	0.0	-197	6.5	20.7	11.60	93.3
71	IW92-08	0.0	-163	6.3	20.9	6.36	93.5
72	IW85-01	0.0	-383	6.4	20.7	20.70	91.0
73	IW85-02	0.0	-227	6.7	20.8	18.80	95.1
74	IW85-05	0.0	-199	6.2	20.8	6.09	95.2
75	IW85-06	0.0	-222	6.8	21.0	13.10	95.3
76	PMW92-01	4.5	-333	6.4	21.9	31.60	93.7
77	PMW92-02	1.6	-157	7.0	22.5	3.44	94.3
78	PMW92-03	1.6	-48	6.4	22.0	0.62	92.3
79	PMW92-04	0.9	-48	6.5	22.0	0.60	94.4
80	PMW92-05	4.0	-156	6.0	22.3	7.93	93.5
81	PMW92-06	0.8	-84	6.5	21.7	0.60	95.0
82	PMW85-01	3.1	-39	6.3	16.7	0.38	95.2
83	PMW85-04	0.8	-94	6.6	12.0	1.99	98.0
84	PMW85-05	0.9	-11	5.5	17.2	1.37	96.8
85	MW-85	3.7	14	6.1	7.2	0.28	98.8
86	DR2-1	7.0	622	6.1	21.7	0.32	87.6
87	DR2-5	4.2	108	5.7	16.8	0.20	95.9
88	IW-01	3.5	-241	6.8	24.7	31.43	95.2

APPENDIX C

SECONDARY PARAMETER TABLES

SECONDARY PARAMETERS
TTA-1, MW-21 AREA ORP MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	FIFTH QUARTER			SIXTH QUARTER			SEVENTH QUARTER			EIGHTH QUARTER			NINTH QUARTER			TENTH QUARTER			FINAL
Injection Wells	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
Well ID	**9/24/2007**	**10/23/2007**	**11/27/2007**	**12/19/2007**	**1/30/2008**	**2/28/2008**	**3/24/2008**	**4/30/2008**	**5/29/2008**	**6/23/2008**	**7/28/2008**	**8/28/2008**	**9/24/2008**	**10/29/2008**	**11/21/2008**	**12/18/2008**	**1/23/2009**	**2/16/2009**	**3/12/2009**
IW21-01A	-54	-187	-205	-94	-184	-207	-136	-75	-62	-31	-183	-87	-223	-91	-211	-73	-205	-287	-60
IW21-01B	-78	-158	-206	-103	-136	-184	-75	-157	-60	-28	-85	-169	-166	-111	-275	-87	-119	-101	-84
IW21-02A	75	-37	-31	-25	45	49	-157	-18	54	-8	25	-51	-142	-51	-144	-17	-139	-234	41
IW21-02B	4	-107	16	-76	116	96	-106	62	-14	8	-127	-121	-68	11	-408	-52	-231	-265	-121
IW21-03A	72	9	39	39	95	122	12	85	34	2	34	-190	-136	-113	-229	-47	-182	-222	-17
IW21-03B	-88	-171	-202	-129	-129	-209	-131	-93	-86	-84	-158	-177	-192	-240	-347	-41	-187	-188	-23
IW21-04A	12	-167	-105	-46	-150	-215	-184	-29	-92	-89	-173	-106	-204	-110	-250	-166	-230	-275	-11
IW21-04B	103	-205	-35	-22	-137	-209	-146	-91	-106	-22	-138	-207	-109	-9	-210	-96	-226	-239	-33
IW21-05A	26	-138	-234	-72	-122	-167	-142	-153	-74	-30	-168	19	-192	-176	-292	-126	-152	-244	-129
IW21-05B	-10	-121	-147	-110	-43	-166	-175	-20	-98	-122	-91	-114	-175	-87	-196	-160	-193	-264	-80
Average	**6**	**-128**	**-111**	**-64**	**-65**	**-109**	**-124**	**-49**	**-50**	**-40**	**-106**	**-120**	**-161**	**-98**	**-256**	**-87**	**-184**	**-230**	**-52**

Monitoring Wells	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
Well ID	**9/24/2007**	**10/23/2007**	**11/27/2007**	**12/19/2007**	**1/30/2008**	**2/28/2008**	**3/24/2008**	**4/30/2008**	**5/29/2008**	**6/23/2008**	**7/28/2008**	**8/28/2008**	**9/24/2008**	**10/29/2008**	**11/21/2008**	**12/18/2008**	**1/23/2009**	**2/16/2009**	**2/16/2009**
PMW21-01*	154	2	213	177	164	163	74	151	108	161	97	14	72	69	-14	-32	-44	-46	0
PMW21-02*	176	202	231	158	183	192	129	172	160	162	87	-5	-2	33	-40	-25	-44	-26	31
PMW21-03	242	216	227	190	182	192	130	174	178	168	96	97	138	77	-50	-57	-84	-14	-9
PMW21-04*	158	211	209	173	184	193	110	176	182	148	129	10	55	-173	-17	-33	27	5	-15
PMW21-05	202	202	187	87	167	148	82	141	165	204	94	185	163	181	78	41	64	38	135
MW-115	-107	-18	158	78	167	188	97	170	184	137	82	81	11	-87	-74	-55	-9	-21	-35
MW-21	195	211	222	150	177	181	98	167	169	199	127	134	87	146	152	68	61	95	125
Average	**146**	**147**	**207**	**145**	**175**	**179**	**103**	**163**	**174**	**177**	**95**	**124**	**100**	**79**	**27**	**-1**	**13**	**25**	**54**

Aerobic	> 200 mV
Nitrate	-50 to 200 mV
Iron Red.	-220 to -50 mV
Sulfate Red.	-240 to -220 mV
Methanogenic	< -240 MV

Dates above reflect first day of lactate injection event
*Converted to Injection Well as of 4/30/2008

SECONDARY PARAMETERS
TTA-1. MW-101 AREA ORP MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	FIFTH QUARTER			SIXTH QUARTER			SEVENTH QUARTER			EIGHTH QUARTER			NINTH QUARTER			TENTH QUARTER			FINAL
Injection Wells	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
Well ID	**9/24/2007**	**10/23/2007**	**11/27/2007**	**12/19/2007**	**1/30/2008**	**2/28/2008**	**3/24/2008**	**4/30/2008**	**5/29/2008**	**6/23/2008**	**7/28/2008**	**8/28/2008**	**9/24/2008**	**10/29/2008**	**11/21/2008**	**12/18/2008**	**1/23/2009**	**2/16/2009**	**3/12/2009**
IW101-01A	-23	-132	-127	-104	-109	-178	-73	-70	-66	-13	-178	-33	-160	-45	-234	-149	-181	-184	-151
IW101-01B	-68	-187	-193	-132	-204	-181	-116	-120	-106	-42	-168	-256	-270	-45	-201	-169	-200	-244	-165
IW101-01C	-86	-13	-30	-118	48	52	-137	-150	-131	-50	48	-123	-82	18	-156	-134	-133	-200	-73
IW101-02A	-20	-153	-143	-163	-175	-207	-142	-197	-119	-128	-142	-99	-135	-22	-178	-157	-226	-264	-204
IW101-02B	110	-137	-83	-86	16	-242	69	-131	-319	-103	-141	-121	-313	-124	-203	-140	-344	-278	-199
IW101-02C	-96	-172	-186	-150	-86	-198	-177	-140	-117	-35	-114	-284	-219	-1	0	-123	-215	-211	-178
IW101-03A	-68	-176	-182	-80	-154	-184	-124	-95	-100	-30	-127	-90	-240	-17	-64	-129	-191	-239	-109
IW101-03B	33	3	-3	43	169	210	-106	-178	-25	-107	-149	-249	-201	-46	-180	-105	-241	-198	-91
IW101-03C	-27	-115	-125	-96	-127	-174	-121	-94	-92	-44	-113	-76	-205	33	-138	-72	-155	-138	-51
IW101-04A	-27	-166	-141	-102	-138	-196	-14	-83	-101	-51	-155	-119	-161	-67	-212	-199	-220	-315	-162
IW101-04B	-102	-149	-151	-96	-147	-170	-110	-41	-98	-20	-113	-252	-264	-88	-221	-142	-243	-222	-160
IW101-04C	-123	-40	-146	-86	-134	-56	-128	-106	-125	-20	-110	-135	-121	-128	-137	-96	-134	-185	-126
IW101-05A	-156	-155	-117	-32	-133	-163	-124	-78	-118	32	-149	-116	-204	-71	-211	-153	-212	-213	-163
IW101-05B	-33	-136	15	25	-43	39	60	-78	-137	155	115	-223	-122	-37	-178	-138	-171	-268	-192
IW101-05C	-104	-103	-46	-88	10	15	-142	-99	-76	-31	-101	-126	-74	3	-190	-122	-208	-178	-68
IW101-06A	-66	-106	-187	-23	-177	-224	-20	-107	-118	18	-130	-105	-140	-101	-187	-116	-208	-325	-98
IW101-06B	62	39	-30	12	118	40	-107	77	-27	64	-1	-189	-192	-32	-146	-72	-189	-198	-75
IW101-06C	-83	-112	-163	-81	-123	-188	-154	-98	-104	0	-163	-161	-48	3	-143	-75	-147	-165	-43
IW101-07A	-56	-181	-184	-42	-114	-209	-109	-141	-107	-75	-114	-250	-172	-30	-218	-100	-205	-249	-125
IW101-07B	-105	-208	-199	-90	5	-344	-127	-135	-139	-55	-252	-150	-229	-17	-193	-40	-186	-203	-154
IW101-07C	-41	-154	-151	-87	-148	-157	-121	-32	-37	16	-145	-90	-128	-5	-132	-89	-139	-133	-101
IW101-08A	-81	-129	-181	-52	-141	-208	-113	-95	-98	-21	-106	-196	-221	-124	-229	-146	-229	-225	-66
IW101-08B	-118	-158	-185	-116	-138	-179	-75	-183	-120	-126	-185	-118	-205	-98	-152	-115	-215	-217	-98
IW101-08C	-81	-137	-176	-58	-116	-162	-101	-124	-87	-40	146.3	-182	-161	-40	-219	-86	-173	-380	-85
IW101-09A	-24	-200	-188	-8	-153	-207	-124	-202	-186	11	-132	-162	-273	-165	-302	-26	-315	-339	-225
IW101-09B	-69	-85	-146	-34	-108	-138	-33	-71	-128	-20	-169	-170	-168	-94	-179	-99	-155	-184	-106
IW101-09C	-15	-52	-101	-15	-60	-98	-87	-5	-33	73	-57	-64	-184	-41	-199	-89	-188	-315	-91
Average	**-54**	**-123**	**-131**	**-67**	**-87**	**-137**	**-95**	**-103**	**-108**	**-24**	**-117**	**-153**	**-180**	**-51**	**-178**	**-113**	**-201**	**-233**	**-124**

Monitoring Wells	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
Well ID	**9/24/2007**	**10/23/2007**	**11/27/2007**	**12/19/2007**	**1/30/2008**	**2/28/2008**	**3/24/2008**	**4/30/2008**	**5/29/2008**	**6/23/2008**	**7/28/2008**	**8/28/2008**	**9/24/2008**	**10/29/2008**	**11/21/2008**	**12/18/2008**	**1/23/2009**	**2/16/2009**	**3/12/2009**
PMW101-01A	-166	-159	-158	-155	-127	-94	-99	-88	-45	-109	-81	-97	-121	-72	-122	-17	-108	-104	-50
PMW101-01B	-181	-98	-29	-95	-75	-47	-69	-34	-6	-66	-126	-71	-71	-51	-136	-93	-127	-99	-103
PMW101-02A	-181	-113	69	-146	-104	-47	-74	-22	53	-45	-55	-32	-18	0	-90	-84	-124	-81	-117
PMW101-02B	-143	129	-126	-126	-88	-67	-83	-58	-18	-103	-92	-81	-54	-34	-127	-101	-62	-87	-64
PMW101-03A	106	121	92	40	3	3	-11	4	7	-67	-73	-75	-64	-37	135	-100	-82	-82	-37
PMW101-03B	-77	-75	-6	-105	-77	-76	-16	-76	-43	-87	-104	-95	-87	-46	-141	-82	-81	-95	-56
PMW101-04A	-157	-129	-137	-175	-96	0	-138	9	99	-38	-33	-5	21	38	-78	-122	9	-85	-90
PMW101-04B	-87	-99	-13	-102	-80	-129	-65	-35	26	-32	-47	-28	-19	17	-43	-40	-10	-71	-97
PMW101-05A	-137	-122	-35	-121	-89	-14	-28	-56	-4	43	-68	-73	-56	-4	-59	-74	-68	-76	-105
PMW101-05B	-12	-5	-36	-65	-21	-4	34	5	73	50	-21	55	-6	67	-9	-36	6	-25	-82
PMW101-06A	95	137	185	58	50	120	48	51	111	102	31	-49	-17	28	-68	-81	-25	-30	-70
PMW101-06B	-135	-120	-27	-129	-86	-53	-18	-49	38	47	-73	-147	-74	-17	-70	-73	-62	-71	-66
PMW101-07A	-56	-72	63	-64	-10	2	12	85	109	87	57	-74	9	62	-42	-42	11	-44	-51
PMW101-07B	119	165	150	105	110	148	117	126	0	147	91	134	131	177	90	-14	120	-55	41
PMW101-08A*	26	95	189	52	48	120	84	105	20	16	76	-119	-1	74	-57	-5	-110	31	-70
PMW101-08B*	150	156	203	78	139	143	108	134	117	94	70	-2	-26	45	-68	-94	-103	-82	-49
MW101B	33	84	50	87	124	113	-110	-17	-89	47	81	72	-149	48	-273	-173	16	-228	-145
MW101T	104	38	3	124	89	43	71	-35	-16	158	121	89	-206	1	-225	-212	-18	-211	-126
DR1-3	-96	-86	-14	-30	-65	15	-41	26	86	44	7	-40	-24	12	-72	-51	-22	55	-17
Average	**-42**	**-8**	**22**	**-40**	**-20**	**9**	**-15**	**-10**	**22**	**10**	**-23**	**-31**	**-47**	**11**	**-78**	**-81**	**-37**	**-81**	**-73**

Aerobic	> 200 mV
Nitrate	-50 to 200 mV
Iron Red.	-220 to -50 mV
Sulfate Red.	-240 to -220 mV
Methanogenic	< -240 MV

Dates above reflect first day of lactate injection event
*Converted to Injection Well as of 4/30/2008
Note: MW101B and MW101T are two intervals in one well

SECONDARY PARAMETERS
TTA-2, ORP MEASUREMENTS
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	FIFTH QUARTER			SIXTH QUARTER			SEVENTH QUARTER			EIGHTH QUARTER			NINTH QUARTER			TENTH QUARTER			FINAL
Injection Wells	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
Well ID	**9/24/2007**	**10/23/2007**	**11/27/2007**	**12/19/2007**	**1/30/2008**	**2/28/2008**	**3/24/2008**	**4/30/2008**	**5/29/2008**	**6/23/2008**	**7/28/2008**	**8/28/2008**	**9/24/2008**	**10/29/2008**	**11/21/2008**	**12/18/2008**	**1/23/2009**	**2/16/2009**	**3/12/2009**
IW85-01	-74	-75	-197	25	-45	-158	-20	-35	26	-88	-114	-107	-181	-211	-388	-228	-164	-383	-345
IW85-02	-77	18	-183	-77	-66	-103	-32	-103	40	-98	-55	-135	-204	-219	-257	-163	-167	-227	-305
IW85-05	-30	21	-6	-40	-22	-183	15	-122	58	-69	-185	-77	-215	-135	-226	-24	-187	-199	-147
IW85-06	-38	-117	-181	-35	-74	-150	-72	-92	26	-95	-185	-144	-283	-113	-197	-168	-202	-222	-91
IW92-01	39	-152	-83	-45	-167	-238	-74	-75	-146	-31	-74	-317	-76	-15	-246	-42	-354	-246	-16
IW92-02	17	-53	-89	4	-134	-209	-46	-56	-88	-228	-165	-197	-165	-54	-167	-22	-320	-142	24
IW92-03	13	-136	-52	20	-118	-196	-41	-45	-56	-182	-140	-391	-224	2	-160	-75	-292	-94	-282
IW92-04	-58	-122	-70	15	-156	-177	-7	-59	-100	-160	-187	-381	-364	-227	-284	-54	-188	-379	-340
IW92-05	-45	-177	-103	-112	-179	-160	-73	-99	-152	-191	-255	-387	-244	-118	-183	-170	-75	-385	-343
IW92-06	-69	-119	-147	-81	-153	-144	-44	-110	-119	-230	-233	-255	-114	7	-378	-140	-223	-163	-337
IW92-07	-64	-88	-139	-13	-102	-139	-89	-38	-36	-151	-156	-108	-180	-151	-261	-102	-194	-197	-253
IW92-08	-92	-82	-128	2	-101	-147	-86	-85	-98	-108	-150	-117	-16	-234	-235	-71	-197	-163	-82
Average	**-40**	**-90**	**-115**	**-28**	**-110**	**-167**	**-47**	**-76**	**-54**	**-136**	**-157**	**-218**	**-189**	**-122**	**-248**	**-105**	**-214**	**-232**	**-210**

Monitoring Wells	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
Well ID	**9/24/2007**	**10/23/2007**	**11/27/2007**	**12/19/2007**	**1/30/2008**	**2/28/2008**	**3/24/2008**	**4/30/2008**	**5/29/2008**	**6/23/2008**	**7/28/2008**	**8/28/2008**	**9/24/2008**	**10/29/2008**	**11/21/2008**	**12/18/2008**	**1/23/2009**	**2/16/2009**	**3/12/2009**
DR2-1	-1	98	157	116	63	112	27	108	190	70	99	161	163	136	-19	63	37	622	89
DR2-5	214	105	103	104	63	126	84	178	115	106	57	118	120	68	112	139	166	106	0
IW-01*	168	135	194	110	131	142	114	200	121	-74	-17	39	-9	-301	-238	-54	-129	-241	-143
MW-85	-8	-6	-94	-68	32	-18	-115	29	60	-111	1	60	120	108	97	-60	106	14	74
PMW85-01	22	73	60	99	17	86	-70	101	86	35	92	-63	37	-106	-81	-100	-16	-39	-44
PMW85-04	-102	-135	-117	-105	-57	-38	-123	14	-21	-103	-101	-58	-66	-138	-96	-98	-94	-94	-144
PMW85-05*	225	147	127	106	106	151	154	162	88	-46	-10	135	9	-97	-88	-387	60	-11	-18
PMW92-01*	184	17	180	146	48	151	102	132	88	161	-82	-96	-149	-361	-227	-337	-97	-333	-350
PMW92-02	-86	-159	-79	-108	-136	-104	-120	-63	-54	-228	-140	-117	-132	-180	-160	-115	-88	-157	-131
PMW92-03	41	-95	101	107	37	79	107	167	77	89	31	38	65	-28	24	54	20	-48	-35
PMW92-04	-40	31	-4	-29	-66	-30	-73	116	89	-136	-67	17	-2	-70	-37	-39	-14	-48	-18
PMW92-05*	217	153	147	191	153	97	127	179	152	112	115	-43	-24	-169	-137	-80	33	-156	-116
PMW92-06	-27	-7	-2	-81	-74	-60	-125	0	-18	-174	-115	-105	-118	-143	-160	-120	7	-84	-39
Average	**62**	**28**	**59**	**45**	**24**	**53**	**7**	**72**	**58**	**-50**	**-16**	**6**	**21**	**-39**	**-35**	**-31**	**14**	**30**	**-28**

Aerobic	> 200 mV
Nitrate	-50 to 200 mV
Iron Red.	-220 to -50 mV
Sulfate Red.	-240 to -220 mV
Methanogenic	< -240 MV

*Converted to Injection Well as of 4/30/2008
Dates above reflect first day of lactate injection event

APPENDIX D

LABORATORY ANALYTICAL RESULTS

TABLE D-1
VOLATILE ORGANIC COMPOUNDS, FIFTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW21-01A	IW21-01A DUP	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B
	Lab ID	L0712497-03	L0712497-13	L0712497-04	L0712497-05	L0712497-08	L0712497-09	L0712497-10
	Date	12/17/2007	12/17/2007	12/17/2007	12/17/2007	12/17/2007	12/17/2007	12/17/2007
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	0.306 J	0 339 J
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0 4	<0 4	<0 4	<0.4	<0 4
1,4-Dichlorobenzene	ug/L	0.156 J	0 146 J	<0.5	<0.5	<0 5	0 167 J	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	9.16 J	13 5	116	<10	<10	<10	3.23 J
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0 4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	1.14	<1	<1	<1	<1	0.962 J
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0 3	<0.3	<0.3	0.145 J	<0.3	<0.3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	88.2	80.1	59.3	6.68	38.6	7.84	13.5
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5
Dibromochloromethane	ug/L	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0 6	<0.6	<0 6	<0.6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	59.4	79 3	357	<10	2 87 J	<10	12.2
Methyl t-butyl ether (MTBE)	ug/L	42.1	44.5	8.88	39 6	77.5	60.4	40 3
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	30.9	29.9	0.714 J	156	67.1	89 4	38 6
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	0 254 J	0.266 J	0 307 J	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	21.7	17.9	0.396 J	26	6.64	29.6	15.8
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J. Estimated result based on QC data or reported below RL
B· Estimated result possibly biased high or false positive based on blank data

1013212

TABLE D-1
VOLATILE ORGANIC COMPOUNDS, FIFTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW21-04A	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115	PMW21-01
	Lab ID	L0712444-09	L0712497-11	L0712444-10	L0712444-12	L0712562-15	L0712562-16	L0712562-11
	Date	12/14/2007	12/17/2007	12/14/2007	12/14/2007	12/18/2007	12/18/2007	12/18/2007
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0 5	<0 5	<0 5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0.5	<0.5	<0 5	<0 5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0 5	<0.5	<0.5	0 407 J	<0 5	0 366 J	0 291 J
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0.4	<0 4	<0.4	<0.4	<0 4
1,4-Dichlorobenzene	ug/L	0.169 J	<0.5	0 22 J	<0 5	<0 5	<0.5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	14.1	<10	50.5	3 21 J	<10	<10	<10
Benzene	ug/L	<0.4	<0.4	<0.4	<0 4	<0.4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	0.725 J	<1	1.1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0 5	<0 5	<0.5	<0.5	<0 5	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0 3	<0 3	<0.3	<0 3	0 137 J	<0.3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	37 3	5.41	25.6	20 2	2.12	2.49	2 17
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0 5	<0.5	<0 5	<0 5	<0.5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0 6	<0 6	<0.6	<0 6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	454	<10	468	32	<10	<10	<10
Methyl t-butyl ether (MTBE)	ug/L	15	1.86 J	22 2	31 8	90.5	3.47 J	33 6
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	1 16	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	19.2	4 62	12.4	26 8	178	9 81	130
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	9 47	3.55	6.95	9 68	32.5	1.35	39.5
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fals

TABLE D-1
VOLATILE ORGANIC COMPOUNDS, FIFTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	PMW21-02	PMW21-03	PMW21-03 DUP	PMW21-04	PMW21-05	IW101-01A	IW101-01A DUP
	Lab ID	L0712562-12	L0712562-13	L0712562-10	L0712562-14	L0712562-01	L0712280-08	L0712280-06
	Date	12/18/2007	12/18/2007	12/18/2007	12/18/2007	12/18/2007	12/10/2007	12/10/2007
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	0.315 J	0.519	0 451 J	<0.5	<0.5	<0 5	<0.5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0 4	<0.4	<0.4	<0 4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	<0.5	<0 5	<0 5	<0.5	<0.5	<0 5	0.14 J
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	<10	<10	<10	<10	3.85 J	3 31 J
Benzene	ug/L	<0 4	<0.4	<0 4	<0 4	<0 4	<0.4	<0 4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	0.538 J	0.607 J
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0 3	<0.3	<0 3	<0.3	<0.3	<0.3	<0 3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	0 626 J	0.403 J	0 465 J	1.83	0 527 J	18 6	20.6
cis-1,3-Dichloropropene	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0 6	<0 6	<0.6	<0 6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	<10	<10	<10	<10	79.1	80
Methyl t-butyl ether (MTBE)	ug/L	27.1	12	12.2	85.2	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	32 6	28.5	28.9	93 4	50.3	1.46	1.41
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	0.259 J	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	17	9.84	10.1	49	18 2	2.95	3 16
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<. Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fal

TABLE D-1
VOLATILE ORGANIC COMPOUNDS, FIFTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02B DUP	IW101-02C	IW101-03A
	Lab ID	L0712280-09	L0712280-10	L0712280-11	L0712280-12	L0712280-07	L0712314-02	L0712314-03
	Date	12/10/2007	12/10/2007	12/10/2007	12/10/2007	12/10/2007	12/11/2007	12/11/2007
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0 5	<0 5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0 5	<0 5	<0.5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0.4	<0 4	<0.4	<0 4	<0 4
1,4-Dichlorobenzene	ug/L	<0.5	<0 5	<0 5	<0.5	<0 5	<0.5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	<10	<10	<10	<10	<10	<10
Benzene	ug/L	<0.4	<0 4	<0 4	<0.4	<0.4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0 3	0.144 J	<0 3	0 194 J	0.176 J	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	27.6	21.3	64.7	20 6	21.1	58 2	16.6
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0 6	<0 6	<0 6	<0 6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	2.94 J	<10	110	<10	<10	56 B	15 1 B
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	1.37	96.8	11.4	102	99 1	49.9	13.3
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	0.288 J	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	0.804 J	7.02	5 5	4.01	4.34	12.3	4.15
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fal

TABLE D-1
VOLATILE ORGANIC COMPOUNDS, FIFTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-03B	IW101-03C	IW101-04A	IW101-04B	IW101-04C	IW101-05A	IW101-05B
	Lab ID	L0712314-04	L0712375-01	L0712375-02	L0712375-03	L0712375-04	L0712280-03	L0712280-04
	Date	12/11/2007	12/12/2007	12/12/2007	12/12/2007	12/12/2007	12/10/2007	12/10/2007
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0 5	<0 5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0.5	<0 5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	0.324 J	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	0.562 J	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	0.536	<0 5	<0 5	2.13	<0.5	<0.5
1,2-Dichloropropane	ug/L	<1	0.691 J	<1	<1	3 56	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0.4	<0 4	<0 4	<0 4	<0.4
1,4-Dichlorobenzene	ug/L	<0 5	<0.5	<0.5	<0 5	<0 5	0 392 J	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	<10	45	<10	<10	14.9	<10
Benzene	ug/L	<0 4	<0.4	<0.4	<0 4	0.392 J	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	0 68 J	<1	<1	0 852 J	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	0.133 J	<0 3	<0.3	0.152 J	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	0.828 J	63 6	32	46 5	232	39.7	28 8
cis-1,3-Dichloropropene	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0 5	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0 6	<0.6	<0 6	<0.6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	3 3 J	123	37.5	29	113	<10
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	88 4	25 8	0.39 J	2.87	2.89	10 5	76.9
Toluene	ug/L	<1	<1	<1	<1	<1	0 793 J	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	0.511 J	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	0 609 J	47.4	0 37 J	2 04	13 3	1.03	2.48
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J. Estimated result based on QC data or repor
B. Estimated result possibly biased high or fal

TABLE D-1
VOLATILE ORGANIC COMPOUNDS, FIFTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW101-05C	IW101-05C DUP	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B
	Lab ID	L0712280-05	L0712280-01	L0712314-14	L0712314-15	L0712314-16	L0712314-17	L0712375-06
	Date	12/10/2007	12/10/2007	12/11/2007	12/11/2007	12/11/2007	12/11/2007	12/12/2007
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0 5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0 5	<0 5	<0 5	<0.5	0 693	<0 5	0 573
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	1.05	<1	0.632 J
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0 4	<0 4	<0.4	<0.4	<0.4	<0 4
1,4-Dichlorobenzene	ug/L	<0.5	<0.5	0.188 B	<0 5	<0 5	<0 5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	<10	<10	20 B	4 23 B	9 61 B	<10
Benzene	ug/L	<0 4	<0 4	<0 4	<0 4	<0.4	<0.4	<0 4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0 3	<0.3	0.164 J	<0.3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	70.7	66 8	3 33	1.11	115	14 2	109
cis-1,3-Dichloropropene	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0.6	<0 6	<0 6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	26 6	33 3	11.2 B	7.84 B	45.8 B	20 2 B	28.7
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	44	45 9	22 4	50.8	10 4	8.59	2.11
Toluene	ug/L	0 279 J	<1	0 344 B	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	0.254 J	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	5 62	5.75	2 29	7.91	29 2	10.9	6.97
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fal

TABLE D-1
VOLATILE ORGANIC COMPOUNDS, FIFTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW101-07C	IW101-08A	IW101-08A DUP	IW101-08B	IW101-08C	IW101-09A	IW101-09B
	Lab ID	L0712375-07	L0712431-13	L0712431-12	L0712375-08	L0712431-18	L0712431-14	L0712431-17
	Date	12/12/2007	12/13/2007	12/13/2007	12/12/2007	12/13/2007	12/13/2007	12/13/2007
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0 5	<0.5	<1	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<2	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<1	<0 5	<0 5
1,1,2-Trichloroethane	ug/L	0.704 J	<1	<1	<1	<2	<1	<1
1,1-Dichloroethane	ug/L	0.699 J	<1	<1	<1	0.619 J	<1	0.301 J
1,1-Dichloroethene	ug/L	0.9 J	<1	<1	<1	<2	<1	0.602 J
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<2	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<2	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<2	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<2	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<2	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<4	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<2	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<2	<1	<1
1,2-Dichloroethane	ug/L	2 4	<0.5	<0.5	<0 5	1 06	<0 5	<0.5
1,2-Dichloropropane	ug/L	3.26	<1	<1	<1	1.76 J	<1	0 631 J
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<2	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<2	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0.4	<0 4	<0 8	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	<0.5	0.151 J	0 14 J	<0 5	<1	<0.5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<2	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<2	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<2	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<20	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<2	<1	<1
Acetone	ug/L	2.79 J	5 42 J	4.98 J	<10	6 35 J	17.7	45
Benzene	ug/L	0.487	<0 4	<0.4	<0 4	0 446 J	<0.4	0.233 J
Bromobenzene	ug/L	<1	<1	<1	<1	<2	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<2	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<2	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<2	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<2	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<2	<1	<1
Chlorobenzene	ug/L	<0.5	<0 5	<0.5	<0 5	<1	<0.5	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<2	<1	<1
Chloroform	ug/L	0.196 J	<0.3	<0 3	<0 3	<0.6	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<2	<1	<1
cis-1,2-Dichloroethene	ug/L	255	21.2	21 2	71.5	250	0 316 J	166
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0 5	<0.5	<1	<0.5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<2	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<2	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<2	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0 6	<0.6	<0 6	<1.2	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<2	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<4	<2	<2
MEK (2-Butanone)	ug/L	48 3	51.5	53.5	10.7	136	<10	542
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<10	<5	<5
Methylene chloride	ug/L	0 347 J	<1	<1	<1	<2	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<20	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<2	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<2	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<2	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<2	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<2	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<2	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<2	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<2	<1	<1
Tetrachloroethene	ug/L	24.2	1.31	1 39	0.728 J	2.12	0.416 J	1.74
Toluene	ug/L	<1	<1	<1	<1	<2	<1	<1
trans-1,2-Dichloroethene	ug/L	0.594 J	<1	<1	<1	<2	<1	0.29 J
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<2	<1	<1
Trichloroethene	ug/L	100	1.12	1.12	0.671 J	7.66	0.268 J	4.95
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<2	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<10	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<2	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fals

TABLE D-1
VOLATILE ORGANIC COMPOUNDS, FIFTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-09C	DR1-3	MW-101B	MW-101T	PMW101-01A	PMW101-01B	PMW101-02A
	Lab ID	L0712444-13	L0712431-11	L0712314-08	L0712314-07	L0712431-02	L0712431-05	L0712444-02
	Date	12/14/2007	12/13/2007	12/11/2007	12/11/2007	12/13/2007	12/13/2007	12/14/2007
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0 5	<0 5	<0 5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	0.551 J	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	0 677 J	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	0.23 J	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	0.314 J	<0 5	<0 5	<0 5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	1 3	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0 4	<0 4	<0 4	<0.4	<0.4	<0 4
1,4-Dichlorobenzene	ug/L	0.34 J	<0 5	<0 5	<0 5	<0.5	<0.5	<0 5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	38.4	<10	<10	<10	36.9	<10	<10
Benzene	ug/L	0 356 J	<0.4	<0 4	<0 4	<0 4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	0.76 J	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0.5	<0 5	<0 5	<0 5	<0.5	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0 3	<0.3	<0.3	<0 3	<0 3	<0.3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	206	22.6	5.26	0 578 J	13 3	54.9	58 7
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
Dibromochloromethane	ug/L	<0 5	<0.5	<0.5	<0 5	<0 5	<0.5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0 6	<0 6	<0.6	<0 6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	299	<10	<10	<10	196	<10	7.62 J
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	13 4	0.904 J	120	125	1.35	23.4	13 9
Toluene	ug/L	0 352 J	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	0 264 J	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	46.5	0.303 J	0.843 J	0.305 J	0.284 J	1 53	1.34
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	0.686 J	<1	<1

<: Not detected above Reporting Limit (RL)
J· Estimated result based on QC data or repor
B. Estimated result possibly biased high or fals

TABLE D-1
VOLATILE ORGANIC COMPOUNDS, FIFTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	PMW101-02A DUP	PMW101-02B	PMW101-03A	PMW101-03B	PMW101-03B DUP	PMW101-04A	PMW101-04B
	Lab ID	L0712444-01	L0712444-03	L0712431-06	L0712431-07	L0712431-01	L0712444-04	L0712444-05
	Date	12/14/2007	12/14/2007	12/13/2007	12/13/2007	12/13/2007	12/14/2007	12/14/2007
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0 4	<0.4	<0.4	<0.4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	<0 5	<0 5	<0.5	<0.5	<0.5	<0 5	<0 5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	3.34 J	<10	<10	<10	<10	<10
Benzene	ug/L	<0 4	<0.4	<0.4	<0 4	<0 4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0 3	<0.3	<0 3	<0.3	<0.3	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	63.4	101	38	87 6	88.3	72.6	48.1
cis-1,3-Dichloropropene	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5	<0 5
Dibromochloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0 6	<0.6	<0 6	<0.6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	9 18 J	30.9	<10	<10	<10	10.1	<10
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	0.204 J
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	10 3	<1	24.9	13.8	15 5	5 89	29 3
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	0 326 J	0.322 J	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	0.993 J	<1	0.325 J	1.57	2	0.294 J	2.91
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J. Estimated result based on QC data or repor
B: Estimated result possibly biased high or fal

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TABLE D-1
VOLATILE ORGANIC COMPOUNDS, FIFTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	PMW101-05A	PMW101-05B	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A
	Lab ID	L0712562-03	L0712562-04	L0712497-14	L0712444-06	L0712497-15	L0712562-05	L0712497-16
	Date	12/18/2007	12/18/2007	12/17/2007	12/14/2007	12/17/2007	12/18/2007	12/17/2007
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5
1,1,2-Trichloroethane	ug/L	<1	0.351 J	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	0 325 J	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	0.827 J	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0 5	0 727	<0 5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	<1	1.77	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0.4	<0.4	<0 4	<0 4	<0 4
1,4-Dichlorobenzene	ug/L	<0 5	<0.5	<0.5	<0 5	<0.5	<0 5	<0 5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	<10	<10	3 15 J	<10	<10	<10
Benzene	ug/L	<0 4	0 249 J	<0.4	<0 4	<0.4	<0 4	<0 4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0 5	<0 5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	0.258 J	<0 3	<0 3	<0.3	<0.3	<0 3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	92 6	89 8	0.364 J	40.5	0.42 J	1 61	<1
cis-1,3-Dichloropropene	ug/L	<0.5	<0 5	<0.5	<0.5 J	<0.5	<0.5	<0 5
Dibromochloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0 5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0 6	<0.6	<0 6	<0 6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	17.3	<10	11 1	<10	<10	<10
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	0 84 J	26.8	7.19	2.63	0 271 J	21 6	9.86
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	0 425 J	116	<1	1.04	<1	46.3	0 29 J
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J. Estimated result based on QC data or repor
B. Estimated result possibly biased high or fals

TABLE D-1
VOLATILE ORGANIC COMPOUNDS, FIFTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	PMW101-08B	IW85-01	IW85-02	IW85-05	IW85-06	IW92-01	IW92-02
	Lab ID	L0712497-17	L0712562-09	L0712562-02	L0712601-05	L0712601-03	L0712431-09	L0712444-14
	Date	12/17/2007	12/18/2007	12/18/2007	12/19/2007	12/19/2007	12/13/2007	12/14/2007
	Area	TTA-1 101	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0 5	<0.5	<0 5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0 5	<0.5	<0 5	<0 5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	43.7	54 2	16	58.3	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	0 216 J	<1	<1
1,2-Dichloroethane	ug/L	<0.5	0.518	0.672	0.584	0.517	<0.5	0.335 J
1,2-Dichloropropane	ug/L	<1	0.354 J	0.644 J	0.241 J	0.381 J	<1	0 255 J
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	0.336 J	<0.4	<0.4	<0.4	<0 4
1,4-Dichlorobenzene	ug/L	<0.5	0 379 J	0 342 J	0 298 B	0.39 B	0.151 J	0.404 J
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	15.1	51.8	6 44 B	21 1 B	10.7	28 6
Benzene	ug/L	<0 4	<0.4	<0 4	<0.4	<0.4	<0 4	<0 4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	1.02	1 26	1.04	<1	0 815 J	0.576 J
Carbon tetrachloride	ug/L	<1	43.4	14.3	59.8	0.665 J	1.28	0.295 J
Chlorobenzene	ug/L	<0.5	<0 5	<0 5	<0.5	0 292 J	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	0.167 J	58	29.5	87 4	6.6	11.9	12.7
Chloromethane	ug/L	<1	<1	<1	0 301 B	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	4 86	56.3	40 7	36.3	94.2	130	123
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5
Dibromochloromethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0.6	<0.6	<0.6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	9 89 J	54.6	2 97 B	27.3 B	30.4	12.2
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	5.46	<1	<1	<1	2 61
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	39.8	23 4	10	31.2	2.7	29	3.18
Toluene	ug/L	<1	0 291 J	<1	<1	0.306 B	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	0.297 J	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	132	10 3	5 08	10.1	0.709 J	9 47	0.872 J
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J. Estimated result based on QC data or repor
B· Estimated result possibly biased high or fal

TABLE D-1
VOLATILE ORGANIC COMPOUNDS, FIFTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-08	DR2-1
	Lab ID	L0712444-15	L0712601-02	L0712562-07	L0712497-01	L0712497-02	L0712562-08	L0712280-16
	Date	12/14/2007	12/19/2007	12/18/2007	12/17/2007	12/17/2007	12/18/2007	12/10/2007
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0 5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0 5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	70 3	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	0.23 J	<1
1,2-Dichloroethane	ug/L	<0 5	<0 5	<0.5	<0.5	<0.5	1 79	<0.5
1,2-Dichloropropane	ug/L	<1	<1	<1	0.23 J	0 256 J	1.32	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0 4	<0 4	<0.4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	0.152 J	0.177 B	0 327 J	0 16 J	0.209 J	0.257 J	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	63.7	95.6 B	181	109	53.5	79	<10
Benzene	ug/L	<0.4	<0.4	0 376 J	<0 4	<0.4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	1 82	7.68	0.985 J	<1	0 744 J	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	3.82	<1	15 5
Chlorobenzene	ug/L	<0 5	<0.5	<0 5	<0 5	<0 5	0.179 J	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	7 84	0 588	0.765	0 603	5 81	26 4	11.3
Chloromethane	ug/L	<1	0.27 B	0 368 J	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	107	98 4	39.4	51	76 7	134	7.71
cis-1,3-Dichloropropene	ug/L	<0.5	<0 5	<0.5	<0 5	<0 5	<0.5	<0.5
Dibromochloromethane	ug/L	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	1 45	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0 6	<0.6	<0 6	<0.6	<0.6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	46 4	102	154	241	53	217	<10
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	2.94	0 314 B	1.49	5 97	0.75 J	1.29	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	7.48	2 55	8.29	21.7	20.1	6 44	192
Toluene	ug/L	0.534 J	<1	10.2	<1	0.299 J	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	0.341 J	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	1.94	0 626 J	3.24	5 65	2.93	3.62	5.72
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J. Estimated result based on QC data or repor
B: Estimated result possibly biased high or fak

TABLE D-1
VOLATILE ORGANIC COMPOUNDS, FIFTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	DR2-5	IW-01	MW-85	MW-85 DUP	PMW85-01	PMW85-04	PMW85-05
	Lab ID	L0712280-17	L0712314-13	L0712280-15	L0712280-13	L0712280-14	L0712314-11	L0712314-12
	Date	12/10/2007	12/11/2007	12/10/2007	12/10/2007	12/10/2007	12/11/2007	12/11/2007
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0 5	<0 5	<0.5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	0.576	<0 5	0 287 J	0 169 J	<0 5	<0 5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	27 6	1 1	40.6	44.1	9.92	69.6	140
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	0 175 J	<1	0.143 J	0 132 J	<1	0 252 J	0.544 J
1,2-Dichloroethane	ug/L	0.452 J	0 468 J	0.596	0.657	0 428 J	0.751	1.18
1,2-Dichloropropane	ug/L	<1	0 405 J	0 212 J	<1	<1	0.366 J	0.783 J
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0 4	<0 4	<0 4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	<0 5	<0.5	<0.5	<0 5	<0 5	<0 5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	6 02 B	10.5	10 3	<10	38.8 B	<10
Benzene	ug/L	<0 4	<0.4	<0.4	<0 4	<0.4	<0.4	<0 4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	0.559 J
Carbon tetrachloride	ug/L	138	16 1	34.3	33 7	72.9	<1	158
Chlorobenzene	ug/L	0.154 J	<0 5	0.15 J	0.157 J	<0.5	0.271 J	0.35 J
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	43 6	8.36	51 5	57	41	61.7	64.6
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	33 7	76.6	51	55.3	12 2	92 3	83.8
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0 6	<0.6	<0 6	<0.6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	<10	8.63 J	7 94 J	<10	26 2 B	<10
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	57.3	70 9	21	20 2	30.7	4.03	127
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	0.921 J	<1	<1	1 74
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	18.9	8.6	9.15	8.68	10.1	2.75	39.3
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J. Estimated result based on QC data or repor
B· Estimated result possibly biased high or fak

TABLE D-1
VOLATILE ORGANIC COMPOUNDS, FIFTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	PMW92-01	PMW92-02	PMW92-03	PMW92-04	PMW92-05	PMW92-06
	Lab ID	L0712431-10	L0712375-09	L0712375-10	L0712375-11	L0712375-12	L0712314-10
	Date	12/13/2007	12/12/2007	12/12/2007	12/12/2007	12/12/2007	12/11/2007
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units						
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0.5	<0.5	<0 5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0 5	<0.5	<0.5	<0 5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	1.29	101
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	0.395 J
1,2-Dichloroethane	ug/L	<0.5	<0 5	<0 5	<0 5	0.474 J	1 32
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	0.379 J	0.828 J
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0 4	<0.4	<0.4	<0 4	<0 4
1,4-Dichlorobenzene	ug/L	<0 5	0 21 J	<0 5	<0.5	<0 5	<0 5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	57.5	<10	8 J	<10	24.1 B
Benzene	ug/L	<0.4	<0.4	<0 4	<0 4	<0.4	<0 4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0 5	<0.5	<0.5	<0 5	<0 5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	6 86	<1	0.969 J	1 51	51 6	1.53
Chlorobenzene	ug/L	<0.5	<0 5	<0 5	<0.5	<0 5	0.231 J
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	8 46	<0.3	3.12	5 3	22.6	78 7
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	38.3	123	159	160	27 3	150
cis-1,3-Dichloropropene	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0 5
Dibromochloromethane	ug/L	<0.5	<0 5	<0 5	<0 5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0 6	<0 6	<0.6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	49 3	<10	<10	<10	17.7 B
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	79 5	<1	30 9	12.1	178	6.76
Toluene	ug/L	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	2.82	<1	6 91	1.64	15.6	2.31
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1

<. Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B· Estimated result possibly biased high or fal

TABLE D-2
VOLATILE ORGANIC COMPOUNDS, SIXTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW21-01A	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B	IW21-04A
	Lab ID	L08030333-06	L08030333-07	L08030333-08	L08030333-09	L08030333-10	L08030333-11	L08030387-07
	Date	3/17/2008	3/17/2008	3/17/2008	3/17/2008	3/17/2008	3/17/2008	3/18/2008
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	<0 5	<0 5	0 33 J	<0 5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0 4	<0 4	<0 4	<0.4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	0.145 B	<0.5	<0 5	<0 5	<0 5	<0.5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	9 27 J	8.99 J	<10	<10	<10	3.33 J	3.29 J
Benzene	ug/L	<0.4	<0.4	<0.4	<0 4	<0.4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	2.01	0 732 J	0.866 J	<1	<1	1.51	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0 3	<0.3	0.129 J	<0 3	0.144 J	<0.3	<0 3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	80.2	9.37	14.3	49 8	9.52	10.1	62 2
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0 5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0 6	<0.6	<0 6	<0.6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	64.9	6 69 J	<10	<10	<10	70 7	25.4
Methyl t-butyl ether (MTBE)	ug/L	41.4	1.83 J	42 4	65.5	56	34.1	17.7
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	20.7	1.46	151	76 3	133	31.4	10.5
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	0 283 J	<1	<1	<1	<1	<1	0.391 J
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	13.1	2 43	23 2	6.94	42.6	19.6	5.77
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE D-2
VOLATILE ORGANIC COMPOUNDS, SIXTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW21-04A DUP	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115	PMW21-01
	Lab ID	L08030387-14	L08030387-08	L08030387-09	L08030387-10	L08030298-16	L08030333-05	L08030298-14
	Date	3/18/2008	3/18/2008	3/18/2008	3/18/2008	3/14/2008	3/17/2008	3/14/2008
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0 5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0 5	<0 5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0 5	<0 5	0 356 J	<0 5	0 284 J	<0 5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0 4	<0 4	<0 4	<0.4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5	<0 5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	3 08 J	5.82 J	4.7 J	<10	<10	<10	<10
Benzene	ug/L	<0 4	<0 4	<0 4	<0 4	<0.4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0 5	<0 5	<0.5	<0.5	<0.5	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0 3	<0 3	<0 3	0 184 J	<0 3	0.164 J
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	61.9	15.4	30.9	19 5	1.83	0.583 J	2.55
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0 5	<0 5	<0 5	<0 5	<0.5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0 6	<0.6	<0.6	<0 6	<0 6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	22 8	5 11 J	176	39 4	<10	<10	<10
Methyl t-butyl ether (MTBE)	ug/L	17 1	2 44 J	24.7	27.3	82.5	1.45 J	50.4
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	10.5	1.49	9 84	16.9	173	8 94	193
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	0 4 J	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	5.72	2.76	7 09	9.07	28 9	1.04	54.2
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<. Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fals

TABLE D-2
VOLATILE ORGANIC COMPOUNDS, SIXTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	PMW21-02	PMW21-03	PMW21-04	PMW21-05	PMW21-05 DUP	IW101-01A	IW101-01B
	Lab ID	L08030333-02	L08030333-03	L08030333-04	L08030298-15	L08030298-18	L08030185-09	L08030185-10
	Date	3/17/2008	3/17/2008	3/17/2008	3/14/2008	3/14/2008	3/10/2008	3/10/2008
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	0 277 J	0 48 J	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0 4	<0.4	<0.4	<0.4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	<0.5	<0 5	<0 5	<0.5	<0.5	0.256 J	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	<10	<10	<10	<10	8.04 J	<10
Benzene	ug/L	<0.4	<0 4	<0 4	<0 4	<0.4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0 3	<0.3	<0 3	<0 3	<0.3	<0.3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	0 478 J	0.407 J	1 58	0 29 J	0.311 J	6.77	24 3
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0 6	<0.6	<0.6	<0 6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	<10	<10	<10	<10	29.8	9.11 J
Methyl t-butyl ether (MTBE)	ug/L	23 3	13.8	89 8	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	31.1	36 9	93.9	43.2	43.2	0 468 J	0.421 J
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	12 6	8.96	47	34.6	34.2	<1	0.408 J
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fal

TABLE D-2
VOLATILE ORGANIC COMPOUNDS, SIXTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-03A	IW101-03B	IW101-03C
	Lab ID	L08030185-11	L08030185-12	L08030220-07	L08030220-08	L08030220-09	L08030220-10	L08030220-11
	Date	3/10/2008	3/10/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	0 213 J
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5	0.666
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	0.917 J
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	<0 5	<0.5	<0.5	<0.5	0.169 J	<0.5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	8.42 J	<10	<10	3 72 J	5 2 J	3 33 J
Benzene	ug/L	<0 4	<0 4	<0 4	<0 4	<0 4	<0 4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0 5	<0 5	<0 5	<0 5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	0 179 J	<0.3	0.156 J	0 131 J	<0 3	0 136 J	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	21 8	48.5	12.6	53.3	16.1	2.24	89 8
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5	<0 5
Dibromochloromethane	ug/L	<0.5	<0.5	<0 5	<0 5	<0 5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0.6	<0 6	<0 6	<0 6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	27.8	<10	43.1	7 66 J	4 16 J	7.1 J
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	70 3	1.44	98 4	48 4	17.8	86 2	15 3
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	6.66	0 866 J	1.67	11 7	4.26	1.7	31.1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<. Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B. Estimated result possibly biased high or fal

TABLE D-2
VOLATILE ORGANIC COMPOUNDS, SIXTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-04A	IW101-04A DUP	IW101-04B	IW101-04C	IW101-05A	IW101-05B	IW101-05C
	Lab ID	L08030240-07	L08030240-15	L08030240-08	L08030269-01	L08030269-02	L08030269-03	L08030269-04
	Date	3/12/2008	3/12/2008	3/12/2008	3/13/2008	3/13/2008	3/13/2008	3/13/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<1	<0 5	<0.5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<2	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<1	<0 5	<0 5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<2	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	0.358 J	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<2	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<2	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<2	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<2	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<2	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<2	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<4	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<2	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<2	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0 5	<0.5	2.12	<0.5	<0.5	<0 5
1,2-Dichloropropane	ug/L	<1	<1	<1	3.38	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<2	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<2	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0.4	<0 8	<0 4	<0 4	<0.4
1,4-Dichlorobenzene	ug/L	0 185 J	0.196 J	<0.5	<1	0.163 J	<0 5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<2	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<2	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<2	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<20	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<2	<1	<1	<1
Acetone	ug/L	48	46.5	<10	<20	98 3	<10	<10
Benzene	ug/L	<0.4	<0 4	<0.4	0.373 J	<0 4	<0 4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<2	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<2	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0.5	<1	<0 5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<2	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<2	<1	<1	<1
Carbon disulfide	ug/L	0.798 J	0 824 J	<1	<2	0.759 J	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<2	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0 5	<0.5	<1	<0 5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<2	<1	<1	<1
Chloroform	ug/L	<0 3	<0.3	<0 3	<0 6	<0.3	0 139 J	0.13 J
Chloromethane	ug/L	<1	<1	<1	<2	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	26.1	25	42 3	227	46.8	15 2	76.6
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0.5	<0.5	<1	<0 5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<2	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<2	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<2	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0 6	<0.6	<1.2	<0 6	<0.6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<2	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<4	<2	<2	<2
MEK (2-Butanone)	ug/L	149	148	19 7	12.6 J	235	<10	35 9
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<10	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<2	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<20	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<2	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<2	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<2	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<2	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<2	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<2	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<2	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<2	<1	<1	<1
Tetrachloroethene	ug/L	0.293 J	0.363 J	2.4	2.09	8.93	80 2	27.2
Toluene	ug/L	<1	<1	<1	<2	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<2	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<2	<1	<1	<1
Trichloroethene	ug/L	0 447 J	0.437 J	1.76	8.22	1.98	1.89	5.14
Trichlorofluoromethane	ug/L	<1	<1	<1	<2	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<10	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<2	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fal

TABLE D-2
VOLATILE ORGANIC COMPOUNDS, SIXTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07A DUP	IW101-07B	IW101-07C
	Lab ID	L08030298-04	L08030298-05	L08030298-06	L08030220-12	L08030220-05	L08030220-13	L08030240-11
	Date	3/14/2008	3/14/2008	3/14/2008	3/11/2008	3/11/2008	3/11/2008	3/12/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0 5	<0 5	<0 5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0 5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	0 243 J	<1	<1	0 206 J	0 582 J
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	1.29
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0 5	0 805	<0.5	<0.5	0.65	3 49
1,2-Dichloropropane	ug/L	<1	<1	0.994 J	<1	<1	0.796 J	4.01
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0 4	<0.4	<0.4	<0 4	<0 4	<0 4
1,4-Dichlorobenzene	ug/L	0.453 J	0 159 J	<0.5	<0.5	0.13 J	<0.5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	3.14 J	18 8	<10	6 84 J	7.42 J	4.65 J	3.03 J
Benzene	ug/L	<0 4	<0 4	0 166 J	<0 4	<0.4	<0.4	0 509
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	1.15	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0 5	<0.5	<0.5	<0 5	<0 5	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	0.171 J	0 191 J	<0 3	<0.3	<0.3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	5 03	3 41	126	21	22	119	325
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0.6	<0 6	<0.6	<0.6	<0 6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	9 71 J	9 68 J	25 9	10 2	9 85 J	25.9	75 6
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	17.7	50.3	6 02	9.33	10 1	1.44	1.98
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	0 256 J	<1	<1	0 303 J	0.8 J
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	2.43	7.32	15.7	9 52	10.2	4.4	7 29
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fals

TABLE D-2
VOLATILE ORGANIC COMPOUNDS, SIXTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW101-08A	IW101-08B	IW101-08C	IW101-09A	IW101-09B	IW101-09C	IW101-09C DUP
	Lab ID	L08030298-07	L08030298-08	L08030298-09	L08030240-12	L08030240-13	L08030240-14	L08030240-06
	Date	3/14/2008	3/14/2008	3/14/2008	3/12/2008	3/12/2008	3/12/2008	3/12/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<2	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<1	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	0.342 J	<1	<1	<2	<1
1,1-Dichloroethane	ug/L	<1	<1	0.75 J	<1	0 202 J	0.554 J	0.661 J
1,1-Dichloroethene	ug/L	<1	<1	0.889	<1	<1	<2	1.14
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<2	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<2	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<2	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<2	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<2	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<4	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<2	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<2	<1
1,2-Dichloroethane	ug/L	<0.5	<0 5	1 47	<0.5	0.252 J	<1	0.41 J
1,2-Dichloropropane	ug/L	<1	<1	2 07	<1	0.629 J	1.87 J	1.88
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<2	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<2	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0.4	<0.4	<0 4	<0 8	<0 4
1,4-Dichlorobenzene	ug/L	0 148 J	<0.5	<0 5	<0.5	0 24 J	<1	<0 5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<2	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<2	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<2	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<20	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<2	<1
Acetone	ug/L	<10	2 82 J	3 67 J	19	166	6.31 J	5 23 J
Benzene	ug/L	<0 4	<0.4	0.517	<0 4	0 259 J	0 349 J	0.354 J
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<2	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<2	<1
Bromodichloromethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0 5	<1	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<2	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<2	<1
Carbon disulfide	ug/L	0.577 J	<1	1.13	<1	<1	<2	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<2	<1
Chlorobenzene	ug/L	<0 5	<0.5	<0 5	<0 5	<0.5	<1	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<2	<1
Chloroform	ug/L	<0.3	<0 3	0.158 J	<0 3	<0 3	<0.6	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<2	<1
cis-1,2-Dichloroethene	ug/L	22.2	54 5	287	0.498 J	187	310	273
cis-1,3-Dichloropropene	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<1	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<1	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<2	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<2	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<2	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0 6	<0.6	<0 6	<1.2	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<2	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<4	<2
MEK (2-Butanone)	ug/L	5 78 J	<10	58 6	<10	280	229	236
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<10	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<2	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<20	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<2	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<2	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<2	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<2	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<2	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<2	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<2	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<2	<1
Tetrachloroethene	ug/L	1.37	3.85	2.04	0 469 J	1 23	4.62	5.68
Toluene	ug/L	<1	<1	<1	<1	<1	<2	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	0.802 J	<1	0.355 J	0 577 J	0.547 J
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<2	<1
Trichloroethene	ug/L	1.04	1.79	8.43	0 344 J	4 03	18 2	21.8
Trichlorofluoromethane	ug/L	<1	<1	0.324 J	<1	<1	<2	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<10	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	0 912 J	<2	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B. Estimated result possibly biased high or fal

TABLE D-2
VOLATILE ORGANIC COMPOUNDS, SIXTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	DR1-3	MW-101B	MW-101T	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02B
	Lab ID	L08030298-17	L08030298-13	L08030298-12	L08030185-06	L08030185-07	L08030185-13	L08030185-08
	Date	3/14/2008	3/14/2008	3/14/2008	3/10/2008	3/10/2008	3/10/2008	3/10/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0 5	<0 5	<0.5	<0 5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0 5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0.4	<0.4	<0.4	<0.4	<0 4
1,4-Dichlorobenzene	ug/L	<0 5	<0 5	<0.5	<0.5	<0.5	<0.5	<0 5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	<10	<10	25.2	<10	<10	<10
Benzene	ug/L	<0.4	<0.4	<0.4	<0 4	<0.4	<0 4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0 5	<0 5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	2.27	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0.5	<0 5	<0 5	<0 5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0 3	<0 3	0.149 J	<0 3	<0 3	<0.3	<0 3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	17	35.6	10 1	18.2	55.3	48	87.7
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0.6	<0 6	<0.6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	<10	<10	141	12.6	4.12 J	13 2
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	2 12	81.3	113	2.31	14 7	20 3	<1
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	0.334 J
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	1.28	2 17	1.37	0 669 J	0.822 J	3.92	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	0.863 J	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fal

TABLE D-2
VOLATILE ORGANIC COMPOUNDS, SIXTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	PMW101-03A	PMW101-03A DUP	PMW101-03B	PMW101-04A	PMW101-04B	PMW101-05A	PMW101-05B
	Lab ID	L08030220-14	L08030220-15	L08030220-16	L08030220-17	L08030220-18	L08030240-02	L08030240-03
	Date	3/11/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008	3/12/2008	3/12/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	0.275 J
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5	0.545
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	1.28
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0 4	<0.4	<0.4	<0.4	<0 4	<0.4
1,4-Dichlorobenzene	ug/L	<0 5	<0.5	<0.5	<0.5	<0 5	<0 5	<0 5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	<10	<10	3.31 J	<10	<10	<10
Benzene	ug/L	<0 4	<0.4	<0.4	<0 4	<0.4	<0.4	0.196 J
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	0.682 J	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0 3	<0.3	<0.3	<0 3	<0 3	0.293 J
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	38 1	40.3	87 6	81.3	69.3	73 9	76.2
cis-1,3-Dichloropropene	ug/L	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0 6	<0.6	<0 6	<0.6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	<10	2.75 J	19 9	<10	<10	13.7
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	9.23	9.72	8.59	5 7	5.33	0.718 J	21.8
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	0.278 J	0.309 J	1.08	0.559 J	1.6	0 329 J	85.3
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fals

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TABLE D-2
VOLATILE ORGANIC COMPOUNDS, SIXTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07A DUP	PMW101-07B	PMW101-08A	PMW101-08B
	Lab ID	L08030240-04	L08030240-05	L08030269-10	L08030269-08	L08030269-11	L08030269-12	L08030269-13
	Date	3/12/2008	3/12/2008	3/13/2008	3/13/2008	3/13/2008	3/13/2008	3/13/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5	<0 5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	0 163 J
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0 5	<0 5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	0.253 J
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0 4	<0 4	<0 4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	<0.5	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	2.5 J	<10	<10	<10	<10	<10
Benzene	ug/L	<0 4	<0.4	<0.4	<0 4	<0 4	<0 4	0 142 J
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0 3	<0.3	<0.3	<0 3	<0 3	<0.3	0.169 J
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	0.917 J	45 8	0 261 J	0 31 J	1.74	<1	3 88
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0.6	<0 6	<0 6	<0.6	<0.6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	2.87 J	<10	<10	<10	<10	<10
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	7 13	3.24	0.435 J	0 428 J	20.6	13 8	34.7
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	0.252 J	1.72	0.502 J	0.411 J	43	0.39 J	115
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<. Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B· Estimated result possibly biased high or fal

TABLE D-2
VOLATILE ORGANIC COMPOUNDS, SIXTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW85-01	IW85-02	IW85-05	IW85-06	IW92-01	IW92-02	IW92-03
	Lab ID	L08030387-01	L08030387-02	L08030420-02	L08030420-04	L08030269-05	L08030298-02	L08030298-03
	Date	3/18/2008	3/18/2008	3/19/2008	3/19/2008	3/13/2008	3/14/2008	3/14/2008
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	0 687 J	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	47.7	70.7	17.1	78	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	0.193 J	<1	<1	0 215 J	<1	<1	<1
1,2-Dichloroethane	ug/L	0 598	0 704	0.614	0.593	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	0 427 J	0.67 J	0.315 J	0.339 J	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0.4	<0 4	<0 4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	0 183 J	0.146 J	0.166 J	0.208 J	0.446 J	0 504	0 421 J
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	4 45 J	8.54 J	7.71 J	24.3	13.2	53.4	129
Benzene	ug/L	<0 4	<0.4	<0.4	<0 4	<0.4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	1.9	1.31	1.12	<1	<1	0.57 J	<1
Carbon tetrachloride	ug/L	31.2	38 6	32.2	27	0 808 J	5 18	<1
Chlorobenzene	ug/L	<0.5	<0 5	<0.5	0.202 J	<0 5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	79 3	59.2	143	20.5	5.75	10.4	4.03
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	59	57.3	54.3	68 8	50.6	37.6	53
cis-1,3-Dichloropropene	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0 6	<0.6	<0.6	<0.6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	4 31 J	14.6	6 38 J	25.1	33 1	24	47 6
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	1.14 B	1.71 B	1.19 B	<1 B	<1	<1	0 539 J
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	40	28.7	45	16.1	7.5	36.3	4.37
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	14.7	10.2	15.3	6.41	2 75	2.73	1.36
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fals

TABLE D-2
VOLATILE ORGANIC COMPOUNDS, SIXTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW92-04	IW92-05	IW92-06	IW92-07	IW92-07 DUP	IW92-08	MW-85
	Lab ID	L08030333-14	L08030333-15	L08030420-01	L08030387-06	L08030387-03	L08030420-05	L08030240-18
	Date	3/17/2008	3/17/2008	3/19/2008	3/18/2008	3/18/2008	3/19/2008	3/12/2008
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0 5	<0.5	<0.5	<0 5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0 5	<0 5	<0 5	<0.5	0.333 J
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	5.21	40.9
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0 5	0 256 J	0.259 J	1.29	0.583
1,2-Dichloropropane	ug/L	<1	<1	0.231 J	0.294 J	0.365 J	0 88 J	0 206 J
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0 4	<0 4	<0.4	<0.4	<0 4	<0 4
1,4-Dichlorobenzene	ug/L	2 08 B	0.391 B	0.126 J	0.155 J	0.144 J	0 562	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	152	256	22.5	76 9	84 1	475	5.04 J
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0 4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	1.29	0.587 J	1.42	1.32	0.609 J	<1
Carbon tetrachloride	ug/L	<1	<1	<1	2.46	2.53	2 42	22.5
Chlorobenzene	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0 5	0.177 J
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	0.334	2 72	0 992	7.65	7 91	33	38.6
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	56 2	9 86	30.4	104	103	20.5	59 2
cis-1,3-Dichloropropene	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0 5	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0 6	<0.6	<0 6	<0 6	<0.6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	109	99 4	44	62.4	74 3	508	15 2
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	0 396 J	1 22	4.8 B	2.16 B	2 08 B	10 3	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	3 73	18 9	24 9	6.75	7 3	13.3	14.4
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	0 439 J	0 504 J	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	0 903 J	1 4	4.17	2.13	2.27	3.25	7
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

< Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fals

TABLE D-2
VOLATILE ORGANIC COMPOUNDS, SIXTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	DR2-1	DR2-1 DUP	DR2-5	IW-01	PMW85-01	PMW85-04	PMW85-05
	Lab ID	L08030185-04	L08030185-01	L08030240-19	L08030269-07	L08030269-06	L08030240-16	L08030240-17
	Date	3/10/2008	3/10/2008	3/12/2008	3/13/2008	3/13/2008	3/12/2008	3/12/2008
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	32.7	<1	15.8	75.1	152
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	0 156 J	<1	<1	0.265 J	0.497 J
1,2-Dichloroethane	ug/L	<0.5	<0.5	0.474 J	0.498 J	0.365 J	0 528	1 24
1,2-Dichloropropane	ug/L	<1	<1	0.233 J	0.352 J	0.217 J	0.42 J	0.801 J
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0 4	<0.4	<0 4	<0 4	<0 4
1,4-Dichlorobenzene	ug/L	0 242 J	0 207 J	<0.5	<0.5	<0.5	<0 5	<0 5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	<10	<10	17.2	5 35 J	6.95 J	<10
Benzene	ug/L	<0.4	<0 4	<0 4	<0 4	<0.4	0.131 J	0.202 J
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	1.01	<1
Carbon tetrachloride	ug/L	1.26	0.554 J	114	16.6	24.5	0.407 J	154
Chlorobenzene	ug/L	<0 5	<0.5	0.151 J	<0 5	0.149 J	0.316 J	0.364 J
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	4.19	1.48	40 9	11.5	36.3	9 37	63.8
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	86.4	103	32	64.9	79.3	107	87.9
cis-1,3-Dichloropropene	ug/L	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0 5	<0.5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0 6	<0.6	<0 6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	2.85 J	<10	<10	<10	5.03 J	10	<10
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	1.2	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	33.7	17.2	49 5	74.4	16.3	2.85	138
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	0.438 J
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	12.7	6.73	17.5	9.53	6 59	1.08	38.7
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	0.321 J	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J. Estimated result based on QC data or repor
B· Estimated result possibly biased high or fak

TABLE D-2
VOLATILE ORGANIC COMPOUNDS, SIXTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	PMW92-01	PMW92-02	PMW92-03	PMW92-04	PMW92-05	PMW92-06
	Lab ID	L08030185-02	L08030185-03	L08030220-01	L08030220-02	L08030220-03	L08030220-04
	Date	3/10/2008	3/10/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units						
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0 5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	0 649 J	117
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	0 388 J
1,2-Dichloroethane	ug/L	<0 5	<0 5	<0 5	<0.5	0.526	1.29
1,2-Dichloropropane	ug/L	<1	<1	0.246 J	<1	0.233 J	0.979 J
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0 4	<0 4	<0 4	<0.4
1,4-Dichlorobenzene	ug/L	<0.5	0.26 J	<0.5	<0 5	<0 5	<0 5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	45.4	<10	<10	<10	21.1
Benzene	ug/L	<0 4	<0 4	<0 4	<0.4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	8.34	<1	0 586 J	1 85	58.5	<1
Chlorobenzene	ug/L	<0.5	<0.5	<0 5	<0 5	<0.5	0.276 J
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	7 6	<0.3	0.994	6 6	20.5	22.9
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	27	87.7	161	135	23.8	179
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0 5	<0.5	<0.5	<0 5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0.6	<0 6	<0 6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	9.69 J	<10	<10	<10	22.1
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	90	<1	30.8	19.8	173	2.01
Toluene	ug/L	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	3.9	<1	4 66	2.04	13.9	0.747 J
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	0.262 J	<1	<1	<1

<. Not detected above Reporting Limit (RL)
J' Estimated result based on QC data or repor
B: Estimated result possibly biased high or fak

TABLE D-3
VOLATILE ORGANIC COMPOUNDS, SEVENTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW21-01A	IW21-01A DUP	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B
	Lab ID	L08060495-05	L08060495-19	L08060495-06	L08060495-07	L08060543-01	L08060543-07	L08060543-08
	Date	6/17/2008	6/17/2008	6/17/2008	6/17/2008	6/18/2008	6/18/2008	6/18/2008
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0 5	<0 5	<0 5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0 5	<0 5	<0.5	<0 5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.302 J
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0 4	<0 4	<0.4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	0.146 B	0.126 B	<0 5	<0 5	<0.5	<0.5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	8 07 B	9.17 B	24 B	<10	<10	<10	8.69 J
Benzene	ug/L	<0.4	<0 4	<0.4	<0.4	<0.4	<0.4	<0 4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0 5	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	3.49 J	1.75	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0.5	<0.5	<0 5	<0 5	<0.5	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	4.12
Chloroform	ug/L	<0.3	<0.3	<0.3	0.169 J	<0.3	0.156 J	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	1 87
cis-1,2-Dichloroethene	ug/L	91.4	98.8	35.2	15 8	82.8	31.6	21.8
cis-1,3-Dichloropropene	ug/L	<0 5	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5
Dibromochloromethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	0.829 J
Hexachlorobutadiene	ug/L	<0.6	<0 6	<0.6	<0 6	<0.6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	0 677 J
MEK (2-Butanone)	ug/L	132	118	109	<10	<10	<10	115
Methyl t-butyl ether (MTBE)	ug/L	59 3	57.6	8 2	44.4	62	60	40.4
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	21.7	19.1	<1	119	68	127	24.2
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	0 303 J	1.7	<1	<1	1.65	1.53	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	16.7	14 8	<1	21.6	5 75	42 9	13 8
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE D-3
VOLATILE ORGANIC COMPOUNDS, SEVENTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW21-04A	IW21-04B	IW21-05A	IW21-05B	IW21-05B DUP	MW-21	MW-115
	Lab ID	L08060543-09	L08060543-10	L08060495-11	L08060495-17	L08060495-18	L08060454-08	L08060413-07
	Date	6/18/2008	6/18/2008	6/17/2008	6/17/2008	6/17/2008	6/16/2008	6/13/2008
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
Analyte	**Units**							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0.5	<0.5	<0 5	<0 5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0 5	<0 5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	0.301 J	0 416 J	0 371 J	<0 5	0.292 J
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0 4	<0 4	<0.4	<0.4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	<0.5	<0.5	<0.5	<0 5	<0 5	<0 5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	5.28 J	19 5	46.2	<10	<10	<10	<10
Benzene	ug/L	<0.4	<0 4	<0.4	<0.4	<0.4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0.5	<0 5	<0 5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	0 863 J	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0 5	<0.5	<0 5	<0 5	<0.5	<0.5
Chloroethane	ug/L	6 81	8.45	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0 3	<0.3	<0.3	0.157 J	<0 3
Chloromethane	ug/L	2 46	3.38	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	72 6	22	38.5	17 8	17 2	2.26	1.56
cis-1,3-Dichloropropene	ug/L	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0 5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	1.38	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0 6	<0 6	<0.6	<0.6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	93.3	148	880	37.6	37.9	<10	<10
Methyl t-butyl ether (MTBE)	ug/L	33.3	10	37.8	19 6	19.2	66.4 J	2.99 J
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	32 4	2.41	9 74	12.2	12.2	154	8 89
Toluene	ug/L	<1	0.349 J	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	0.843 J	<1	<1	1 29	<1	0 252 J	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	14.4	2.2	7.78	6 83	6.72	26 1	1.81
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fal

TABLE D-3
VOLATILE ORGANIC COMPOUNDS, SEVENTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	PMW21-01	PMW21-02	PMW21-03	PMW21-04	PMW21-05	PMW21-05 DUP	IW101-01A
	Lab ID	L08060454-05	L08060454-06	L08060413-05	L08060413-06	L08060454-07	L08060454-15	L08060250-07
	Date	6/16/2008	6/16/2008	6/13/2008	6/13/2008	6/16/2008	6/16/2008	6/9/2008
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	0.251 J	<0 5	0.511	0.285 J	<0 5	<0 5	<0.5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0 4	<0.4	<0.4	<0 4	<0 4
1,4-Dichlorobenzene	ug/L	<0 5	<0.5	<0 5	<0 5	<0.5	<0 5	0.131 J
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	2.69 J	<10	<10	<10	<10	37
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0 4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5	<0 5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	0.513 J
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0 3	<0.3	0.131 J	<0.3	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	1.86	0 251 J	0.504 J	2 32	<1	0.26 J	13.8
cis-1,3-Dichloropropene	ug/L	<0 5	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0.6	<0 6	<0.6	<0 6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	<10	<10	<10	<10	<10	53.7
Methyl t-butyl ether (MTBE)	ug/L	33.1 J	11 8	18.6 J	122 J	<5	0.551 J	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	114	11 4	30.8	90.9	36.9	37	<1
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	0 291 J	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	32.2	12.8	9 73	55 5	10 3	10 2	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fal

TABLE D-3
VOLATILE ORGANIC COMPOUNDS, SEVENTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-01A DUP	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-03A
	Lab ID	L08060250-08	L08060250-09	L08060250-14	L08060250-13	L08060283-13	L08060283-06	L08060283-07
	Date	6/9/2008	6/9/2008	6/9/2008	6/9/2008	6/10/2008	6/10/2008	6/10/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0 5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0 5	<0 5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0.5	<0.5	<0 5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0.4	<0.4	<0.4	<0 4	<0.4
1,4-Dichlorobenzene	ug/L	0.143 J	<0.5	<0 5	<0.5	<0.5	<0 5	0.126 B
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	51.7	<10	<10	<10	<10	<10	<10
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0.5	<0 5	<0 5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	0 666 J	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0 5	<0 5	<0.5	<0.5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0 3	0.148 J	<0.3	<0 3	<0.3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	14	23 1	15.7	46 2	13.2	52.9	15.4
cis-1,3-Dichloropropene	ug/L	<0 5	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0 6	<0 6	<0.6	<0 6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	61	5 81 J	<10	17 7	<10	52.9	<10
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	0 687 J	1.08	68 2	24	44	30.1	14 2
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	0 68 J	1.04	6 72	5 59	1.78	9.49	4.19
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fal

TABLE D-3
VOLATILE ORGANIC COMPOUNDS, SEVENTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-03B	IW101-03C	IW101-03C DUP	IW101-04A	IW101-04B	IW101-04C	IW101-05A
	Lab ID	L08060348-04	L08060348-07	L08060348-01	L08060413-01	L08060413-02	L08060413-03	L08060413-04
	Date	6/11/2008	6/11/2008	6/11/2008	6/13/2008	6/13/2008	6/13/2008	6/13/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	0.333 J	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	0 703	0.773	<0.5	<0 5	1.72	<0.5
1,2-Dichloropropane	ug/L	<1	0 748 J	0 758 J	<1	<1	2 89	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0 4	<0.4	<0.4	<0 4	<0.4
1,4-Dichlorobenzene	ug/L	<0.5	0.146 J	0 149 J	0.148 J	<0 5	<0 5	<0.5
1-Chlorohexane	ug/L	<1 J	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	<10	<10	12.9 B	2.85 B	<10	36.5 B
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	0.379 J	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	1.1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0 5	<0.5	<0.5	<0 5	<0.5	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	<0 3	<0.3	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	53	86 4	86.2	33.3	44.5	192	43
cis-1,3-Dichloropropene	ug/L	<0 5	<0 5	<0 5	<0.5	<0 5	<0.5	<0 5
Dibromochloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0.6	<0 6	<0.6	<0.6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	23 4 J	9.75 J	10.4	84 4 J	31.3 J	16.6 J	90 6
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	0 297 B	0.501 B	0 538 B	<1	<1	0.296 B	0 261 B
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	0 677 J
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	17.6 J	17.5	17.2	0.54 J	2.05	2.8	10.1
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	0 487 J	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	2.94	28.9	28.1	0.731 J	1.59	12.4	1.99
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fal

TABLE D-3
VOLATILE ORGANIC COMPOUNDS, SEVENTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B
	Lab ID	L08060454-09	L08060454-10	L08060454-11	L08060454-12	L08060454-13	L08060348-08	L08060348-09
	Date	6/16/2008	6/16/2008	6/16/2008	6/16/2008	6/16/2008	6/11/2008	6/11/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0 5	<0 5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0 5	0 265 J	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	0 674 J	<1	0.624 J
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0 5	<0 5	<0 5	<0.5	0.553	<0.5	0 563
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	0 752 J	<1	0 544 J
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0 4	<0.4	<0.4	<0.4	<0 4
1,4-Dichlorobenzene	ug/L	<0 5	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	<10	<10	<10	<10	8.19 J	<10
Benzene	ug/L	<0 4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0 3	<0 3	<0.3	<0.3	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	8 52	69 7	9.32	15.9	102	25.5	111
cis-1,3-Dichloropropene	ug/L	<0.5	<0 5	<0 5	<0.5	<0 5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0 6	<0 6	<0 6	<0 6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	56 1	34.8	10 7	7.79 J	11.8	23 1
Methyl t-butyl ether (MTBE)	ug/L	1 8	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	0 451 B
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	79.6	27.6	12 3	20.8	5 29	6.13	1 62
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	0.251 J	<1	0.276 J
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	1.58	5.46	2 05	4.95	13.3	5 42	4.1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fals

TABLE D-3
VOLATILE ORGANIC COMPOUNDS, SEVENTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW101-07C	IW101-08A	IW101-08B	IW101-08B DUP	IW101-08C	IW101-09A	IW101-09B
	Lab ID	L08060383-07	L08060454-14	L08060495-14	L08060495-10	L08060495-15	L08060383-08	L08060383-11
	Date	6/12/2008	6/16/2008	6/17/2008	6/17/2008	6/17/2008	6/12/2008	6/12/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<1	<0.5	<0.5	<0 5 J	<1	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<2	<1	<1	<1 J	<2	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<1	<0.5	<0.5	<0 5	<1	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<2	<1	<1	<1	<2	<1	<1
1,1-Dichloroethane	ug/L	<2	<1	<1	<1	<2	<1	<1
1,1-Dichloroethene	ug/L	<2	<1	<1	<1	2 83	<1	<1
1,1-Dichloropropene	ug/L	<2	<1	<1	<1	<2	<1	<1
1,2,3-Trichlorobenzene	ug/L	<2	<1	<1	<1	<2	<1	<1
1,2,3-Trichloropropane	ug/L	<2	<1	<1	<1	<2	<1	<1
1,2,4-Trichlorobenzene	ug/L	<2	<1	<1	<1	<2	<1	<1
1,2,4-Trimethylbenzene	ug/L	<2	<1	<1	<1	<2	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<4	<2	<2	<2	<4	<2	<2
1,2-Dibromoethane	ug/L	<2	<1	<1	<1	<2	<1	<1
1,2-Dichlorobenzene	ug/L	<2	<1	<1	<1	<2	<1	<1
1,2-Dichloroethane	ug/L	2 69	<0.5	<0 5	<0.5	1.34	<0 5	<0.5
1,2-Dichloropropane	ug/L	2 36	<1	<1	<1	1.59 J	<1	0.245 J
1,3,5-Trimethylbenzene	ug/L	<2	<1	<1	<1	<2	<1	<1
1,3-Dichlorobenzene	ug/L	<2	<1	<1	<1	<2	<1	<1
1,3-Dichloropropane	ug/L	<0 8	<0.4	<0 4	<0.4	<0 8	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	<1	<0 5	<0.5	<0 5	<1	<0 5	<0.5
1-Chlorohexane	ug/L	<2	<1	<1	<1	<2	<1	<1
2,2-Dichloropropane	ug/L	<2	<1	<1	<1	<2	<1	<1
2-Chlorotoluene	ug/L	<2	<1	<1	<1	<2	<1	<1
2-Hexanone	ug/L	<20	<10	<10	<10	<20	<10	<10
4-Chlorotoluene	ug/L	<2	<1	<1	<1	<2	<1	<1
Acetone	ug/L	<20	<10	<10	<10	<20	11.4	27 4
Benzene	ug/L	0 306 J	<0.4	<0 4	<0.4	0.505 B	<0.4	0.191 J
Bromobenzene	ug/L	<2	<1	<1	<1	<2	<1	<1
Bromochloromethane	ug/L	<2	<1	<1	<1	<2	<1	<1
Bromodichloromethane	ug/L	<1	<0 5	<0 5	<0 5	<1	<0.5	<0.5
Bromoform	ug/L	<2	<1	<1	<1	<2	<1	<1
Bromomethane	ug/L	<2	<1	<1	<1	<2	<1	<1
Carbon disulfide	ug/L	<2	<1	<1	<1	<2	<1	<1
Carbon tetrachloride	ug/L	<2	<1	<1	<1	<2	<1	<1
Chlorobenzene	ug/L	<1	<0 5	<0.5	<0 5	<1	<0.5	<0 5
Chloroethane	ug/L	<2	<1	<1	<1	<2	<1	<1
Chloroform	ug/L	<0 6	<0.3	<0 3	<0.3	<0 6	<0.3	<0.3
Chloromethane	ug/L	<2	<1	<1	<1	<2	<1	<1
cis-1,2-Dichloroethene	ug/L	307	17.2	73.4	73 6	311	<1	150
cis-1,3-Dichloropropene	ug/L	<1	<0 5	<0.5	<0.5	<1	<0.5	<0.5
Dibromochloromethane	ug/L	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5
Dibromomethane	ug/L	<2	<1	<1	<1	<2	<1	<1
Dichlorodifluoromethane	ug/L	<2	<1	<1	<1	<2	<1	<1
Ethylbenzene	ug/L	<2	<1	<1	<1	<2	<1	<1
Hexachlorobutadiene	ug/L	<1.2	<0.6	<0.6	<0 6	<1 2	<0.6	<0.6
Isopropylbenzene	ug/L	<2	<1	<1	<1	<2	<1	<1
m-,p-Xylene	ug/L	<4	<2	<2	<2	<4	<2	<2
MEK (2-Butanone)	ug/L	93 9	<10	<10	<10	41.3	<10	242
Methyl t-butyl ether (MTBE)	ug/L	<10	<5	<5	<5	<10	<5	<5
Methylene chloride	ug/L	1.15 J	<1	<1	<1	0.542 B	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<20	<10	<10	<10	<20	<10	<10
Naphthalene	ug/L	<2	<1	<1	<1	<2	<1	<1
n-Butylbenzene	ug/L	<2	<1	<1	<1	<2	<1	<1
n-Propylbenzene	ug/L	<2	<1	<1	<1	<2	<1	<1
o-Xylene	ug/L	<2	<1	<1	<1	<2	<1	<1
p-Isopropyltoluene	ug/L	<2	<1	<1	<1	<2	<1	<1
sec-Butylbenzene	ug/L	<2	<1	<1	<1	<2	<1	<1
Styrene	ug/L	<2	<1	<1	<1	<2	<1	<1
tert-Butylbenzene	ug/L	<2	<1	<1	<1	<2	<1	<1
Tetrachloroethene	ug/L	<2	2.59	1.29	0.641 J	3.19	0.895 J	0 621 J
Toluene	ug/L	<2	<1	<1	<1	<2	<1	<1
trans-1,2-Dichloroethene	ug/L	1.58 J	<1	1.37	<1	2.88	<1	0.628 J
trans-1,3-Dichloropropene	ug/L	<2	<1	<1	<1	<2	<1	<1
Trichloroethene	ug/L	2.58	1 8	1.47	<1	9 03	0 85 J	2.43
Trichlorofluoromethane	ug/L	<2	<1	<1	<1	<2	<1	<1
Vinyl acetate	ug/L	<10	<5	<5	<5	<10	<5	<5
Vinyl chloride	ug/L	<2	<1	<1	<1	<2	<1	1.23

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fal

TABLE D-3
VOLATILE ORGANIC COMPOUNDS, SEVENTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-09C	DR1-3	MW-101B	MW-101T	PMW101-01A	PMW101-01B	PMW101-02A
	Lab ID	L08060383-12	L08060413-09	L08060283-09	L08060283-08	L08060250-01	L08060250-04	L08060283-12
	Date	6/12/2008	6/13/2008	6/10/2008	6/10/2008	6/9/2008	6/9/2008	6/10/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<1	<0 5	<0.5	<0 5	<0.5	<0 5	<0 5
1,1,1-Trichloroethane	ug/L	<2	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<1	<0.5	<0.5	<0 5	<0 5	<0.5	<0 5
1,1,2-Trichloroethane	ug/L	<2	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<2	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	1.14 J	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<2	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<2	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<2	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<2	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<2	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<4	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<2	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<2	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<1	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5
1,2-Dichloropropane	ug/L	1.37 J	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<2	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<2	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.8	<0.4	<0 4	<0.4	<0 4	<0 4	<0.4
1,4-Dichlorobenzene	ug/L	<1	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5
1-Chlorohexane	ug/L	<2	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<2	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<2	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<20	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<2	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<20	<10	<10	<10	16	<10	<10
Benzene	ug/L	<0.8	<0.4	<0.4	<0 4	<0.4	<0.4	<0.4
Bromobenzene	ug/L	<2	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<2	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<1	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5
Bromoform	ug/L	<2	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<2	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<2	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<2	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<1	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5
Chloroethane	ug/L	<2	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0 6	<0.3	<0 3	0 137 J	<0.3	<0 3	<0.3
Chloromethane	ug/L	<2	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	245	19.5	23.3	3.22	20 3	42.9	37.7
cis-1,3-Dichloropropene	ug/L	<1	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
Dibromochloromethane	ug/L	<1	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
Dibromomethane	ug/L	<2	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<2	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<2	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<1 2	<0 6	<0 6	<0 6	<0.6	<0 6	<0 6
Isopropylbenzene	ug/L	<2	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<4	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	210	<10	<10	<10	104	8.59 J	<10
Methyl t-butyl ether (MTBE)	ug/L	<10	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<2	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<20	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<2	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<2	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<2	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<2	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<2	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<2	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<2	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<2	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	5 28	2.95	78.9	101	1 84	20.1	24 5
Toluene	ug/L	<2	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<2	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<2	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	20 4	2 02	4.15	1.09	0 836 J	1.64	5.97
Trichlorofluoromethane	ug/L	<2	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<10	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<2	<1	<1	<1	0.469 J	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fals

TABLE D-3
VOLATILE ORGANIC COMPOUNDS, SEVENTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	PMW101-02A DUP	PMW101-02B	PMW101-03A	PMW101-03B	PMW101-04A	PMW101-04B	PMW101-05A
	Lab ID	L08060283-15	L08060250-05	L08060283-01	L08060283-02	L08060348-17	L08060283-03	L08060348-10
	Date	6/10/2008	6/9/2008	6/10/2008	6/10/2008	6/11/2008	6/10/2008	6/11/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0 5	<0 5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0 4	<0.4	<0 4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5	<0 5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	4.88 J	<10	<10	<10	<10	<10
Benzene	ug/L	<0 4	<0.4	<0 4	<0.4	<0 4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0 3	<0 3	<0 3	<0 3	<0.3	<0 3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	40	96.1	56 5	86.8	42.6	52 2	77
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0.6	<0.6	<0 6	<0.6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	18 1	5.23 B	5.58 B	<10	<10	<10
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	24.7	<1	1 93	3 3	4 64	12 8	0 909 J
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	0 265 J	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	6.19	0.698 J	<1	0.975 J	1 65	4 85	0.998 J
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fal

TABLE D-3
VOLATILE ORGANIC COMPOUNDS, SEVENTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	PMW101-05B	PMW101-05B DUP	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A
	Lab ID	L08060348-11	L08060348-02	L08060383-02	L08060348-12	L08060383-03	L08060383-04	L08060383-05
	Date	6/11/2008	6/11/2008	6/12/2008	6/11/2008	6/12/2008	6/12/2008	6/12/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0 5	<0.5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0 5	<0.5	<0 5	<0 5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1 J	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1 J	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	0.548	0 583	<0.5	<0 5	<0.5	<0 5	<0.5
1,2-Dichloropropane	ug/L	1.03	1.1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0 4	<0.4	<0 4	<0.4	<0 4
1,4-Dichlorobenzene	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1 J	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1 J	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	<10	<10	<10	<10	<10	<10
Benzene	ug/L	<0.4	<0 4	<0.4	<0 4	<0.4	<0.4	<0 4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	0.202 J	0 165 J	<0.3	<0 3	<0.3	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	70 6	72.6	0 414 J	39.3 J	<1	5.49	3 55
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0 5	<0 5	<0 5	<0 5
Dibromochloromethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0 6	<0.6	<0 6	<0 6	<0.6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1 J	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	17	19.7	<10	<10	<10	<10	<10
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1 J	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1 J	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1 J	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1 J	<1	<1	<1
Tetrachloroethene	ug/L	16 4	16 2	5 52	1.15 J	0 327 J	14 9	28.8
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	60.7	61.8	<1	1.28 J	0.296 J	34	2 09
Trichlorofluoromethane	ug/L	<1	<1	<1	<1 J	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fal

TABLE D-3
VOLATILE ORGANIC COMPOUNDS, SEVENTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	PMW101-08A DUP	PMW101-08B	IW85-01	IW85-02	IW85-05	IW85-06	IW92-01
	Lab ID	L08060383-01	L08060413-08	L08060543-04	L08060495-02	L08060495-03	L08060495-04	L08060250-11
	Date	6/12/2008	6/13/2008	6/18/2008	6/17/2008	6/17/2008	6/17/2008	6/9/2008
	Area	TTA-1 101	TTA-1 101	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0 5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5	<0 5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	0 295 J	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	0.554 J	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	51 9	62.2	20 5	50.1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	0.314 J	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	0.152 J	0.16 J	<1
1,2-Dichloroethane	ug/L	<0 5	<0.5	0 607	0.583	0 453 J	0.263 J	<0 5
1,2-Dichloropropane	ug/L	<1	0 423 J	0.431 J	1 4	0.371 J	0 32 J	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0 4	0.498	<0.4	0 298 J	<0 4
1,4-Dichlorobenzene	ug/L	<0 5	<0.5	0 255 B	0.142 B	0 242 B	0.128 B	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	<10	29 3	23.8 B	3 69 B	27.4 B	14.6
Benzene	ug/L	<0.4	0.299 J	<0.4	<0.4	<0.4	0.133 B	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	2.27	1 93 J	2.8 J	<1	<1
Carbon tetrachloride	ug/L	<1	<1	21.5	9.51	5 6	<1	<1
Chlorobenzene	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	0.261 J	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	0 249 J	81.7	42 J	36.4 J	0.641 J	9.1
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	3.88	15.4	54.3	53.3	105	65 6	107
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0 6	<0 6	<0.6	<0.6	<0 6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	<10	30.1	25 9	8 43 J	65.1	103
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	1 82 B	2.13 B	<1	<1	0.392 J
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	28	43.2	27.7	7.28	1 39	0 925 J	3.24
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	1.38	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	2.07	161	10.7	3.42	0.963 J	<1	2.25
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B. Estimated result possibly biased high or fak

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TABLE D-3
VOLATILE ORGANIC COMPOUNDS, SEVENTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW92-02	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-08
	Lab ID	L08060283-14	L08060283-10	L08060348-15	L08060348-16	L08060413-11	L08060413-12	L08060495-01
	Date	6/10/2008	6/10/2008	6/11/2008	6/11/2008	6/13/2008	6/13/2008	6/17/2008
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<1	<0 5	<0 5	<0.5 J	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<2	<1	<1	<1 J	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0 5	<1	<0 5	<0 5	<0.5 J	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<2	<1	<1	<1 J	<1
1,1-Dichloroethane	ug/L	<1	<1	<2	<1	<1	<1 J	<1
1,1-Dichloroethene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
1,1-Dichloropropene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<2	<1	<1	<1 J	3.78
1,2,4-Trichlorobenzene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<4	<2	<2	<2 J	<2
1,2-Dibromoethane	ug/L	<1	<1	<2	<1	<1	<1 J	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
1,2-Dichloroethane	ug/L	<0.5	<0 5	<1	<0 5	<0.5	0.26 J	1 02
1,2-Dichloropropane	ug/L	<1	<1	<2	<1	<1	0 247 J	1 05
1,3,5-Trimethylbenzene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0.8	<0.4	<0 4	<0 4 J	<0.4
1,4-Dichlorobenzene	ug/L	<0.5	0.171 B	0 865 J	<0 5	0 594	<0.5 J	0 453 B
1-Chlorohexane	ug/L	<1	<1	<2	<1	<1	<1 J	<1
2,2-Dichloropropane	ug/L	<1	<1	<2	<1	<1	<1 J	<1
2-Chlorotoluene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
2-Hexanone	ug/L	<10	<10	<20	<10	<10	<10 J	<10
4-Chlorotoluene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
Acetone	ug/L	9.13 B	82.5 B	479	91.8	40 9 B	35 B	281
Benzene	ug/L	<0.4	<0 4	<0.8	<0.4	<0.4	<0.4 J	<0.4
Bromobenzene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
Bromochloromethane	ug/L	<1	<1	<2	<1	<1	<1 J	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<1	<0 5	<0.5	<0 5 J	<0 5
Bromoform	ug/L	<1	<1	<2	<1	<1	<1 J	<1
Bromomethane	ug/L	<1	<1	<2	<1	<1	<1 J	<1
Carbon disulfide	ug/L	<1	0 558 J	<2	<1	<1	0 675 J	1.9
Carbon tetrachloride	ug/L	3.67	<1	<2	<1	<1	0.812 J	<1
Chlorobenzene	ug/L	<0.5	<0.5	<1	<0.5	<0 5	<0.5 J	<0 5
Chloroethane	ug/L	<1	<1	<2	<1	<1	<1 J	<1
Chloroform	ug/L	27.7	3 36	0.604	0 322	<0.3	5 88 J	11.4 J
Chloromethane	ug/L	<1	<1	<2	<1	<1	<1 J	0.309 J
cis-1,2-Dichloroethene	ug/L	90 5	63.9	45 8	9.95	34 9	67.5 J	35 4
cis-1,3-Dichloropropene	ug/L	<0 5	<0.5	<1	<0.5	<0 5	<0.5 J	<0 5
Dibromochloromethane	ug/L	<0.5	<0.5	<1	<0.5	<0.5	<0.5 J	<0.5
Dibromomethane	ug/L	<1	<1	<2	<1	<1	<1 J	<1
Dichlorodifluoromethane	ug/L	<1	<1	<2	<1	<1	<1 J	<1
Ethylbenzene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
Hexachlorobutadiene	ug/L	<0.6	<0 6	<1.2	<0 6	<0 6	<0 6 J	<0.6
Isopropylbenzene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
m-,p-Xylene	ug/L	<2	<2	<4	<2	<2	<2 J	<2
MEK (2-Butanone)	ug/L	10 6 B	136	388	65 8	80 8 J	39.7 J	526
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<10	<5	<5	<5 J	<5
Methylene chloride	ug/L	1.54	0.559 J	1.43 B	1.96 B	3 37 B	2.14 B	16 5
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<20	<10	<10	<10 J	<10
Naphthalene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
n-Butylbenzene	ug/L	<1	<1	1.06 B	<1	<1	<1 J	<1
n-Propylbenzene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
o-Xylene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
p-Isopropyttoluene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
sec-Butylbenzene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
Styrene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
tert-Butylbenzene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
Tetrachloroethene	ug/L	38.6	2.4	3.67	13 3	6 93	15.7 J	8 95
Toluene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<2	<1	<1	<1 J	<1
Trichloroethene	ug/L	8.63	1 56	2 14	2.53	3.61	3 64 J	4 36
Trichlorofluoromethane	ug/L	<1	<1	<2	<1	<1	<1 J	<1
Vinyl acetate	ug/L	<5	<5	<10	<5	<5	<5 J	<5
Vinyl chloride	ug/L	<1	<1	<2	<1	<1	<1 J	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B Estimated result possibly biased high or fal

TABLE D-3
VOLATILE ORGANIC COMPOUNDS, SEVENTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	DR2-1	DR2-5	IW-01	MW-85	PMW85-01	PMW85-04	PMW85-05
	Lab ID	L08060250-10	L08060543-06	L08060454-04	L08060454-03	L08060543-05	L08060543-02	L08060543-03
	Date	6/9/2008	6/18/2008	6/16/2008	6/16/2008	6/18/2008	6/18/2008	6/18/2008
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0 5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0.5	0 433 J	<0.5	<0 5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	1.27	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	36 5	0.981 J	17 6	5.53	70 7	175
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	0.187 J	0.4 J
1,2-Dichloroethane	ug/L	<0 5	0.437 J	0.549	0 295 J	0.294 J	0 327 J	1.26
1,2-Dichloropropane	ug/L	<1	<1	0.413 J	1 74	<1	0 327 J	0.746 J
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0 4	<0.4	1 04	<0 4	0.278 J	<0.4
1,4-Dichlorobenzene	ug/L	<0.5	<0 5	<0 5	<0.5	<0 5	<0.5	<0 5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	5.06 J	<10	26	3.57 J	<10	19 1	<10
Benzene	ug/L	<0.4	<0.4	<0 4	<0.4	<0.4	<0 4	0.147 J
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0 5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	0 502 J	<1	<1	2 5
Carbon tetrachloride	ug/L	2.8	103	8.41	47.2	57.3	1.01	143
Chlorobenzene	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	0.323 J	0 35 J
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	5.75	37.2	10.8	8 03	29 9	6.57	73.6
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	38 1	29 2	108	39 1	18.3	107	94.8
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0 6	<0.6	<0.6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	<10	7 93 J	6 75 J	<10	53 9	<10
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	0 491 J	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	50.7	41.7	50 8	22	19.3	3.6	126
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	1 62	<1	<1	<1	1.46	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	5 36	13.7	11.6	10.4	7.68	2.14	34 5
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fal

TABLE D-3
VOLATILE ORGANIC COMPOUNDS, SEVENTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	PMW92-01	PMW92-02	PMW92-03	PMW92-04	PMW92-05	PMW92-06
	Lab ID	L08060250-12	L08060283-11	L08060348-18	L08060383-13	L08060383-14	L08060454-02
	Date	6/9/2008	6/10/2008	6/11/2008	6/12/2008	6/12/2008	6/16/2008
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units						
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0 5	<0.5	<0 5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0 5	<0 5	<0.5	<0 5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	0 622 J	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	84.6
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	0 408 J
1,2-Dichloroethane	ug/L	<0.5	<0 5	<0.5	<0.5	0 571	0.659
1,2-Dichloropropane	ug/L	<1	<1	0.316 J	<1	0 296 J	7.77
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0 4	<0.4	<0 4	4.59
1,4-Dichlorobenzene	ug/L	<0 5	0 2 B	<0.5	<0 5	<0.5	<0 5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1
Acetone	ug/L	17.6	23.8 B	<10	<10	<10	44.7
Benzene	ug/L	<0.4	<0 4	<0.4	<0.4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	1.03	62.7	<1
Chlorobenzene	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	0 305 J
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	1.91	<0 3	0 49	3 91	24.7	1 11
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	19 4	130	159	159	25 2	178
cis-1,3-Dichloropropene	ug/L	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0 6	<0 6	<0 6	<0.6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	31.2	18.3 B	<10	<10	<10	90 1 J
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	0.324 J	<1	<1	<1	<1	0.251 J
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	24.8	<1	27.1	8.75	168	0 785 J
Toluene	ug/L	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	0.254 J	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	1.53	<1	8 79	2.09	14 3	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1

< Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or repor
B: Estimated result possibly biased high or fal

TABLE D-4
VOLATILE ORGANIC COMPOUNDS, EIGTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW21-01A	IW21-01B	IW21-01B DUP	IW21-02A	IW21-02B	IW21-03A	IW21-03B
	Lab ID	L08120452-12	L08120452-13	L08120452-15	L08120452-14	L08120478-01	L08120478-02	L08120478-03
	Date	12/15/2008	12/15/2008	12/15/2008	12/15/2008	12/16/2008	12/16/2008	12/16/2008
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<2.5	<0 5	<2.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<5	<1	<5
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<2.5	<0.5	<2.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<5	<1	<5
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<5	<1	<5
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<5	<1	<5
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<5	<1	<5
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<5	<1	<5
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<5	<1	<5
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<5	<1	<5
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<5	<1	<5
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<10	<2	<10
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<5	<1	<5
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<5	<1	<5
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0 5	<0.5	<2.5	0.569 J	<2.5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<5	<1	<5
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<5	<1	<5
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<5	<1	<5
1,3-Dichloropropane	ug/L	<0.4	<0 4	<0.4	<0 4	<2	<0.4	<2
1,4-Dichlorobenzene	ug/L	0.761 B	<0 5	<0.5	0 18 B	<2.5	0 134 J	<2.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<5	<1	<5
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<5	<1	<5
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<5	<1	<5
2-Hexanone	ug/L	<10	<10	<10	<10	<50	<10	<50
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<5	<1	<5
Acetone	ug/L	18 6 B	63.9 B	63 5 B	26.9 B	118	8.31 J	212
Benzene	ug/L	<0.4	<0 4	<0.4	<0 4	<2	<0 4	<2
Bromobenzene	ug/L	<1	<1	<1	<1	<5	<1	<5
Bromochloromethane	ug/L	<1	<1	<1	<1	<5	<1	<5
Bromodichloromethane	ug/L	<0 5	<0.5	<0.5	<0.5	<2.5	<0.5	<2.5
Bromoform	ug/L	<1	<1	<1	<1	<5	<1	<5
Bromomethane	ug/L	<1	<1	<1	<1	<5 J	<1	<5 J
Carbon disulfide	ug/L	6.46	<1	<1	0.564 J	<5	<1	<5 J
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<5	<1	<5
Chlorobenzene	ug/L	<0.5	<0.5	<0 5	<0.5	<2.5	<0.5	<2.5
Chloroethane	ug/L	<1	<1	<1	<1	<5	<1	<5
Chloroform	ug/L	<0.3	<0.3	<0 3	<0.3	<1.5	<0.3	<1.5
Chloromethane	ug/L	<1	<1	<1	<1	<5	<1 J	<5
cis-1,2-Dichloroethene	ug/L	75 2	63 7	66.2	24.1	2 37 J	96.8	16 1
cis-1,3-Dichloropropene	ug/L	<0 5	<0.5	<0.5	<0.5	<2 5	<0.5	<2.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<2 5	<0.5	<2.5
Dibromomethane	ug/L	<1	<1	<1	<1	<5	<1	<5
Dichlorodifluoromethane	ug/L	<1	<1 J	<1 J	<1 J	<5	<1 J	<5
Ethylbenzene	ug/L	<1	<1	<1	<1	<5	<1	<5
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0.6	<0.6	<3	<0.6	<3
Isopropylbenzene	ug/L	<1	<1	<1	<1	<5	<1	<5
m-,p-Xylene	ug/L	<2	<2	<2	<2	<10	<2	<10
MEK (2-Butanone)	ug/L	1040	462	459	532	683	79.1	1930 J
Methyl t-butyl ether (MTBE)	ug/L	35.5	23.1 J	22.5 J	39 J	5 J	60.3	7.04 J
Methylene chloride	ug/L	<1	<1	<1	<1	<5	<1	<5
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<50	<10	<50
Naphthalene	ug/L	<1	<1	<1	<1	<5	<1	<5
n-Butylbenzene	ug/L	<1	<1	<1	<1	<5	<1	<5
n-Propylbenzene	ug/L	<1	<1	<1	<1	<5	<1	<5
o-Xylene	ug/L	<1	<1	<1	<1	<5	<1	<5
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<5	<1	<5
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<5	<1	<5
Styrene	ug/L	<1	<1	<1	<1	<5	<1	<5
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<5	<1	<5
Tetrachloroethene	ug/L	4.52	5.72	6 12	62.9	18 6	0 397 J	<5
Toluene	ug/L	<1	<1	<1	<1	<5	<1	<5
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<5	0.585 J	<5
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<5	<1	<5
Trichloroethene	ug/L	5.19	2.89	2.96	13.9	2.12 J	<1	<5
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<5 J	<1	<5 J
Vinyl acetate	ug/L	<5 J	<5 R	<5 R	<5 R	<25 R	<5 J	<25 R
Vinyl chloride	ug/L	<1	<1	<1	<1	<5	<1	<5

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B. Estimated result possibly biased high or false positive based on blank data
R: Datum rejected based upon QC data

TABLE D-4
VOLATILE ORGANIC COMPOUNDS, EIGTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW21-04A	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115	MW-115 DUP
	Lab ID	L08120478-06	L08120478-07	L08120478-08	L08120478-09	L08120376-15	L08120394-13	L08120394-09
	Date	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/11/2008	12/12/2008	12/12/2008
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<2.5	<2 5	<2.5	<2.5	<0 5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<5	<5	<5	<5	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<2.5	<2.5	<2.5	<2.5	<0.5	<0.5	<0 5
1,1,2-Trichloroethane	ug/L	<5	<5	<5	<5	<1	<1	<1
1,1-Dichloroethane	ug/L	<5	<5	<5	<5	<1	<1	<1
1,1-Dichloroethene	ug/L	<5	<5	<5	<5	<1	<1	<1
1,1-Dichloropropene	ug/L	<5	<5	<5	<5	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<5	<5	<5	<5	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<5	<5	<5	<5	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<5	<5	<5	<5	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<5	<5	<5	<5	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<10	<10	<10	<10	<2	<2	<2
1,2-Dibromoethane	ug/L	<5	<5	<5	<5	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<5	<5	<5	<5	<1	<1	<1
1,2-Dichloroethane	ug/L	<2.5	<2.5	<2.5	<2 5	<0 5	<0.5	0 548
1,2-Dichloropropane	ug/L	<5	<5	<5	<5	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<5	<5	<5	<5	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<5	<5	<5	<5	<1	<1	<1
1,3-Dichloropropane	ug/L	<2	<2	<2	<2	<0 4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	<2.5	<2.5	<2.5	<2 5	<0.5	<0 5	<0.5
1-Chlorohexane	ug/L	<5	<5	<5	<5	<1	<1	<1
2,2-Dichloropropane	ug/L	<5	<5	<5	<5	<1	<1	<1
2-Chlorotoluene	ug/L	<5	<5	<5	<5	<1	<1	<1
2-Hexanone	ug/L	<50	<50	<50	<50	<10	<10	<10
4-Chlorotoluene	ug/L	<5	<5	<5	<5	<1	<1	<1
Acetone	ug/L	<50	416	15 5 J	<50	<10	6.17 J	3 21 J
Benzene	ug/L	<2	<2	<2	<2	<0.4	<0 4	<0 4
Bromobenzene	ug/L	<5	<5	<5	<5	<1	<1	<1
Bromochloromethane	ug/L	<5	<5	<5	<5	<1	<1	<1
Bromodichloromethane	ug/L	<2.5	<2.5	<2.5	<2.5	<0 5	<0.5	<0.5
Bromoform	ug/L	<5	<5	<5	<5	<1	<1	<1
Bromomethane	ug/L	<5 J	<5 J	<5	<5 J	<1	<1	<1
Carbon disulfide	ug/L	<5	<5	8.37	<5	<1	5 58	6.31
Carbon tetrachloride	ug/L	<5	<5	<5	<5	<1	<1	<1
Chlorobenzene	ug/L	<2 5	<2.5	1.39 J	<2 5	<0.5	<0 5	<0.5
Chloroethane	ug/L	<5	<5	<5	<5	<1	<1	<1
Chloroform	ug/L	<1.5	<1.5	<1 5	<1.5	0 183 J	<0.3	<0.3
Chloromethane	ug/L	<5	<5	<5 J	<5	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	65	22	7.06	9.95	2.44	3 63	3.55
cis-1,3-Dichloropropene	ug/L	<2.5	<2.5	<2.5	<2.5	<0 5	<0.5	<0.5
Dibromochloromethane	ug/L	<2 5	<2.5	<2 5	<2.5	<0 5	<0.5	<0 5
Dibromomethane	ug/L	<5	<5	<5	<5	<1	<1	<1
Dichlorodifluoromethane	ug/L	<5	<5	<5 J	<5	<1	<1	<1
Ethylbenzene	ug/L	<5	<5	<5	<5	<1	<1	<1
Hexachlorobutadiene	ug/L	<3	<3	<3	<3	<0.6	<0 6	<0.6
Isopropylbenzene	ug/L	<5	<5	<5	<5	<1	<1	<1
m-,p-Xylene	ug/L	<10	<10	<10	<10	<2	<2	<2
MEK (2-Butanone)	ug/L	679	2050 J	218	965	<10	29 3	32.5
Methyl t-butyl ether (MTBE)	ug/L	31.5	7.01 J	8 77 J	16 1 J	51.9 J	7.75	6.64
Methylene chloride	ug/L	<5	<5	<5	<5	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<50	<50	<50	<50	<10	<10	<10
Naphthalene	ug/L	<5	<5	<5	<5	<1	<1	<1
n-Butylbenzene	ug/L	<5	<5	<5	<5	<1	<1	<1
n-Propylbenzene	ug/L	<5	<5	<5	<5	<1	<1	<1
o-Xylene	ug/L	<5	<5	<5	<5	<1	<1	<1
p-Isopropyltoluene	ug/L	<5	<5	<5	<5	<1	<1	<1
sec-Butylbenzene	ug/L	<5	<5	<5	<5	<1	<1	<1
Styrene	ug/L	<5	<5	<5	<5	<1	<1	<1
tert-Butylbenzene	ug/L	<5	<5	<5	<5	<1	<1	<1
Tetrachloroethene	ug/L	5.46	<5	<5	3.11 J	192	9.46	9.39
Toluene	ug/L	<5	<5	<5	<5	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<5	<5	<5	<5	0.274 J	<1	<1
trans-1,3-Dichloropropene	ug/L	<5	<5	<5	<5	<1	<1	<1
Trichloroethene	ug/L	3.89 J	1.31 J	<5	1.4 J	20 4	1.74	1 74
Trichlorofluoromethane	ug/L	<5 J	<5 J	<5	<5 J	<1	<1	<1
Vinyl acetate	ug/L	<25 R	<25 R	<25 J	<25 J	<5	<5 J	<5 J
Vinyl chloride	ug/L	<5	<5	<5	<5	<1	<1	<1

<. Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or fals
R. Datum rejected based upon QC data

TABLE D-4
VOLATILE ORGANIC COMPOUNDS, EIGTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	PMW21-01	PMW21-01 DUP	PMW21-02	PMW21-03	PMW21-04	PMW21-05	IW101-01A
	Lab ID	L08120376-13	L08120376-11	L08120394-10	L08120394-11	L08120394-12	L08120376-14	L08120243-02
	Date	12/11/2008	12/11/2008	12/12/2008	12/12/2008	12/12/2008	12/11/2008	12/8/2008
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0 5	0.293 J	<0 5	<0.5	<0.5	<0.5	<0 5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0.4	<0 4	<0 4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	0.271 J
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	80.3 B	79 2 B	20.4	2 74 J	97 3	3 23 B	11.2
Benzene	ug/L	<0.4	<0 4	<0.4	<0 4	<0 4	<0.4	<0 4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	24.4	29.2	39 1	5.4	12.4	1.16	0.606 J
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0 5	<0 5	<0.5	<0 5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0 3	<0 3	<0.3	<0.3	<0 3	<0.3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	1.78	1 72	1.03	19.2	3.49	0 865 J	10.1
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0.6	<0 6	<0.6	<0.6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	21.8 B	21.8 B	27	3 06 J	77	<10	852
Methyl t-butyl ether (MTBE)	ug/L	41 3 J	41 3 J	42 3	39.4	18	1.73 J	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	73.3	77.9	48 4	22 2	16.2	40.3	<1
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	23 9	24.8	20.4	9.79	5 8	10.4	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5 J	<5 J	<5 J	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or fals
R: Datum rejected based upon QC data

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TABLE D-4
VOLATILE ORGANIC COMPOUNDS, EIGTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-02C DUP	IW101-03A
	Lab ID	L08120243-03	L08120243-04	L08120243-05	L08120243-06	L08120243-07	L08120243-01	L08120343-01
	Date	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/10/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	0.313 J	<0 5	<0 5	0 855	0.925	<0 5
1,2-Dichloropropane	ug/L	<1	0.761 J	<1	<1	1 49	1.44	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0 4	<0.4	<0 4	<0.4	<0 4	<0.4
1,4-Dichlorobenzene	ug/L	0.232 J	0.171 J	<0.5	<0 5	<0.5	<0 5	0.129 J
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	9 45	14	16	14 6	17.8	16 9	23 6 J
Benzene	ug/L	<0.4	0 133 J	<0 4	<0 4	0 191 J	<0 4	<0 4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	0 887 J	<1	<1	0 603 J	<1	<1	7
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0.5	<0 5	<0 5	<0.5	<0 5	<0.5
Chloroethane	ug/L	<1	<1	3 11	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0 3	<0.3	<0 3	<0.3	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	21 7	75.5	47.9	39 5	92.5	93 8	22.9
cis-1,3-Dichloropropene	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0.5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	1 18	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0 6	<0.6	<0.6	<0 6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	393	475	142	379	481	498	239 J
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	1.88	12 5	4 9	17.9	22	22.5	0 86 J
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	0.638 J	22.1	2.79	3.27	40.3	42.7	0 468 J
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5 J
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B. Estimated result possibly biased high or false
R· Datum rejected based upon QC data

TABLE D-4
VOLATILE ORGANIC COMPOUNDS, EIGTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW101-03B	IW101-03C	IW101-04A	IW101-04B	IW101-04C	IW101-05A	IW101-05A DUP
	Lab ID	L08120343-02	L08120343-03	L08120452-06	L08120452-07	L08120452-10	L08120394-02	L08120394-01
	Date	12/10/2008	12/10/2008	12/15/2008	12/15/2008	12/15/2008	12/12/2008	12/12/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0 5	<0 5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	0 493 J	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	0 343 J	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	3 81 J	<0.5	<0.5	1.38	<0 5	<0.5
1,2-Dichloropropane	ug/L	<1	3.41	<1	<1	1.85	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0.4	<0.4	<0 4	<0 4	<0 4
1,4-Dichlorobenzene	ug/L	<0.5	<0 5	0.239 B	0.151 B	0.145 B	<0.5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	65 9 J	27 4 J	19.9 B	56 4 B	56.6 B	<10	<10
Benzene	ug/L	<0 4	0.413	<0 4	<0.4	0 255 B	<0.4	<0 4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	1.05	2 57	4.98	<1	0.806 J	0.672 J	0.625 J
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0 3	<0.3	<0.3	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	41.4	207	23.2	45 2	108	31.8	30 8
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1 J	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0.6	<0 6	<0 6	<0.6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	1460	784	936	1090	1720	107	101
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	0.635 B	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	0.27 J	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	9 26	11 2	<1	0.522 J	3.45	7.41	7.71
Toluene	ug/L	<1	<1	<1	0.386 B	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	0.266 J	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	1 87	54	<1	0.566 J	13.4	1.67	1.54
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1 J	<1 J
Vinyl acetate	ug/L	<5 J	<5 J	<5 J	<5 R	<5 J	<5 R	<5 R
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<. Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or false
R: Datum rejected based upon QC data

TABLE D-4
VOLATILE ORGANIC COMPOUNDS, EIGTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B
	Lab ID	L08120394-03	L08120452-11	L08120394-04	L08120394-05	L08120394-06	L08120343-04	L08120376-03
	Date	12/12/2008	12/15/2008	12/12/2008	12/12/2008	12/12/2008	12/10/2008	12/11/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	0 451 J	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	0 561	<0 5	<0.5	1.92	<0.5	1.05
1,2-Dichloropropane	ug/L	<1	1 38	<1	<1	2.91	<1	1.16
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0 4	<0 4	<0 4	<0.4	<0 4	<0.4
1,4-Dichlorobenzene	ug/L	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5	0 219 B
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	20.9 B	<10	<10	<10	26.3 J	<10
Benzene	ug/L	<0 4	0 281 B	<0 4	<0.4	0.48	<0 4	0.216 B
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	16 9	<1	0 515 J	<1	13.1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5
Chloroethane	ug/L	3.36	<1	<1	<1	11.9	<1	<1
Chloroform	ug/L	<0.3	<0 3	<0.3	<0 3	<0.3	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	2.77	<1	<1
cis-1,2-Dichloroethene	ug/L	32.4	127	14	11.5	209	30.3	176
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5
Dibromochloromethane	ug/L	<0 5	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	7 14	<1	0.38 J	1.53	4.32	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0 6	<0.6	<0 6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	5.78	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	78 3	271	95 3	238	457	280	379 B
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	0.168 J	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	24.6	15 2	1 54	17 2	10.6	1 91	2 96
Toluene	ug/L	0 337 J	<1	0 457 J	0.277 J	0.56 J	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	0 472 J	<1	0.293 J
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	6.76	31 3	0.872 J	6.47	48.7	2.65	9 86
Trichlorofluoromethane	ug/L	<1 J	<1	<1 J	<1 J	<1 J	<1	<1 J
Vinyl acetate	ug/L	<5 R	<5 J	<5 R	<5 R	<5 R	<5	<5 R
Vinyl chloride	ug/L	<1	<1	<1	<1	0.974 J	<1	<1

<: Not detected above Reporting Limit (RL)
J. Estimated result based on QC data or report
B. Estimated result possibly biased high or false
R: Datum rejected based upon QC data

TABLE D-4
VOLATILE ORGANIC COMPOUNDS, EIGTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW101-07C	IW101-08A	IW101-08B	IW101-08C	IW101-09A	IW101-09B	IW101-09C
	Lab ID	L08120376-04	L08120376-07	L08120394-07	L08120394-08	L08120376-08	L08120376-09	L08120376-10
	Date	12/11/2008	12/11/2008	12/12/2008	12/12/2008	12/11/2008	12/11/2008	12/11/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0 5	<0 5	<0.5	<1
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<2
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<2
1,1-Dichloroethane	ug/L	0 453 J	<1	<1	0 413 J	<1	<1	<2
1,1-Dichloroethene	ug/L	0 804	<1	<1	<1	<1	<1	<2
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<2
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<2
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<2
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<2
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<2
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<4
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<2
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<2
1,2-Dichloroethane	ug/L	2.49	<0 5	<0 5	2.17	<0.5	<0 5	<1
1,2-Dichloropropane	ug/L	3.36	<1	<1	2.32	<1	0.469 J	1.07 J
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<2
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<2
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0.4	<0 4	<0 4	<0.4	<0 8
1,4-Dichlorobenzene	ug/L	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5	<1
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<2
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<2
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<2
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<20
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<2
Acetone	ug/L	54.5 B	13 1 B	6.66 J	37.8	<10	23.1 B	29 4 B
Benzene	ug/L	0 469 B	<0 4	<0.4	0.501	<0.4	0.252 B	0.332 B
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<2
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<2
Bromodichloromethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0 5	<0.5	<1
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<2
Bromomethane	ug/L	<1 J	<1	<1	<1	<1	<1	<2
Carbon disulfide	ug/L	<1	0.578 J	5.85	0.568 J	<1	0.535 J	<2
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<2
Chlorobenzene	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5	<1
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<2
Chloroform	ug/L	<0 3	<0.3	<0.3	<0.3	<0 3	<0.3	<0.6
Chloromethane	ug/L	<1 J	<1	<1	<1	<1	<1	<2
cis-1,2-Dichloroethene	ug/L	295	37 8	60.5	236	<1	138	169
cis-1,3-Dichloropropene	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0 5	<1
Dibromochloromethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0.5	<0 5	<1
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<2
Dichlorodifluoromethane	ug/L	<1 J	<1	<1	<1	<1	<1	<2
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<2
Hexachlorobutadiene	ug/L	<0.6	<0.6	<0.6	<0.6	<0 6	<0 6	<1.2
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<2
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<4
MEK (2-Butanone)	ug/L	1260	618	265	307	8.33 B	1160	332
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<10
Methylene chloride	ug/L	<1	<1	<1	0 347 B	<1	<1	<2
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<20
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<2
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<2
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<2
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<2
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<2
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<2
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<2
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<2
Tetrachloroethene	ug/L	2 52	<1	0.842 J	7.07	0 371 J	0 866 J	3.43
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<2
trans-1,2-Dichloroethene	ug/L	0 31 J	<1	<1	0 404 J	<1	<1	<2
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<2
Trichloroethene	ug/L	5.85	<1	2.54	36.2	<1	3.17	13.8
Trichlorofluoromethane	ug/L	<1 J	<1 J	<1	<1	<1 J	<1	<2
Vinyl acetate	ug/L	<5 J	<5 R	<5 J	<5 J	<5 R	<5	<10
Vinyl chloride	ug/L	0 798	<1	<1	0.884 J	<1	2.37	<2

<. Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or false
R. Datum rejected based upon QC data

TABLE D-4
VOLATILE ORGANIC COMPOUNDS, EIGTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-09C DUP	DR1-3	MW-101B	MW-101T	PMW101-01A	PMW101-01B	PMW101-02A
	Lab ID	L08120376-01	L08120376-18	L08120343-06	L08120343-05	L08120243-09	L08120243-10	L08120243-13
	Date	12/11/2008	12/11/2008	12/10/2008	12/10/2008	12/8/2008	12/8/2008	12/8/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	0 503 J	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	0 262 J	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	1.25	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0 4	<0.4	<0.4	<0 4	<0.4
1,4-Dichlorobenzene	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5	<0 5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	21 4 B	2.7 B	2.98 J	<10 J	20.1	3 78 J	<10
Benzene	ug/L	0 263 B	<0.4	<0 4	<0.4	<0.4	<0 4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	1 88	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	2 8 B	2.81 B	<1	<1 J	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	5.62	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0 5	<0 5	<0 5	<0 5	<0.5	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0 3	<0 3	<0.3	<0 3	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	194	16 5	29.1	51.2	16 8	60.3 J	31.2
cis-1,3-Dichloropropene	ug/L	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0 5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0.6	<0 6	<0 6	<0.6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	254	4 39 B	24 8	41.1	291	40.1 J	7.85 J
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	0 596 J	0.52 J	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	1.39 B	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	4 11	2.59	47	16.5	2.41	1 72	24
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	16 3	1.32	0.923 J	1.63	<1	1.84	2.28
Trichlorofluoromethane	ug/L	<1 J	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5 R	<5	<5 R	<5 R	<5	<5 J	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or false
R. Datum rejected based upon QC data

TABLE D-4
VOLATILE ORGANIC COMPOUNDS, EIGTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	PMW101-02B	PMW101-03A	PMW101-03A DUP	PMW101-03B	PMW101-04A	PMW101-04B	PMW101-05A
	Lab ID	L08120243-14	L08120243-15	L08120243-08	L08120243-16	L08120243-17	L08120343-08	L08120343-09
	Date	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/10/2008	12/10/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0 5	<0 5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0 4	<0.4	<0.4	<0.4	<0.4	<0 4
1,4-Dichlorobenzene	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5	<0 5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane .	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	3.73	<10	<10	<10	<10	<10 J	<10 J
Benzene	ug/L	<0.4	<0 4	<0.4	<0 4	<0.4	<0 4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0 3	<0.3	<0 3	<0 3	<0.3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	55	73	67.1	60 8	60.7	26	69.6
cis-1,3-Dichloropropene	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0.5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0.6	<0 6	<0 6	<0.6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	4 35 J	<10	<10	3 34 J	<10	<10	<10
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	0 542 J
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	4.03	0.766 J	0.663 J	5.75	13 9	37	0 812 J
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	0 375 J	<1	1.07	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	5.41	<1	0 273 J	0 958 J	2.65	5.02	0.422 J
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5 J	<5	<5 J	<5 J	<5 R	<5 R
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or false
R: Datum rejected based upon QC data

TABLE D-4
VOLATILE ORGANIC COMPOUNDS, EIGTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	PMW101-05B	PMW101-06A	PMW101-06A DUP	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A
	Lab ID	L08120343-10	L08120343-11	L08120343-07	L08120343-12	L08120343-13	L08120343-16	L08120376-16
	Date	12/10/2008	12/10/2008	12/10/2008	12/10/2008	12/10/2008	12/10/2008	12/11/2008
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	0 293 J	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	0 293 J	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	1 32	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0 4	<0.4	<0 4	<0 4	<0.4
1,4-Dichlorobenzene	ug/L	<0 5	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10 J	<10 J	<10 J	<10 J	<10 J	<10 J	20.8 B
Benzene	ug/L	0.169 J	<0 4	<0.4	<0.4	<0 4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	2.83 B	<1	<1	<1	2 9 B	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	50
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0 5	<0.5	<0 5	<0.5	<0 5	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	0.3	<0.3	<0 3	<0 3	<0 3	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	57.4	3 63	3.43	31.9	<1	1 39	7.16
cis-1,3-Dichloropropene	ug/L	<0 5	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5
Dibromochloromethane	ug/L	<0 5	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0 6	<0.6	<0 6	<0.6	<0.6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	5.31 J	3.47 J	3.38 J	8 08 J	<10	<10	169
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	0 68 J
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	26.1	0 341 J	0.357 J	<1	0 527 J	13.3	65 4
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	77.8	0.266 J	<1	<1	<1	24 5	9.88
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5 R	<5 R	<5 R	<5 R	<5 R	<5 R	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or fals
R: Datum rejected based upon QC data

TABLE D-4
VOLATILE ORGANIC COMPOUNDS, EIGTH QUARTER SAMPLES
5 YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	PMW101-08B	PMW101-08B DUP	IW85-01	IW85-02	IW85-05	IW85-06	IW92-01
	Lab ID	L08120376-17	L08120376-12	L08120452-03	L08120394-15	L08120452-04	L08120394-16	L08120478-11
	Date	12/11/2008	12/11/2008	12/15/2008	12/12/2008	12/15/2008	12/12/2008	12/16/2008
	Area	TTA-1 101	TTA-1 101	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0 5	<0 5	<0.5	<0 5	<2 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<5
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<5
1,1-Dichloroethane	ug/L	0 543 J	0.533 J	<1	<1	<1	<1	<5
1,1-Dichloroethene	ug/L	1.91	1 64	<1	<1	<1	<1	<5
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<5
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<5
1,2,3-Trichloropropane	ug/L	<1	<1	13.6	14	18.7	17.7	<5
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<5
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<5
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<10
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<5
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<5
1,2-Dichloroethane	ug/L	<0.5	0.255 J	<0.5	<0 5	<0.5	<0 5	<2.5
1,2-Dichloropropane	ug/L	1.24	1.24	0.238 J	1 84	0.302 J	2.83	<5
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<5
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<5
1,3-Dichloropropane	ug/L	<0.4	<0 4	<0.4	0 939	<0.4	2.67	<2
1,4-Dichlorobenzene	ug/L	<0.5	<0 5	0.383 B	0.28 B	0.275 B	0.432 B	<2.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<5
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<5
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<5
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<50
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<5
Acetone	ug/L	34.2 B	23 2 B	47.4 B	88 7	34.5 B	40.9	<50
Benzene	ug/L	0.432 B	0 425 B	0.139 B	<0 4	0.125 B	<0 4	<2
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<5
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<5
Bromodichloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0 5	<2.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<5
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<5 J
Carbon disulfide	ug/L	1 15	1.37	0.753 J	2 02	0.581 J	1 25	3.35 J
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	0 908 J	<5
Chlorobenzene	ug/L	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5	<2.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<5
Chloroform	ug/L	0 169 J	0.174 J	18.6	7 01	37.8	6.23	<1.5
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<5
cis-1,2-Dichloroethene	ug/L	172	168	21.7	42 6	70.8	36.7	97
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5	<2.5
Dibromochloromethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0 5	<2.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<5
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<5
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<5
Hexachlorobutadiene	ug/L	<0 6	<0 6	<0.6	<0 6	<0 6	<0.6	<3
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<5
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<10
MEK (2-Butanone)	ug/L	153	141	262	3310	703	2210	920
Methyl t-butyl ether (MTBE)	ug/L	<5	0.559 J	<5	<5	<5	<5	<25
Methylene chloride	ug/L	<1	<1	14.6	5.17	8.28	1 93 B	<5
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<50
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<5
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<5
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<5
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<5
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<5
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<5
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<5
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<5
Tetrachloroethene	ug/L	25 4	24 7	10 6	3 2	8.34	3.18	<5
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<5
trans-1,2-Dichloroethene	ug/L	0.264 J	<1	<1	<1	<1	<1	<5
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<5
Trichloroethene	ug/L	103	102	3.4	2.11	6 23	2.07	<5
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<5 J
Vinyl acetate	ug/L	<5	<5	<5 J	<5 J	<5 J	<5 J	<25 R
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<5

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or false
R: Datum rejected based upon QC data

TABLE D-4
VOLATILE ORGANIC COMPOUNDS, EIGTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW92-02	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-08
	Lab ID	L08120478-12	L08120452-02	L08120512-08	L08120512-04	L08120512-05	L08120512-01	L08120512-02
	Date	12/16/2008	12/15/2008	12/17/2008	12/17/2008	12/17/2008	12/17/2008	12/17/2008
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<2.5	<0 5	<0 5	<0.5	<0 5	<2.5	<0.5
1,1,1-Trichloroethane	ug/L	<5	<1	<1	<1	<1	<5	<1
1,1,2,2-Tetrachloroethane	ug/L	<2.5	<0.5	<0 5	<0.5	<0.5	<2.5	<0.5
1,1,2-Trichloroethane	ug/L	<5	<1	<1	<1	<1	<5	<1
1,1-Dichloroethane	ug/L	<5	<1	<1	<1	<1	<5	<1
1,1-Dichloroethene	ug/L	<5	<1	<1	<1	<1	<5	<1
1,1-Dichloropropene	ug/L	<5	<1	<1	<1	<1	<5	<1
1,2,3-Trichlorobenzene	ug/L	<5	<1	<1	<1	<1	<5	<1
1,2,3-Trichloropropane	ug/L	<5	<1	<1	<1	<1	<5	60 3
1,2,4-Trichlorobenzene	ug/L	<5	<1	<1	<1	<1	<5	<1
1,2,4-Trimethylbenzene	ug/L	<5	<1	<1	<1	<1	<5	<1
1,2-Dibromo-3-chloropropane	ug/L	<10	<2	<2	<2	<2	<10	<2
1,2-Dibromoethane	ug/L	<5	<1	<1	<1	<1	<5	<1
1,2-Dichlorobenzene	ug/L	<5	<1	<1	<1	<1	<5	0 149 J
1,2-Dichloroethane	ug/L	<2 5	0 351 J	<0.5	<0 5	<0.5	<2.5	1.1 J
1,2-Dichloropropane	ug/L	<5	<1	<1	<1	<1	<5	0 826 J
1,3,5-Trimethylbenzene	ug/L	<5	<1	<1	<1	<1	<5	<1
1,3-Dichlorobenzene	ug/L	<5	<1	<1	<1	<1	<5	<1
1,3-Dichloropropane	ug/L	<2	<0 4	<0.4	<0 4	<0.4	<2	<0 4
1,4-Dichlorobenzene	ug/L	<2.5	0.224 B	0 298 B	0.215 B	0 212 B	<2.5	0 277 B
1-Chlorohexane	ug/L	<5	<1	<1	<1	<1	<5	<1
2,2-Dichloropropane	ug/L	<5	<1	<1	<1	<1	<5	<1
2-Chlorotoluene	ug/L	<5	<1	<1	<1	<1	<5	<1
2-Hexanone	ug/L	<50	<10	<10	<10 J	<10 J	<50 J	<10 J
4-Chlorotoluene	ug/L	<5	<1	<1	<1	<1	<5	<1
Acetone	ug/L	<50 J	28 4 B	159	83	78.4	48.4 B	42.2
Benzene	ug/L	<2	0 187 B	<0.4	<0.4	<0.4	<2	<0.4
Bromobenzene	ug/L	<5	<1	<1	<1	<1	<5	<1
Bromochloromethane	ug/L	<5	<1	<1	<1	<1	<5	<1
Bromodichloromethane	ug/L	<2.5	<0 5	<0.5	<0.5	<0.5	<2 5	<0.5
Bromoform	ug/L	<5	<1	<1	<1	<1	<5	<1
Bromomethane	ug/L	<5	<1	<1	<1	<1	<5	<1
Carbon disulfide	ug/L	<5	2 62	<1	<1 J	<1 J	<5 J	<1 J
Carbon tetrachloride	ug/L	<5	<1	<1	<1	<1	<5	<1
Chlorobenzene	ug/L	<2.5	<0.5	<0.5	<0 5	<0 5	<2 5	0 158 J
Chloroethane	ug/L	<5	<1	<1	<1	<1	<5	<1
Chloroform	ug/L	5 68	<0 3	<0.3	<0 3	<0.3	3 27	7.22
Chloromethane	ug/L	<5	<1	<1 J	<1	<1	<5	<1
cis-1,2-Dichloroethene	ug/L	139	147	77.3	20 7	7.28	52 3	101
cis-1,3-Dichloropropene	ug/L	<2 5	<0.5	<0 5	<0.5	<0.5	<2.5	<0 5
Dibromochloromethane	ug/L	<2 5	<0.5	<0 5	<0.5	<0 5	<2 5	<0.5
Dibromomethane	ug/L	<5	<1	<1	<1	<1	<5	<1
Dichlorodifluoromethane	ug/L	<5	<1	<1 J	<1	<1	<5	<1
Ethylbenzene	ug/L	<5	<1	<1	<1	<1	<5	<1
Hexachlorobutadiene	ug/L	<3	<0.6	<0 6	<0 6	<0.6	<3	<0.6
Isopropylbenzene	ug/L	<5	<1	<1	<1	<1	<5	<1
m-,p-Xylene	ug/L	<10	<2	<2	<2	<2	<10	<2
MEK (2-Butanone)	ug/L	24 J	346	1920 J	2530 J	1870 J	1080	805 J
Methyl t-butyl ether (MTBE)	ug/L	<25	<5	<5	<5	<5	<25	<5
Methylene chloride	ug/L	<5	0 876 J	0.579 J	1 73	3.14	<5	4 42
MIBK (methyl isobutyl ketone)	ug/L	<50	<10	<10	<10	<10	<50	<10
Naphthalene	ug/L	<5	<1	<1	<1	<1	<5	<1
n-Butylbenzene	ug/L	<5	<1	<1	<1	<1	<5	<1
n-Propylbenzene	ug/L	<5	<1	<1	<1	<1	<5	<1
o-Xylene	ug/L	<5	<1	<1	<1	<1	<5	<1
p-Isopropyltoluene	ug/L	<5	<1	<1	<1	<1	<5	<1
sec-Butylbenzene	ug/L	<5	<1	<1	<1	<1	<5	<1
Styrene	ug/L	<5	<1	<1	<1	<1	<5	<1
tert-Butylbenzene	ug/L	<5	<1	<1	<1	<1	<5	<1
Tetrachloroethene	ug/L	<5	0 924 J	2.89	6 56	7 44	4.32 J	3.03
Toluene	ug/L	<5	<1	<1	<1	<1	<5	<1
trans-1,2-Dichloroethene	ug/L	<5	<1	<1	<1	<1	<5	<1
trans-1,3-Dichloropropene	ug/L	<5	<1	<1	<1	<1	<5	<1
Trichloroethene	ug/L	<5	<1	0.497 J	0.785 J	0.866 J	<5	0.987 J
Trichlorofluoromethane	ug/L	<5	<1	<1	<1	<1	<5	<1
Vinyl acetate	ug/L	<25 R	<5	<5 J	<5 R	<5 R	<25 R	<5 R
Vinyl chloride	ug/L	<5	<1	0 367 J	<1	<1	<5	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or fals
R: Datum rejected based upon QC data

TABLE D-4
VOLATILE ORGANIC COMPOUNDS, EIGTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	DR2-1	DR2-5	IW-01	MW-85	PMW85-01	PMW85-04	PMW85-05
	Lab ID	L08120394-17	L08120512-03	L08120343-20	L08120512-06	L08120243-20	L08120243-21	L08120243-22
	Date	12/12/2008	12/17/2008	12/10/2008	12/17/2008	12/8/2008	12/8/2008	12/8/2008
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0 5	<0 5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0.5	0.498 J	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	31.1	<1	1 42	16.2	65.5	180
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	0.177 J	<1	<1	<1	0 199 J	0.398 J
1,2-Dichloroethane	ug/L	<0.5	0 415 J	0.318 J	<0.5	<0 5	<0.5	<0.5
1,2-Dichloropropane	ug/L	<1	<1	0 426 J	<1	<1	4 27	0.899 J
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0 4	<0.4	<0 4	<0.4	3.78	<0.4
1,4-Dichlorobenzene	ug/L	0.265 B	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10 J	2.64 J	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	4 93 J	<10	113 J	<10	28.2 J	15 J	62.2 J
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0 4	0.187 J	0 225 J
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1 J	<1	<1	1.34	1.62	4.8
Carbon tetrachloride	ug/L	20 4	112 J	<1	76.2	0 942 J	0.657 J	44.5 J
Chlorobenzene	ug/L	<0.5	0 148 J	<0.5	<0.5	<0.5	0.328 J	0.435 J
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	9 18	37 9	0.34	9 84	78 J	0.802 J	98 7 J
Chloromethane	ug/L	<1	<1	<1	<1 J	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	9.14	34 5	119	7.45	29 8	99.2	127
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1 J	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0 6	<0.6	<0 6	<0 6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	<10	178	<10	34.3	212 J	28.3 J
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	0 412 B	<1	0.637 B
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	137	48 9	2 49	36 4	22.5	0 89 J	71
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	1 07	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	5.46	17	0 353 J	14.4	7.33	<1	26.6
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5 J	<5 R	<5 R	<5 J	<5	<5 J	<5 J
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J. Estimated result based on QC data or report
B: Estimated result possibly biased high or false
R: Datum rejected based upon QC data

TABLE D-4
VOLATILE ORGANIC COMPOUNDS, EIGTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	PMW92-01	PMW92-02	PMW92-03	PMW92-04	PMW92-05	PMW92-06
	Lab ID	L08120376-20	L08120376-21	L08120376-23	L08120343-18	L08120343-19	L08120243-19
	Date	12/11/2008	12/11/2008	12/11/2008	12/10/2008	12/10/2008	12/8/2008
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units						
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0 5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	33.6
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	0 427 J
1,2-Dichloroethane	ug/L	<0 5	<0.5	<0.5	<0 5	0 671 J	0.65
1,2-Dichloropropane	ug/L	<1	<1	0.427 J	0 289 J	0 457 J	20.7
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0 4	<0.4	<0.4	<0 4	17.8
1,4-Dichlorobenzene	ug/L	0.219 B	0.218 B	<0.5	<0.5	<0.5	<0 5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1
Acetone	ug/L	75.7 B	14 3 B	<10	<10 J	18.2 J	12 3
Benzene	ug/L	<0.4	<0.4	<0 4	<0.4	<0 4	0 245 J
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	2.82 B	<1
Carbon disulfide	ug/L	<1	0.91 J	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	1.33	0 849 J	<1
Chlorobenzene	ug/L	<0 5	<0.5	<0 5	<0.5	<0 5	0.435 J
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	0 387 J	<0 3	0 151 J	2.13	5.73	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	5 58	99.2	159	152	33 9	193
cis-1,3-Dichloropropene	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5
Dibromochloromethane	ug/L	<0 5	<0.5	<0 5	<0 5	<0 5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0 6	<0.6	<0 6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	131	44 3 B	<10	3 12 J	32 1	13.3
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	5.32	<1	33.3	14	55 2	0 67 J
Toluene	ug/L	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	0 339 J	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	<1	<1	12.7	2.39	3.44	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5 J	<5 R	<5 R	<5 J
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J. Estimated result based on QC data or report
B: Estimated result possibly biased high or fals
R: Datum rejected based upon QC data

TABLE D-5
VOLATILE ORGANIC COMPOUNDS, NINTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW21-01A	IW21-01B	IW21-02A	IW21-02A DUP	IW21-02B	IW21-03A	IW21-03B
	Lab ID	L09030379-07	L09030418-07	L09030379-01	L09030379-06	L09030379-02	L09030379-03	L09030379-04
	Date	3/16/2009	3/17/2009	3/16/2009	3/16/2009	3/16/2009	3/16/2009	3/16/2009
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0 5	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0 4	<0 4	<0 4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1 J	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	42.4 B	48 1 J	32 B	38 3 B	48.1 B	6 26 B	61.8 B
Benzene	ug/L	<0.4	<0 4	<0.4	<0 4	<0.4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	1.12	<1	11.6	9.66	1.22	0.787 J	0 598 J
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0 3	<0 3	<0.3	<0.3	<0 3	<0.3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	104	40 8	38 6	37.3	4 41	134	34
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0 6	<0 6	<0 6	<0.6	<0.6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	1140	1460	545	570 B	925	866 B	4930
Methyl t-butyl ether (MTBE)	ug/L	35 6	12.4	24.3	25 4	3.29 J	53.7	20
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	1.06	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	3.41	7.13	111	112	10.7	3.66	0.3 J
Toluene	ug/L	0.27 B	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	0 388 J	<1	<1	<1	<1	0.624 J	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	2.26	4	17.8	17 8	1.76	4.09	1.32
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data

TABLE D-5
VOLATILE ORGANIC COMPOUNDS, NINTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW21-04A	IW21-04B	IW21-05A	IW21-05B	MW-21	MW-115	PMW21-01
	Lab ID	L09030418-01	L09030418-04	L09030418-08	L09030418-09	L09030334-01	L09030323-15	L09030323-10
	Date	3/17/2009	3/17/2009	3/17/2009	3/17/2009	3/13/2009	3/12/2009	3/12/2009
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0 5	<0 5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0 5	<0 5	<0.5	<0 5	<0.5	0.459 J	<0 5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0 4	<0.4	<0.4	<0.4	<0.4	<0 4
1,4-Dichlorobenzene	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1 J	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	21 7	16.7 J	41.5	184	<10	<10	31.8
Benzene	ug/L	<0 4	<0 4	<0.4	<0 4	<0.4	<0 4	<0 4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	0 601 J
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0 3	<0.3	<0 3	<0.3	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1 J	<1
cis-1,2-Dichloroethene	ug/L	70 8	16.7	12 8	10.6	2 3	7.47	1.32
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
Dibromochloromethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1 J	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0 6	<0.6	<0 6	<0.6	<0 6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	1790	792	632	3540	<10	40.2	19 4
Methyl t-butyl ether (MTBE)	ug/L	39.9	2 64 J	11 7	12.3	29 6	10.7	11 9
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	8 75	0.383 J	<1	2.09	179	10.8	23.5
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	7.76	0.956 J	0.464 J	1 22	16.6	2.44	7.6
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5 J	<5	<5 J	<5 J	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or fals

TABLE D-5
VOLATILE ORGANIC COMPOUNDS, NINTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	PMW21-02	PMW21-02 DUP	PMW21-03	PMW21-04	PMW21-05	IW101-01A	IW101-01A DUP
	Lab ID	L09030323-11	L09030323-09	L09030323-12	L09030323-13	L09030323-14	L09030224-14	L09030224-13
	Date	3/12/2009	3/12/2009	3/12/2009	3/12/2009	3/12/2009	3/9/2009	3/9/2009
	Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	0.454 J	0.418 J	0 259 J	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0 4	<0.4	<0.4	<0 4	<0.4	<0 4
1,4-Dichlorobenzene	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	0.138 J	0.144 J
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	36.6	39	<10	29.1	<10	18.2	14
Benzene	ug/L	<0.4	<0 4	<0 4	<0.4	<0 4	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	1 07	0.752 J	<1	<1	<1	<1	0 509 J
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0 3	<0 3	<0.3	<0.3	<0.3	<0 3	<0.3
Chloromethane	ug/L	<1 J	<1	<1	<1 J	<1 J	<1	<1
cis-1,2-Dichloroethene	ug/L	0 891 J	0 791 J	57 4	13.9	1.47	8.83	8 87
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0.5	<0 5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1 J	<1	<1	<1 J	<1 J	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0.6	<0.6	<0 6	<0 6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	205	174	8 66 J	79.5	<10	1550	1740
Methyl t-butyl ether (MTBE)	ug/L	31.5	30.1	40 3	18 2	1 47 J	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	49.5	51 7	18.7	13.5	61.2	<1	<1
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	21.4	20 6	8.01	5.52	13	<1	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J. Estimated result based on QC data or report
B. Estimated result possibly biased high or fals

TABLE D-5
VOLATILE ORGANIC COMPOUNDS, NINTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	IW101-01B	IW101-01C	IW101-02A	IW101-02B	IW101-02C	IW101-03A	IW101-03A DUP
	Lab ID	L09030224-15	L09030224-16	L09030224-05	L09030265-06	L09030265-07	L09030265-08	L09030265-05
	Date	3/9/2009	3/9/2009	3/9/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0 5	<0 5	<0.5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	0 535	<0.5	<0 5	0.896	<0 5	<0.5
1,2-Dichloropropane	ug/L	<1	1 36	<1	<1	1.26	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0 4	<0 4	<0 4	<0 4	<0.4
1,4-Dichlorobenzene	ug/L	0.126 J	<0 5	0.149 J	<0 5	<0.5	0.222 J	0.207 J
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	6 15 J	33.7	4 9 J	7 11 J	67.9	257	249
Benzene	ug/L	<0 4	0.196 J	<0 4	<0.4	0.165 J	<0.4	<0 4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1 J	<1 J	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0 3	<0.3	<0.3	<0 3	<0.3	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	19 4	110	42.7	44.2	145	15 4	17.1
cis-1,3-Dichloropropene	ug/L	<0 5	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0.5	<0 5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0 6	<0 6	<0.6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	388	1010	147	92.8 J	537	316	324
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	0 535 J	0 726 J	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	0.256 J	8.38	10.4	18.4	1.06	1 01	0.977 J
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	<1	19.9	3 05	2.29	1 27	0 413 J	0.518 J
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	0.433 J	<1	<1

< Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or fals

TABLE D-5
VOLATILE ORGANIC COMPOUNDS, NINTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-03B	IW101-03C	IW101-04A	IW101-04B	IW101-04C	IW101-05A	IW101-05B
	Lab ID	L09030265-09	L09030265-10	L09030323-01	L09030323-02	L09030323-03	L09030323-06	L09030334-05
	Date	3/10/2009	3/10/2009	3/12/2009	3/12/2009	3/12/2009	3/12/2009	3/13/2009
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0 5	<0.5	<0 5	<0 5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	0 226 J	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	2.34	<0 5	<0 5	1.49	<0.5	<0.5
1,2-Dichloropropane	ug/L	<1	2.06	<1	<1	1.54	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0 4	<0.4	<0.4	<0 4	<0.4	<0 4
1,4-Dichlorobenzene	ug/L	<0.5	<0.5	0 169 J	0.135 J	<0.5	<0.5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	110	27.7	10 8 B	34.2	23 3 B	34.2	4.21 J
Benzene	ug/L	<0.4	0 24 J	<0.4	<0.4	0 152 J	<0.4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1 J	<1 J	0.604 J	<1	<1	0.847 J	0.5 J
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0 3	<0.3	<0.3	<0.3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1 J	<1
cis-1,2-Dichloroethene	ug/L	28.2	184	17 7	35 5	103	27.8	27
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
Dibromochloromethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0 5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1 J	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	1210	619	821	2280	1160	323	135
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	16.1	2 35	<1	0.328 J	0.89 J	5 19	26.1
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	2.43	11 4	<1	0.464 J	2.85	1.28	4.72
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	0.408 J	<1	<1	0.435 J	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or fals

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TABLE D-5
VOLATILE ORGANIC COMPOUNDS, NINTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-05B DUP	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B
	Lab ID	L09030334-04	L09030334-06	L09030334-07	L09030334-08	L09030334-09	L09030297-10	L09030297-11
	Date	3/13/2009	3/13/2009	3/13/2009	3/13/2009	3/13/2009	3/11/2009	3/11/2009
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	0.228 J	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0 5	0.684	<0 5	<0 5	2.24	<0.5	1.01
1,2-Dichloropropane	ug/L	<1	1 5	<1	<1	2.09	<1	0.937 J
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0.4	<0.4	<0 4	<0 4	<0.4	<0 4	<0.4
1,4-Dichlorobenzene	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	4.85 J	156	16.3	63.1	11 8	43.7 B	45 7 B
Benzene	ug/L	<0.4	0.175 J	0.157 J	<0.4	0 321 J	<0.4	0 286 B
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0 5	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	0.512 J	<1	<1	<1	0.509 J
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0.5	<0 5	<0 5	<0.5	<0 5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0 3	<0.3	<0 3	<0 3	<0.3	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	27.5	136	9 82	19 9	184	32.7	155
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0 5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0 6	<0.6	<0.6	<0 6	<0 6	<0.6	<0 6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	159	826	313	487	276	298	259
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	26.3	4.23	1.05	6.28	5 68	1 1	6
Toluene	ug/L	<1	<1	0 57 B	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	4.54	8.82	0.502 J	4.17	33.4	1.43	23.5
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5 J	<5 J	<5	<5
Vinyl chloride	ug/L	<1	0 491 J	<1	<1	0 884 J	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B. Estimated result possibly biased high or fals

TABLE D-5
VOLATILE ORGANIC COMPOUNDS, NINTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW101-07C	IW101-08A	IW101-08B	IW101-08C	IW101-09A	IW101-09B	IW101-09C
	Lab ID	L09030297-12	L09030379-08	L09030379-11	L09030379-12	L09030297-13	L09030323-07	L09030323-08
	Date	3/11/2009	3/16/2009	3/16/2009	3/16/2009	3/11/2009	3/12/2009	3/12/2009
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<1	<0.5	<0.5	<1	<0 5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<2	<1	<1	<2	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<1	<0.5	<0.5	<1	<0.5	<0 5	<0.5
1,1,2-Trichloroethane	ug/L	<2	<1	<1	<2	<1	<1	<1
1,1-Dichloroethane	ug/L	<2	<1	<1	<2	<1	<1	0.176 J
1,1-Dichloroethene	ug/L	<2	<1	<1	<2	<1	<1	<1
1,1-Dichloropropene	ug/L	<2	<1	<1	<2	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<2	<1	<1	<2	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<2	<1	<1	<2	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<2	<1	<1	<2	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<2	<1	<1	<2	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<4	<2	<2	<4	<2	<2	<2
1,2-Dibromoethane	ug/L	<2	<1	<1	<2	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<2	<1	<1	<2	<1	<1	<1
1,2-Dichloroethane	ug/L	1.48	<0.5	<0.5	1 34	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	2.13	<1	<1	1.24 J	<1	<1	0 987 J
1,3,5-Trimethylbenzene	ug/L	<2	<1	<1	<2	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<2	<1	<1	<2	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 8	<0.4	<0 4	<0 8	<0.4	<0 4	<0.4
1,4-Dichlorobenzene	ug/L	<1	<0.5	<0 5	<1	<0 5	<0.5	<0.5
1-Chlorohexane	ug/L	<2	<1	<1	<2	<1	<1	<1
2,2-Dichloropropane	ug/L	<2	<1	<1	<2	<1	<1	<1
2-Chlorotoluene	ug/L	<2	<1	<1	<2	<1	<1	<1
2-Hexanone	ug/L	<20	<10	<10	<20	<10	<10	<10
4-Chlorotoluene	ug/L	<2	<1	<1	<2	<1	<1	<1
Acetone	ug/L	47 B	14.8 B	13 8 B	42.9 B	7 51 B	16.6 B	19.7 B
Benzene	ug/L	0.381 B	<0 4	<0 4	0.316 B	<0.4	0.203 J	0 209 J
Bromobenzene	ug/L	<2	<1	<1	<2	<1	<1	<1
Bromochloromethane	ug/L	<2	<1	<1	<2	<1	<1	<1
Bromodichloromethane	ug/L	<1	<0.5	<0.5	<1	<0.5	<0 5	<0.5
Bromoform	ug/L	<2	<1	<1	<2	<1	<1	<1
Bromomethane	ug/L	<2	<1	<1	<2	<1	<1	<1
Carbon disulfide	ug/L	<2	<1	0 873 J	<2	<1	<1	<1
Carbon tetrachloride	ug/L	<2	<1	<1	<2	<1	<1	<1
Chlorobenzene	ug/L	<1	<0 5	<0.5	<1	<0 5	<0.5	<0.5
Chloroethane	ug/L	<2	<1	<1	<2	<1	<1	<1
Chloroform	ug/L	<0.6	<0.3	<0 3	<0.6	<0.3	<0 3	<0.3
Chloromethane	ug/L	<2	<1	<1	<2	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	238	43.7 J	51 8	167	4 57	86.2	163
cis-1,3-Dichloropropene	ug/L	<1	<0.5	<0 5	<1	<0.5	<0 5	<0.5
Dibromochloromethane	ug/L	<1	<0.5	<0.5	<1	<0.5	<0.5	<0 5
Dibromomethane	ug/L	<2	<1	<1	<2	<1	<1	<1
Dichlorodifluoromethane	ug/L	<2	<1	<1	<2	<1	<1	<1
Ethylbenzene	ug/L	<2	<1	<1	<2	<1	<1	<1
Hexachlorobutadiene	ug/L	<1.2	<0 6	<0.6	<1.2	<0 6	<0 6	<0.6
Isopropylbenzene	ug/L	<2	<1	<1	<2	<1	<1	<1
m-,p-Xylene	ug/L	<4	<2	<2	<4	<2	<2	<2
MEK (2-Butanone)	ug/L	1190 B	572 B	286 B	739 B	91.2	2090	1400
Methyl t-butyl ether (MTBE)	ug/L	<10	<5	<5	<10	<5	<5	<5
Methylene chloride	ug/L	<2	<1	<1	<2	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<20	<10	<10	<20	<10	<10	<10
Naphthalene	ug/L	<2	<1	<1	<2	<1	<1	<1
n-Butylbenzene	ug/L	<2	<1	<1	<2	<1	<1	<1
n-Propylbenzene	ug/L	<2	<1	<1	<2	<1	<1	<1
o-Xylene	ug/L	<2	<1	<1	<2	<1	<1	<1
p-Isopropyltoluene	ug/L	<2	<1	<1	<2	<1	<1	<1
sec-Butylbenzene	ug/L	<2	<1	<1	<2	<1	<1	<1
Styrene	ug/L	<2	<1	<1	<2	<1	<1	<1
tert-Butylbenzene	ug/L	<2	<1	<1	<2	<1	<1	<1
Tetrachloroethene	ug/L	0.722 J	<1	0 765 J	0.827 J	0.45 J	0.395 J	1.04
Toluene	ug/L	<2	0.28 B	<1	<2	<1	0.381 B	<1
trans-1,2-Dichloroethene	ug/L	<2	<1	<1	0.808 J	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<2	<1	<1	<2	<1	<1	<1
Trichloroethene	ug/L	1.84 J	<1	1.82	3.42	0.328 J	0.454 J	4.19
Trichlorofluoromethane	ug/L	<2	<1	<1	<2	<1	<1	<1
Vinyl acetate	ug/L	<10	<5	<5	<10	<5	<5	<5
Vinyl chloride	ug/L	<2	<1	<1	1.61 J	<1	1.73	0.442 J

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or false

TABLE D-5
VOLATILE ORGANIC COMPOUNDS, NINTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	DR1-3	MW-101B	MW-101T	PMW101-01A	PMW101-01B	PMW101-02A	PMW101-02B
	Lab ID	L09030323-16	L09030297-15	L09030297-14	L09030224-06	L09030265-12	L09030224-07	L09030224-10
	Date	3/12/2009	3/11/2009	3/11/2009	3/9/2009	3/10/2009	3/9/2009	3/9/2009
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0 5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0 5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0 5	<0.5	<0 5	<0 5	<0.5	<0 5	<0 5
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0 4	<0 4	<0.4	<0 4	<0.4
1,4-Dichlorobenzene	ug/L	<0 5	<0.5	<0 5	<0 5	<0.5	<0 5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	<10	<10	13 2	<10	<10 J	<10
Benzene	ug/L	<0.4	<0 4	<0.4	<0.4	<0 4	<0.4	<0 4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0 5	<0 5	<0.5	<0.5	<0.5	<0 5	<0 5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1 J	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0.5	<0 5	<0 5	<0.5	<0 5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0.3	<0.3	<0 3	<0.3	<0 3	<0 3
Chloromethane	ug/L	<1 J	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	13.3	31 2	35.2	19 6	49	37.7	35.2
cis-1,3-Dichloropropene	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1 J	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0 6	<0.6	<0 6	<0.6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	5.22 B	3 98 B	252	7.3 J	22 4	<10
Methyl t-butyl ether (MTBE)	ug/L	<5	0 602 J	0.755 J	<5	<5	<5	0.517 J
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	2 43	55 6	46.9	1 58	5.47	5.21	27
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	1.26	3.53	2.16	<1	1.41	<1	21
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

< Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or fals

TABLE D-5
VOLATILE ORGANIC COMPOUNDS, NINTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	PMW101-03A	PMW101-03B	PMW101-03B DUP	PMW101-04A	PMW101-04B	PMW101-05A	PMW101-05B
	Lab ID	L09030224-11	L09030224-12	L09030224-04	L09030265-13	L09030265-14	L09030265-15	L09030265-16
	Date	3/9/2009	3/9/2009	3/9/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<0 5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	0.206 J
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0.5	0.4 J
1,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	1.07
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0 4	<0.4	<0 4	<0.4	<0.4
1,4-Dichlorobenzene	ug/L	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	<10	<10	<10 J	<10	<10	<10	2.86 J
Benzene	ug/L	<0.4	<0 4	<0.4	<0.4	<0 4	<0.4	0.146 J
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	<0 3	<0.3	<0 3	<0.3	<0 3	0.207 J
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	68.1	58.1	56 4	47	37.2	61.9	72 1
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0 5	<0.5	<0 5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0.6	<0 6	<0 6	<0.6	<0 6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	<10	<10	<10	<10	<10	9.6 J
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	0.685 J	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	0.885 J	10.4	10.9	22.6	22.4	3 8	15.9
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	0 534 J	3.31	3.05	6.83	2.39	1.81	50
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or false

TABLE D-5
VOLATILE ORGANIC COMPOUNDS, NINTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	PMW101-05B DUP	PMW101-06A	PMW101-06B	PMW101-07A	PMW101-07B	PMW101-08A	PMW101-08A DUP
	Lab ID	L09030265-11	L09030265-17	L09030297-02	L09030297-03	L09030297-04	L09030297-07	L09030297-01
	Date	3/10/2009	3/10/2009	3/11/2009	3/11/2009	3/11/2009	3/11/2009	3/11/2009
	Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0 5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	0.169 J	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	0.383 J	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5
1,2-Dichloropropane	ug/L	0.969 J	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0 4	<0.4	<0 4	<0 4	<0.4
1,4-Dichlorobenzene	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0 5	<0.5
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	3.7 J	<10	<10	<10	<10	8.1 B	7.15 B
Benzene	ug/L	<0 4	<0 4	<0.4	<0 4	<0.4	<0.4	<0 4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1 J	<1	<1	<1 J	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<0.5	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	0.172 J	<0.3	<0 3	<0 3	<0.3	<0 3	<0 3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	68.3	1.71	25.5	<1	1.74	23 1	21.8
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0.5	<0 5	<0.5	<0 5	<0.5
Dibromochloromethane	ug/L	<0.5	<0 5	<0.5	<0.5	<0.5	<0 5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0.6	<0 6	<0.6	<0 6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	9 76 J	<10	<10	<10	<10	101	93 3
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<1	<1	<1	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	16 2	1.17	<1	0 39 J	14 4	36.3	35 5
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	47.5	0.607 J	<1	<1	29.2	9.43	8 85
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or fals

TABLE D-5
VOLATILE ORGANIC COMPOUNDS, NINTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Well ID	PMW101-08B	IW85-01	IW85-02	IW85-05	IW85-06	IW92-01	IW92-01 DUP
	Lab ID	L09030297-08	L09030334-11	L09030334-12	L09030334-02	L09030334-03	L09030297-18	L09030297-16
	Date	3/11/2009	3/13/2009	3/13/2009	3/13/2009	3/13/2009	3/11/2009	3/11/2009
	Area	TTA-1 101	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	0 335 J	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	1.23	<1	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	13 5	9 42	10.8	16	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<0 5	0.362 J	0.252 J	0.321 J	<0.5	<0.5	<0.5
1,2-Dichloropropane	ug/L	0 679 J	<1	1.83	0.317 J	2.57	<1	<1
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	1.17	<0 4	2.77	<0 4	<0 4
1,4-Dichlorobenzene	ug/L	<0.5	<0.5	0 144 J	0.215 J	0 21 J	0.222 B	0.193 B
1-Chlorohexane	ug/L	<1	<1	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	6 13 J	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
Acetone	ug/L	7.4 B	36.5	96.7	40 6	39.8	74.2 B	70.4 B
Benzene	ug/L	0 278 B	<0 4	<0.4	<0 4	<0.4	<0 4	<0.4
Bromobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0 5	<0 5	<0.5	<0 5	<0.5	<0 5	<0.5
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	0 552 J	<1	0.542 J	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	6 69	<1	<1
Chlorobenzene	ug/L	<0.5	<0.5	<0 5	<0 5	0.134 J	<0 5	<0.5
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<0.3	10.4	3.78	3.94	8.38	<0 3	<0.3
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	155	27 1	46	49	37.8	83 3	85.1
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<0 5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0.5	<0.5	<0 5	<0 5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0.6	<0.6	<0 6	<0 6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	399	717	2060	405	5400	1760	1820
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<1	7.8	5.44	3.47	1.44	<1	<1
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	10.9	4 84	3 62	1.87	5 48	0.264 J	0.303 J
Toluene	ug/L	<1	<1	<1	0.257 B	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	ug/L	44 4	1 79	2.01	0.824 J	2.72	<1	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B. Estimated result possibly biased high or fals

TABLE D-5
VOLATILE ORGANIC COMPOUNDS, NINTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	IW92-02	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-08
	Lab ID	L09030297-19	L09030265-02	L09030297-20	L09030265-03	L09030224-02	L09030224-03	L09030323-18
	Date	3/11/2009	3/10/2009	3/11/2009	3/10/2009	3/9/2009	3/9/2009	3/12/2009
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<1	<0 5	<0.5	<0.5	<2.5
1,1,1-Trichloroethane	ug/L	<1	<1	<2	<1	<1	<1	<5
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<2 5
1,1,2-Trichloroethane	ug/L	<1	<1	<2	<1	<1	<1	<5
1,1-Dichloroethane	ug/L	<1	<1	<2	<1	<1	<1	<5
1,1-Dichloroethene	ug/L	<1	<1	<2	<1	<1	<1	<5
1,1-Dichloropropene	ug/L	<1	<1	<2	<1	<1	<1	<5
1,2,3-Trichlorobenzene	ug/L	<1	<1	<2	<1	<1	<1	<5
1,2,3-Trichloropropane	ug/L	<1	<1	<2	<1	<1	<1	45 3
1,2,4-Trichlorobenzene	ug/L	<1	<1	<2	<1	<1	<1	<5
1,2,4-Trimethylbenzene	ug/L	<1	<1	<2	<1	<1	<1	<5
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<4	<2	<2	<2	<10
1,2-Dibromoethane	ug/L	<1	<1	<2	<1	<1	<1	<5
1,2-Dichlorobenzene	ug/L	<1	<1	<2	<1	<1	<1	<5
1,2-Dichloroethane	ug/L	<0 5	<0.5	<1	0 299 J	0.34 J	0 255 J	<2.5
1,2-Dichloropropane	ug/L	<1	<1	<2	<1	<1	<1	<5
1,3,5-Trimethylbenzene	ug/L	<1	<1	<2	<1	<1	<1	<5
1,3-Dichlorobenzene	ug/L	<1	<1	<2	<1	<1	<1	<5
1,3-Dichloropropane	ug/L	<0 4	<0.4	<0 8	<0.4	<0 4	<0 4	<2
1,4-Dichlorobenzene	ug/L	0.127 B	0.266 J	0 623 B	0.474 J	0.373 J	0.193 J	<2.5
1-Chlorohexane	ug/L	<1	<1	<2	<1	<1	<1	<5
2,2-Dichloropropane	ug/L	<1	<1	<2	<1	<1	<1	<5
2-Chlorotoluene	ug/L	<1	<1	<2	<1	<1	<1	<5
2-Hexanone	ug/L	<10	<10	<20	3.73 J	<10	<10	<50
4-Chlorotoluene	ug/L	<1	<1	<2	<1	<1	<1	<5
Acetone	ug/L	26.2 B	80.7	948 B	126	53 J	27.2 J	168
Benzene	ug/L	<0.4	<0 4	<0 8	<0 4	<0 4	<0 4	<2
Bromobenzene	ug/L	<1	<1	<2	<1	<1	<1	<5
Bromochloromethane	ug/L	<1	<1	<2	<1	<1	<1	<5
Bromodichloromethane	ug/L	<0 5	<0.5	<1	<0.5	<0 5	<0.5	<2 5
Bromoform	ug/L	<1	<1	<2	<1	<1	<1	<5
Bromomethane	ug/L	<1	<1	<2	<1	<1	<1	<5
Carbon disulfide	ug/L	<1	<1	<2	4.5	<1	<1	<5
Carbon tetrachloride	ug/L	<1	<1	<2	<1	<1	<1	<5
Chlorobenzene	ug/L	<0.5	<0 5	<1	<0 5	<0 5	<0 5	<2.5
Chloroethane	ug/L	<1	<1	<2	<1	<1	<1	<5
Chloroform	ug/L	0 268 J	<0.3	<0 6	0.153 J	<0 3	<0.3	0 987 J
Chloromethane	ug/L	<1	<1	<2	<1	<1	<1	<5 J
cis-1,2-Dichloroethene	ug/L	126	50	37.7	11.7	6 13	32.9	47 8
cis-1,3-Dichloropropene	ug/L	<0.5	<0.5	<1	<0.5	<0 5	<0.5	<2 5
Dibromochloromethane	ug/L	<0.5	<0 5	<1	<0.5	<0 5	<0.5	<2 5
Dibromomethane	ug/L	<1	<1	<2	<1	<1	<1	<5
Dichlorodifluoromethane	ug/L	<1	<1	<2	<1	<1	<1	<5 J
Ethylbenzene	ug/L	<1	<1	<2	<1	<1	<1	<5
Hexachlorobutadiene	ug/L	<0 6	<0.6	<1 2	<0 6	<0 6	<0.6	<3
Isopropylbenzene	ug/L	<1	<1	<2	<1	<1	<1	<5
m-,p-Xylene	ug/L	<2	<2	<4	<2	<2	<2	<10
MEK (2-Butanone)	ug/L	367	182 J	1810	941	854	899	1380
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<10	<5	<5	<5	<25
Methylene chloride	ug/L	0.812 J	<1	<2	1.61	2 26	0.391 J	4 28 J
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<20	<10	<10	<10	<50
Naphthalene	ug/L	<1	<1	<2	<1	<1	<1	<5
n-Butylbenzene	ug/L	<1	<1	<2	<1	<1	<1	<5
n-Propylbenzene	ug/L	<1	<1	<2	<1	<1	<1	<5
o-Xylene	ug/L	<1	<1	<2	<1	<1	<1	<5
p-Isopropyltoluene	ug/L	<1	<1	<2	<1	<1	<1	<5
sec-Butylbenzene	ug/L	<1	<1	<2	<1	<1	<1	<5
Styrene	ug/L	<1	<1	<2	<1	<1	<1	<5
tert-Butylbenzene	ug/L	<1	<1	<2	<1	<1	<1	<5
Tetrachloroethene	ug/L	0 371 J	<1	0.722 J	1.43	3 61	0.684 J	1.79 J
Toluene	ug/L	0.253 B	0 502 J	<2	0.277 J	0.505 J	0 449 J	<5
trans-1,2-Dichloroethene	ug/L	<1	<1	<2	<1	<1	<1	<5
trans-1,3-Dichloropropene	ug/L	<1	<1	<2	<1	<1	<1	<5
Trichloroethene	ug/L	<1	<1	<2	0 335 J	0.377 J	0.282 J	<5
Trichlorofluoromethane	ug/L	<1	<1	<2	<1	<1	<1	<5
Vinyl acetate	ug/L	<5	<5	<10	<5	<5	<5	<25
Vinyl chloride	ug/L	0.672 J	<1	<2	<1	<1	<1	<5

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or false

TABLE D-5
VOLATILE ORGANIC COMPOUNDS, NINTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	DR2-1	DR2-5	IW-01	MW-85	PMW85-01	PMW85-04	PMW85-05
	Lab ID	L09030323-20	L09030334-15	L09030379-17	L09030418-13	L09030334-14	L09030418-05	L09030418-06
	Date	3/12/2009	3/13/2009	3/16/2009	3/17/2009	3/13/2009	3/17/2009	3/17/2009
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units							
1,1,1,2-Tetrachloroethane	ug/L	<0.5	<0 5	<5	<0 5	<0.5	<0.5	<0 5
1,1,1-Trichloroethane	ug/L	<1	<1	<10	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	<5	0.335 J	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<1	<1	<10	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<10	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<10	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<10	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<1	<1	<10	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	37 3	<10	0 982 J	11	19 4	134
1,2,4-Trichlorobenzene	ug/L	<1	<1	<10	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<10	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<2	<2	<20	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<1	<1	<10	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	0.246 J	<10	<1	<1	0.23 J	0.468 J
1,2-Dichloroethane	ug/L	<0.5	0.573	<5	<0.5	<0 5	<0.5	0.846
1,2-Dichloropropane	ug/L	<1	0.386 J	<10	0.249 J	<1	9.08	0 801 J
1,3,5-Trimethylbenzene	ug/L	<1	<1	<10	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<10	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<0 4	<0.4	<4	<0.4	<0 4	8.17	<0 4
1,4-Dichlorobenzene	ug/L	0.355 J	<0.5	<5	<0.5	<0.5	<0.5	0.163 J
1-Chlorohexane	ug/L	<1	<1	<10	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<10	<1 J	<1	<1 J	<1 J
2-Chlorotoluene	ug/L	<1	<1	<10	<1	<1	<1	<1
2-Hexanone	ug/L	<10	<10	<100	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<1	<1	<10	<1	<1	<1	<1
Acetone	ug/L	<10	<10	72.1 B	18 6 J	8.46 J	32.7 J	30.6 J
Benzene	ug/L	<0 4	<0.4	<4	<0 4	<0.4	<0 4	0.182 J
Bromobenzene	ug/L	<1	<1	<10	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<10	<1	<1	<1	<1
Bromodichloromethane	ug/L	<0.5	<0 5	<5	<0.5	<0.5	<0.5	<0 5
Bromoform	ug/L	<1	<1	<10	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<10	<1	<1	<1	<1
Carbon disulfide	ug/L	<1	<1	<10	<1	<1	<1	1.41
Carbon tetrachloride	ug/L	22 7	206	<10	69.9	<1	0.355 J	5 13
Chlorobenzene	ug/L	<0.5	0.276 J	<5	<0.5	<0.5	0 293 J	0.522
Chloroethane	ug/L	<1	<1	<10	<1	<1	<1	<1
Chloroform	ug/L	7.53	68 8	1.48 J	8.51	0 455	0.499	86.4
Chloromethane	ug/L	<1 J	<1	<10	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	7.59	62	114	7.29	50.4	89 3	166
cis-1,3-Dichloropropene	ug/L	<0.5	<0 5	<5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ug/L	<0.5	<0.5	<5	<0 5	<0.5	<0.5	<0.5
Dibromomethane	ug/L	<1	<1	<10	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1 J	<1	<10	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<10	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<0.6	<0.6	<6	<0 6	<0 6	<0.6	<0.6
Isopropylbenzene	ug/L	<1	<1	<10	<1	<1	<1	<1
m-,p-Xylene	ug/L	<2	<2	<20	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	<10	<10	1070	3 05 J	16 9	234	55
Methyl t-butyl ether (MTBE)	ug/L	<5	<5	<50	<5	<5	<5	<5
Methylene chloride	ug/L	<1	<1	<10	<1	<1	<1	3.9
MIBK (methyl isobutyl ketone)	ug/L	<10	<10	<100	<10	<10	<10	<10
Naphthalene	ug/L	<1	<1	<10	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<10	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<10	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<10	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<1	<1	<10	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<1	<1	<10	<1	<1	<1	<1
Styrene	ug/L	<1	<1	<10	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<10	<1	<1	<1	<1
Tetrachloroethene	ug/L	150	114	<10	33 9	0 896 J	1 3	30.5
Toluene	ug/L	<1	<1	<10	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<1	<1	<10	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<1	<1	<10	<1	<1	<1	<1
Trichloroethene	ug/L	5.09	35	<10	11.6	<1	<1	14.8
Trichlorofluoromethane	ug/L	<1	<1	<10	<1	<1	<1	<1
Vinyl acetate	ug/L	<5	<5	<50 J	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<10	<1	<1	0.339 J	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or fals

TABLE D-5
VOLATILE ORGANIC COMPOUNDS, NINTH QUARTER SAMPLES
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

	Well ID	PMW92-01	PMW92-02	PMW92-03	PMW92-04	PMW92-05	PMW92-06
	Lab ID	L09030379-14	L09030379-15	L09030379-16	L09030418-11	L09030418-12	L09030323-19
	Date	3/16/2009	3/16/2009	3/16/2009	3/17/2009	3/17/2009	3/12/2009
	Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Units						
1,1,1,2-Tetrachloroethane	ug/L	<5	<0.5	<0.5	<0.5	<0 5	<0.5
1,1,1-Trichloroethane	ug/L	<10	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<5	<0 5	<0.5	<0 5	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	<10	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<10	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<10	<1	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<10	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	<10	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<10	<1	<1	<1	0 838 J	36 6
1,2,4-Trichlorobenzene	ug/L	<10	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<10	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	<20	<2	<2	<2	<2	<2
1,2-Dibromoethane	ug/L	<10	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<10	<1	<1	<1	<1	0.469 J
1,2-Dichloroethane	ug/L	<5	<0 5	0.335 J	<0.5	0.389 J	0.899
1,2-Dichloropropane	ug/L	<10	<1	0 207 J	<1	0 265 J	21.4
1,3,5-Trimethylbenzene	ug/L	<10	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<10	<1	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<4	<0 4	<0.4	<0 4	<0.4	15.5
1,4-Dichlorobenzene	ug/L	<5	0.15 B	<0 5	<0.5	<0.5	<0.5
1-Chlorohexane	ug/L	<10	<1	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<10	<1	<1	<1 J	<1 J	<1
2-Chlorotoluene	ug/L	<10	<1	<1	<1	<1	<1
2-Hexanone	ug/L	<100	<10	<10	<10	<10	<10
4-Chlorotoluene	ug/L	<10	<1	<1	<1	<1	<1
Acetone	ug/L	1160 B	6 05 B	3.38 B	<10 J	21.6 J	3.24 B
Benzene	ug/L	<4	<0.4	<0.4	<0 4	<0.4	0 236 J
Bromobenzene	ug/L	<10	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	<10	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<5	<0.5	<0.5	<0.5	<0.5	<0 5
Bromoform	ug/L	<10	<1	<1	<1	<1	<1
Bromomethane	ug/L	<10	<1	<1	<1	<1	<1
Carbon disulfide	ug/L	<10	<1	<1	<1	1.44	<1
Carbon tetrachloride	ug/L	<10	<1	<1	<1	2 37	<1
Chlorobenzene	ug/L	<5	<0 5	<0.5	<0.5	<0.5	0.405 J
Chloroethane	ug/L	<10	<1	<1	<1	<1	<1
Chloroform	ug/L	<3	<0.3	<0.3	0.733	14 4	<0.3
Chloromethane	ug/L	<10.	<1	<1	<1	<1	<1 J
cis-1,2-Dichloroethene	ug/L	4.43 J	124	139	112	87.5	200
cis-1,3-Dichloropropene	ug/L	<5	<0 5	<0.5	<0 5	<0.5	<0.5
Dibromochloromethane	ug/L	<5	<0 5	<0 5	<0.5	<0.5	<0 5
Dibromomethane	ug/L	<10	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<10	<1	<1	<1	<1	<1 J
Ethylbenzene	ug/L	<10	<1	<1	<1	<1	<1
Hexachlorobutadiene	ug/L	<6	<0 6	<0 6	<0.6	<0 6	<0.6
Isopropylbenzene	ug/L	<10	<1	<1	<1	<1	<1
m-,p-Xylene	ug/L	<20	<2	<2	<2	<2	<2
MEK (2-Butanone)	ug/L	822 B	33.3 B	<10	<10	222	4.59 J
Methyl t-butyl ether (MTBE)	ug/L	<50	<5	<5	<5	<5	<5
Methylene chloride	ug/L	<10	<1	<1	<1	5.14	1.23
MIBK (methyl isobutyl ketone)	ug/L	<100	<10	<10	<10	<10	<10
Naphthalene	ug/L	<10	<1	<1	<1	<1	<1
n-Butylbenzene	ug/L	<10	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	<10	<1	<1	<1	<1	<1
o-Xylene	ug/L	<10	<1	<1	<1	<1	<1
p-Isopropyltoluene	ug/L	<10	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	<10	<1	<1	<1	<1	<1
Styrene	ug/L	<10	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<10	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	<10	<1	15.6	5 02	33 9	3.88
Toluene	ug/L	<10	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	ug/L	<10	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	ug/L	<10	<1	<1	<1	<1	<1
Trichloroethene	ug/L	<10	<1	5 99	0.916 J	7.02	2.98
Trichlorofluoromethane	ug/L	<10	<1	<1	<1	<1	<1
Vinyl acetate	ug/L	<50 J	<5 J	<5 J	<5	<5	<5
Vinyl chloride	ug/L	<10	<1	<1	<1	<1	<1

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or report
B: Estimated result possibly biased high or fals

TABLE D-6
MONITORED NATURAL ATTENUATION PARAMETERS
FIFTH QUARTER SAMPLES - EBT-5
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area	Units	IW21-01A L0712497-03 12/17/2007 TTA-1 21	IW21-01A DUP L0712497-13 12/17/2007 TTA-1 21	IW21-01B L0712497-04 12/17/2007 TTA-1 21	IW21-02A L0712497-05 12/17/2007 TTA-1 21	IW21-02B L0712497-06 12/17/2007 TTA-1 21	IW21-03A L0712497-09 12/17/2007 TTA-1 21	IW21-03B L0712497-10 12/17/2007 TTA-1 21	IW21-04A L0712444-09 12/14/2007 TTA-1 21	IW21-04B L0712497-11 12/17/2007 TTA-1 21	IW21-05A L0712444-10 12/14/2007 TTA-1 21	IW21-05B L0712444-12 12/14/2007 TTA-1 21
Bromide	300		mg/L	<0.2	<0.2	0.928	0.197 J	0.172 J	0.184 J	2.54	1.85	<0.2	28.3	0.577
Chloride	300		mg/L	10.2 J	19.3 J	6.47 J	17.4 J	10.6 J	13.3 J	11.7 J	10.2 J	4.12 J	11.9 J	8.39 J
Nitrate	300		mg/L	<0.6	<0.6	<0.6	1.97	2.45	1.97	<0.6	<0.6	0.11 J	<0.6	<0.6
Nitrite	300		mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	0.124 J	<0.4	<2	0.158 J	<2	<0.4
Sulfate	300		mg/L	2.5	2.87	<1	15.3	5.98	19.2	1.76	1.36	9.79	2.61	6.09
Sulfide	376.1		mg/L	0.55 J	<1	<1	<1	<1	<1	1.52	<1	<1	<1	0.628 B
Alkalinity, Total	310.2		mg/L	596 J	597 J	572 J	91.7 J	89.3 J	95.5 J	294 J	1160 J	267 J	2440 J	229 J
Total Organic Carbon	9060MOD		mg/L	441	400	519	1.26	9.01	1.78	157	1010	7.16	2020	68.7
Arsenic, Total	6010B\3005A		mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.00791 J	0.0452	<0.01	0.0073 J
Manganese, Total	6010B\3005A		mg/L	0.143	0.139	0.137	0.0127	0.0443	0.069	0.0667	0.365	0.208	0.475	0.131
Selenium, Total	6010B\3005A		mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Acetic Acid	830-MBA		mg/L	288	282	236	0.985 J	11.9	<1	137	550	5.02	330	66.8
Butyric Acid	830-MBA		mg/L	66.9	67.5	9.69	<1	<1	<1	22.5	19.8	<1	121	3.85
Lactic Acid	830-MBA		mg/L	44.8	46.4	1.42	<1	1.34	2.2	2.17	3.99	<1	17.9	1.67
Propionic Acid	830-MBA		mg/L	460	459	429	<10	6.9 J	<10	188	1030	<10	610	71.4
Pyruvic Acid	830-MBA		mg/L	1.23	1.29	<0.1	<0.1	<0.1	<0.1	<0.1	0.068 J	<0.1	1.86	<0.1
Carbon Dioxide	RSK175\5021		ug/L	170000 J	180000 J	200000 J	120000 J	87000 J	100000 J	140000 J	180000 J	110000 J	430000 J	150000 J
Ethane	RSK175\5021		ug/L	<13	<13	<13	<13	<13	<13	<13	<50	<13	<50	<13
Ethene	RSK175\5021		ug/L	<13	<13	<13	<13	<13	<13	<13	<50	<13	<50	<13
Methane	RSK175\5021		ug/L	1900	2100	3400	22	91	230	3200	5700	9300	3500	5000
Hydrogen	AM20GAX		nM	71	68	1.4	3.6	5.7	4	2.3	5.1	1.4	33	3.2

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data
–: Not Sampled

TABLE D-6
MONITORED NATURAL ATTENUATION PARAMETERS
FIFTH QUARTER SAMPLES - EBT-5
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

		Sample ID	MW-21	MW-115	PMW21-01	PMW21-02	PMW21-03	PMW21-03 DUP	PMW21-04	PMW21-05	IW101-01A	IW101-01A DUP	IW101-01B
		Lab ID	L0712562-15	L0712562-16	L0712562-11	L0712562-12	L0712562-13	L0712562-10	L0712562-14	L0712562-01	L0712280-08	L0712280-06	L0712280-09
		Date	12/18/2007	12/18/2007	12/18/2007	12/18/2007	12/18/2007	12/18/2007	12/18/2007	12/18/2007	12/10/2007	12/10/2007	12/10/2007
		Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Method	Units											
Bromide	300	mg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.8	<0.2	<0.2	<0.2
Chloride	300	mg/L	17.1	11.9	14.6	12.9	13.4	13.5	14.4	23.3	22.6	24	17.8
Nitrate	300	mg/L	4.5	3.67	4.29	4.88	4.77	4.75	4.35	5.58	<0.6	<0.6	<0.6
Nitrite	300	mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.6	<0.4	<0.4	<0.4
Sulfate	300	mg/L	13.3	13.9	18.8	14.7	14.9	14.9	19.5	18.2	<1	<1	8.62
Sulfide	376.1	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.528 J
Alkalinity, Total	310.2	mg/L	90	113	96.8	98.4	88.5	86.3	112	64.3	1170	1330	205
Total Organic Carbon	9060MOD	mg/L	<1	<5	<1	0.701 J	<1	<1	<1	<1	1020	1070	8.19
Arsenic, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.00574 J	0.00559 J	0.0126
Manganese, Total	6010B\3005A	mg/L	<0.01	0.0655	<0.01	0.0231	<0.01	<0.01	<0.01	0.0212	1.63	1.54	0.439
Selenium, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.00695 J	0.00527 J	<0.01
Acetic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	675	664	10.8
Butyric Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	48.1	47.5	<1
Lactic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	976	973	1.28
Propionic Acid	830-MBA	mg/L	<10	<10	<10	<10	<10	<10	<10	<10	954	940	7.71 J
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.61	1.74	<0.1
Carbon Dioxide	RSK175\5021	ug/L	73000 J	34000 J	100000 J	60000 J	49000 J	49000 J	67000 J	68000	310000 J	280000 J	92000 J
Ethane	RSK175\5021	ug/L	<13	<13	<13	<13	<13	<13	<13	<13	<5	<5	<5
Ethene	RSK175\5021	ug/L	<13	<13	<13	<13	<13	<13	<13	<13	<5	<5	<5
Methane	RSK175\5021	ug/L	12 J	3800	10 J	14	48	47	12 J	120	18000	16000	4700
Hydrogen	AM20GAX	nM	1.2	3.4	1.1	3.2	1.1	1.2	3.1	1.1	2.6	2.3	2.4

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– Not Sampled

TABLE D-6
MONITORED NATURAL ATTENUATION PARAMETERS
FIFTH QUARTER SAMPLES - EBT-5
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area	Units	IW101-01C L0712280-10 12/10/2007 TTA-1 101	IW101-02A L0712280-11 12/10/2007 TTA-1 101	IW101-02B L0712280-12 12/10/2007 TTA-1 101	IW101-02B DUP L0712280-07 12/10/2007 TTA-1 101	IW101-02C L0712314-02 12/11/2007 TTA-1 101	IW101-03A L0712314-03 12/11/2007 TTA-1 101	IW101-03B L0712314-04 12/11/2007 TTA-1 101	IW101-03C L0712375-01 12/12/2007 TTA-1 101	IW101-04A L0712375-02 12/12/2007 TTA-1 101	IW101-04B L0712375-03 12/12/2007 TTA-1 101	IW101-04C L0712375-04 12/12/2007 TTA-1 101
Bromide	300		mg/L	0.372	<0.2	0.156 J	<0.2	<0.2	<0.2	0.155 J	2.16	3.99	0.176 J	0.477
Chloride	300		mg/L	20.3	23.6	22.3	21.7	23	23.3	23.6	15.6	22.3	17.7	17.2
Nitrate	300		mg/L	1.07	<0.6	2.27	2.15	0.677	0.144 J	3.74	0.142 J	<0.6	<0.6	<0.6
Nitrite	300		mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.277 J	<0.4	<0.4	<0.4	<0.4
Sulfate	300		mg/L	10.6	2.16	15.6	15.1	3.95	2.11	17.5	1.16	<1	6.93	<1
Sulfide	376.1		mg/L	1.28	1.36	<1	0.748 J	1.52	0.923 J	<1	1.08	<1	<1	<1
Alkalinity, Total	310.2		mg/L	176	595	172	164	268	426	101	275	2540	256	285
Total Organic Carbon	9060MOD		mg/L	28.7	357	15.2	17.4	84.4	179	2.92	149	1370	9.97	30.9
Arsenic, Total	6010B\3005A		mg/L	<0.01	<0.01	<0.01	<0.01	0.014	<0.01	<0.01	0.006 J	0.0136	0.0135	0.0197
Manganese, Total	6010B\3005A		mg/L	0.0294	0.472	0.00821 J	0.0137	0.118	0.0793	0.0102	0.0292	0.239	0.49	0.417
Selenium, Total	6010B\3005A		mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0205	<0.01	<0.01
Acetic Acid	830-MBA		mg/L	42.6	164	21.2	22.2	98.7	163	3.21	127	662	3.81	15.7
Butyric Acid	830-MBA		mg/L	2.74	8.4	<1	<1	8.28	9.61	0.813 J	19.4	48.8	<1	0.808 J
Lactic Acid	830-MBA		mg/L	1.33	376	<1	1.24	1.99 B	1.55 B	<1	3.53	2190	<1	1.35
Propionic Acid	830-MBA		mg/L	26	306	12.7	14.8	86.8	175	<10	168	1120	10.6	47.8
Pyruvic Acid	830-MBA		mg/L	<0.1	1.5	<0.1	<0.1	<0.1	0.111	<0.1	<0.1	8.92	<0.1	<0.1
Carbon Dioxide	RSK175\5021		ug/L	72000 J	74000 J	76000 J	81000 J	97000 J	78000 J	59000 J	130000 J	420000 J	110000 J	24000 J
Ethane	RSK175\5021		ug/L	<5	<5	<5	<5	<25	<25	<5	<13	<50	<25	<25
Ethene	RSK175\5021		ug/L	<5	<5	<5	<5	<25	<25	<5	<13	<50	<25	<25
Methane	RSK175\5021		ug/L	1000	15000	47	40	7800	7600	91	3800	25000	14000	11000
Hydrogen	AM20GAX		nM	4.9	3.4	1.4	1.2	54	2.1	2.2	88	32	2.8	1.7

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–: Not Sampled

TABLE D-6
MONITORED NATURAL ATTENUATION PARAMETERS
FIFTH QUARTER SAMPLES - EBT-5
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

		Sample ID	IW101-05A	IW101-05B	IW101-05C	IW101-05C DUP	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B	IW101-07C	IW101-08A
		Lab ID	L0712280-03	L0712280-04	L0712280-05	L0712280-01	L0712314-14	L0712314-15	L0712314-16	L0712314-17	L0712375-06	L0712375-07	L0712431-13
		Date	12/10/2007	12/10/2007	12/10/2007	12/10/2007	12/11/2007	12/11/2007	12/11/2007	12/11/2007	12/12/2007	12/12/2007	12/13/2007
		Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Method	Units											
Bromide	300	mg/L	<0.2	0.162 J	0.244	0.224	0.183 J	<0.8	<0.2	0.136 J	0.164 J	<0.2	0.129 J
Chloride	300	mg/L	31.6	20.4	20.9	20.9	27	20.3	13.1	17	9.9	10	18.6 J
Nitrate	300	mg/L	0.287 J	1.79	0.512 J	0.506 J	1.33	1.77	<0.6	<0.6	<0.6	<0.6	0.153 J
Nitrite	300	mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.188 J
Sulfate	300	mg/L	4.72	101	9.14	8.84	6.26	12.1	0.601 J	5.44	<1	0.753 J	11.2
Sulfide	376.1	mg/L	<1	<1	0.598 J	1.12	0.769 J	0.692 J	0.838 J	0.769 J	1	<1	<1
Alkalinity, Total	310.2	mg/L	1380	136	188	192	502	106	197	184	187	496	289 J
Total Organic Carbon	9060MOD	mg/L	1020	<1	29.6	32.1	214	3.94	74.2	39	31.9	230	39.3
Arsenic, Total	6010B\3005A	mg/L	0.0148	<0.01	<0.01	<0.01	0.00572 J	<0.01	<0.01	<0.01	0.00821 J	0 0051 J	0 0188
Manganese, Total	6010B\3005A	mg/L	0.0879	0.0331	0.0635	0.0622	0.139	<0.01	0.0316	0.0589	0.0548	0.0406	0.223
Selenium, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0 01	<0.01	<0.01	<0.01	0.00725 J	<0.01
Acetic Acid	830-MBA	mg/L	622	<1	21.5	20.9	135	5.76	72.7	44.9	38	178	45.3
Butyric Acid	830-MBA	mg/L	13	<1	2.05	2.09	3.81	<1	12.2	0.822 J	1.18	79.1	<1
Lactic Acid	830-MBA	mg/L	469	<1	<1	<1	26.4	<1	<1	<1	1.44	1.5	<1
Propionic Acid	830-MBA	mg/L	1360	<10	46.2	44.4	281	<10	69.2	39.8	41.1	280	47.4
Pyruvic Acid	830-MBA	mg/L	53	<0.1	<0.1	<0.1	11.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	83000	96000 J	99000 J	83000	110000 J	81000 J	97000 J	83000 J	83000 J	94000 J	100000
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<13	<5	<13	<5	<10	<25	<13
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<13	<5	<13	<5	<10	<25	<13
Methane	RSK175\5021	ug/L	470	1200	4400	3200	2100	78	2900	870	2100	5300	2300
Hydrogen	AM20GAX	nM	1 6	30	18	12	2.1	4.4	48	1.3	5.6	13	1.7

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– Not Sampled

TABLE D-6
MONITORED NATURAL ATTENUATION PARAMETERS
FIFTH QUARTER SAMPLES - EBT-5
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area	Units	MW101-08A DUP L0712431-12 12/13/2007 TTA-1 101	MW101-08B L0712375-08 12/12/2007 TTA-1 101	MW101-08C L0712431-18 12/13/2007 TTA-1 101	MW101-09A L0712431-14 12/13/2007 TTA-1 101	MW101-09B L0712431-17 12/13/2007 TTA-1 101	MW101-09C L0712444-13 12/14/2007 TTA-1 101	DR1-3 L0712431-11 12/13/2007 TTA-1 101	MW-101B L0712314-08 12/11/2007 TTA-1 101	MW-101T L0712314-07 12/11/2007 TTA-1 101	PMW101-01A L0712431-02 12/13/2007 TTA-1 101	PMW101-01B L0712431-05 12/13/2007 TTA-1 101
Bromide	300		mg/L	0.124 J	<0.2	<0.2	0.239	<0.2	8.05	<0.2	0.172 J	<0.2	1.41	0.128 J
Chloride	300		mg/L	18.6 J	10.9	8.92 J	30.9 J	10.1 J	3.56 J	20.6 J	22	20.4	29 J	17.5 J
Nitrate	300		mg/L	0.148 J	<0.6	<0.6	3.86	<0.6	<0.6	<0.6	4.56	5.57	<0.6	0.841
Nitrite	300		mg/L	0.157 J	<0.4	<0.4	0.301 J	<0.4	<0.4	<0.4	<0.4	<0.4	0.885 J	<0.4
Sulfate	300		mg/L	11.3	1.12	<1	38.7	<1	<1	6.01	25.5	23.7	4.37	21.9
Sulfide	376.1		mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity, Total	310.2		mg/L	283 J	282	478 J	211 J	1100 J	527 J	199 J	131	126	1820 J	197 J
Total Organic Carbon	9060MOD		mg/L	38.9	9.7	257	7.19	1040	528	<1	<1	<1	673	8.77
Arsenic, Total	6010B\3005A		mg/L	0.0189	0.0162	0.0103	<0.01	0.0104	<0.01	0.0103	<0.01	<0.01	0.0373	0.015
Manganese, Total	6010B\3005A		mg/L	0.208	0.261	0.0888	<0.01	0.488	0.0283	2.81	0.0458	<0.01	3.3	0.161
Selenium, Total	6010B\3005A		mg/L	<0.01	0.00819 J	<0.01	<0.01	0.00693 J	<0.01	<0.01	<0.01	<0.01	0.0226	0.0056 J
Acetic Acid	830-MBA		mg/L	46.3	8.73	222	14.3	703	247	<1	<1	<1	353	2.06
Butyric Acid	830-MBA		mg/L	<1	<1	41.4	<1	184	77.4	<1	<1	<1	15.9	<1
Lactic Acid	830-MBA		mg/L	<1	<1	2.26	2.26	1.74	1.36	<1	<1	<1	1.84	<1
Propionic Acid	830-MBA		mg/L	45.8	10.2	256	<10	975	319	<10	<10	<10	1130	18
Pyruvic Acid	830-MBA		mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021		ug/L	110000 J	33000 J	110000	110000 J	260000	120000 J	93000 J	44000 J	72000 J	160000	89000
Ethane	RSK175\5021		ug/L	<13	<50	<13	<13	<13	<13	<13	<5	<5	<25	<13
Ethene	RSK175\5021		ug/L	<13	<50	<13	<13	<13	<13	<13	<5	<5	<25	<13
Methane	RSK175\5021		ug/L	2800	7400	5200	71	7000	5000	6800	450	36	19000	4300
Hydrogen	AM20GAX		nM	1.6	4.4	15	1.5	1.5	6.7	1	1.6	1.8	1.3	2

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TABLE D-6
MONITORED NATURAL ATTENUATION PARAMETERS
FIFTH QUARTER SAMPLES - EBT-5
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area	Units	PMW101-02A L0712444-02 12/14/2007 TTA-1 101	PMW101-02A DUP L0712444-01 12/14/2007 TTA-1 101	PMW101-02B L0712444-03 12/14/2007 TTA-1 101	PMW101-03A L0712431-06 12/13/2007 TTA-1 101	PMW101-03B L0712431-07 12/13/2007 TTA-1 101	PMW101-03B DUP L0712431-01 12/13/2007 TTA-1 101	PMW101-04A L0712444-04 12/14/2007 TTA-1 101	PMW101-04B L0712444-05 12/14/2007 TTA-1 101	PMW101-05A L0712562-03 12/18/2007 TTA-1 101	PMW101-05B L0712562-04 12/18/2007 TTA-1 101	PMW101-06A L0712497-14 12/17/2007 TTA-1 101
Bromide	300		mg/L	0.175 J	0.173 J	0.21	0.133 J	<0.2	0.136 J	0.172 J	0.131 J	<1	<0.8	0.16 J
Chloride	300		mg/L	14.3 J	14.2 J	16.5 J	21.6 J	21.4 J	21.5 J	16.8 J	17.9 J	22.2	12.7	20.8 J
Nitrate	300		mg/L	<0.6	0.169 J	<0.6	0.424 J	0.132 J	0.122 J	0.244 J	1.18	<3	0.464 J	2.72
Nitrite	300		mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<2	<1.6	0.137 J
Sulfate	300		mg/L	8.51	8.64	<1	12.8	5.15	4.4	1.38	5.64	17.7	<4	18.5
Sulfide	376.1		mg/L	<1	1.22 B	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity, Total	310.2		mg/L	252 J	252 J	261 J	275 J	266 J	272 J	466 J	205 J	152	208	96.9 J
Total Organic Carbon	9060MOD		mg/L	32.1	35.4	79.5	<1	26.6	30.7	59.5	30.4	<1	42.8	0.67 J
Arsenic, Total	6010B\3005A		mg/L	0.0338	0.0312	0.0192	<0.01	0.0299	0.0283	0.0229	0.00918 J	0.0119	0.00592 J	<0.01
Manganese, Total	6010B\3005A		mg/L	8.46	9.2	0.782	0.0222	1.04	1.07	4.07	1.13	1.03	0.197	0.0498
Selenium, Total	6010B\3005A		mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01
Acetic Acid	830-MBA		mg/L	28.3	27.6	51.2	<1	17.7	17.5	96.4	37.4	<1	43.6	<1
Butyric Acid	830-MBA		mg/L	0.783 J	<1	1.35	<1	<1	<1	<1	<1	<1	<1	<1
Lactic Acid	830-MBA		mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Propionic Acid	830-MBA		mg/L	38.7	39	43.2	<10	41.7	38.8	41.5	23	<10	53.5	<10
Pyruvic Acid	830-MBA		mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021		ug/L		71000	120000 J	96000	35000 J	69000	34000 J	32000 J	68000	31000	96000
Ethane	RSK175\5021		ug/L	<13	<13	<13	<13	<13	<13	<13	<50	<13	<13	<13
Ethene	RSK175\5021		ug/L	<13	<13	<13	<13	<13	<13	<13	<50	<13	<13	<13
Methane	RSK175\5021		ug/L		11000	8700	28	14000	11000	3800	7600	4500	3300	430
Hydrogen	AM20GAX		nM	1.2	1.1	2	2.4	1.3	2.2	4.3	1.3	1.1	2.7	1

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-: Not Sampled

TABLE D-6
MONITORED NATURAL ATTENUATION PARAMETERS
FIFTH QUARTER SAMPLES - EBT-5
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area / Units	PMW101-06B L0712444-06 12/14/2007 TTA-1 101	PMW101-07A L0712497-15 12/17/2007 TTA-1 101	PMW101-07B L0712562-05 12/18/2007 TTA-1 101	PMW101-08A L0712497-16 12/17/2007 TTA-1 101	PMW101-08B L0712497-17 12/17/2007 TTA-1 101	IW85-01 L0712562-09 12/18/2007 TTA-2	IW85-02 L0712562-02 12/18/2007 TTA-2	IW85-05 L0712601-05 12/19/2007 TTA-2	IW85-06 L0712601-03 12/19/2007 TTA-2	IW92-01 L0712431-09 12/13/2007 TTA-2	IW92-02 L0712444-14 12/14/2007 TTA-2
Bromide	300	mg/L	0.133 J	0.197 J	<0.2	0.24	0.139 J	<0.8	<0.8	<0.8	0.904	1.6	1.33
Chloride	300	mg/L	19 J	26.1 J	14	30 J	8.14 J	23.9	28.1	19.5	22.4	19.9 J	10.5 J
Nitrate	300	mg/L	<0.6	<0.6	5.02	2.16	3.93	<2.4	<2.4	<2.4	<2.4	0.119 J	0.275 J
Nitrite	300	mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<1.6	<1.6	<1.6	<1.6	<0.4	<0.4
Sulfate	300	mg/L	6.87	36.6	9.07	48.4	2.55	<4	<4	5.54	<4	2.63	6.62
Sulfide	376.1	mg/L	<1	<1	<1	0.627 J	0.679 J	<1	<1	<1	<1	<1	<1
Alkalinity, Total	310.2	mg/L	159 J	172 J	56.2	164 J	39.9 J	280	1150	144 B	396	440 J	206 J
Total Organic Carbon	9060MOD	mg/L	5.71	1.11	0.598 J	<1	<1	166	768	14.9	125	197	275
Arsenic, Total	6010B\3005A	mg/L	0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.037
Manganese, Total	6010B\3005A	mg/L	0.365	0.41	<0.01	0.184	<0.01	0.249	1.33	0.417	1.85	0.492	0.159
Selenium, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Acetic Acid	830-MBA	mg/L	7.62	<1	<1	<1	<1	80	399	15.7	106	156	97
Butyric Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	45	154	0.824 J	9.2	15.3	25.1
Lactic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	63.2	14	7.13	4.33	75.9	5.59
Propionic Acid	830-MBA	mg/L	<10	<10	<10	<10	<10	150	754	8.63 J	157	183	121
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	1.77	0.344	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	110000 J	66000	16000	89000	20000	58000 J	340000	83000 B	110000	150000 J	130000 J
Ethane	RSK175\5021	ug/L	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13
Ethene	RSK175\5021	ug/L	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13
Methane	RSK175\5021	ug/L	4500	590	1700	660	1700	980	8400	16	1100	1600	1600
Hydrogen	AM20GAX	nM	1	1.3	1.2	–	1.3	1.6	–	5.9	11	7.3	0.85

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data
–: Not Sampled

TABLE D-6
MONITORED NATURAL ATTENUATION PARAMETERS
FIFTH QUARTER SAMPLES - EBT-5
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area	Units	MW92-03 L0712444-15 12/14/2007 TTA-2	MW92-04 TTA-2	MW92-05 L0712562-07 12/18/2007 TTA-2	MW92-06 L0712497-01 12/17/2007 TTA-2	MW92-07 L0712497-02 12/17/2007 TTA-2	MW92-08 L0712562-08 12/18/2007 TTA-2	DR2-1 L0712280-16 12/10/2007 TTA-2	DR2-5 L0712280-17 12/10/2007 TTA-2	MW-01 L0712314-13 12/11/2007 TTA-2	MW-85 L0712280-15 12/10/2007 TTA-2	MW-85 DUP L0712280-13 12/10/2007 TTA-2
Bromide	300		mg/L	7.57	--	--	<0.2	<0.2	<1	<0.2	<0.2	0.472	<0.2	<0.2
Chloride	300		mg/L	8.34 J	--	--	19.1 J	15.3 J	40.5	24.9	19.4	26.3	19.9	20
Nitrate	300		mg/L	<0.6	--	--	<0.6	0.135 J	<3	1.7	4.15	1.18	1.09	1.01
Nitrite	300		mg/L	<0.4	--	--	<0.4	<0.4	<2	<0.4	<0.4	<0.4	<0.4	<0.4
Sulfate	300		mg/L	0.658 J	--	--	<1	5 06	<5	18.9	9.24	19.6	8.67	8.25
Sulfide	376.1		mg/L	<1	--	--	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity, Total	310.2		mg/L	580 J	--	--	8800 J	2210 J	2260	71.3	45.7	73.8	520	536
Total Organic Carbon	9060MOD		mg/L	212	--	5240 J	5350	1560	2280 J	6.42	<1	<1	180	196
Arsenic, Total	6010B\3005A		mg/L	0.047	--	--	<0.01	0.00692 J	<0.01	0.00528 J	<0.01	<0.01	0.00863 J	0.00748 J
Manganese, Total	6010B\3005A		mg/L	0.503	--	--	1.87	0.417	0.429 J	0.0253	0.00695 J	0.783	7.36	7.56
Selenium, Total	6010B\3005A		mg/L	<0.01	--	--	0.0214	0.00643 J	0.0148 J	<0.01	<0.01	<0.01	<0 01	<0.01
Acetic Acid	830-MBA		mg/L	137	--	--	4570	727	1240	<1	<1	<1	195	202
Butyric Acid	830-MBA		mg/L	79.9	--	--	1290	500	345	<1	<1	<1	5.21	5.51
Lactic Acid	830-MBA		mg/L	1050	--	--	40.8	11.4	7.26	<1	<1	1.23 B	1.35	1.24
Propionic Acid	830-MBA		mg/L	273	--	--	4930	1390	2510	<10	<10	<10	239	256
Pyruvic Acid	830-MBA		mg/L	6.26	--	--	6.53	3.38	0.762	<0.1	<0.1	<0.1	0.0743 J	0.0561 J
Carbon Dioxide	RSK175\5021		ug/L	230000 J	--	210000	560000 J	330000 J	140000	51000 J	43000 J	410000 J	110000 J	130000 J
Ethane	RSK175\5021		ug/L	<50	--	<13	<50	<50	<13	<5	<5	<25	<5	<5
Ethene	RSK175\5021		ug/L	<50	--	<13	<50	<50	<13	<5	<5	<25	<5	<5
Methane	RSK175\5021		ug/L	3400	--	2200	8500	4800	5700	7300	12	5400	370	430
Hydrogen	AM20GAX		nM	--	--	--	--	--	--	1.3	--	--	--	--

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J: Estimated result based on QC data or reported below RL
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--: Not Sampled

TABLE D-8
MONITORED NATURAL ATTENUATION PARAMETERS
FIFTH QUARTER SAMPLES - EBT-5
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area	Units	PMW85-01 L0712280-14 12/10/2007 TTA-2	PMW85-04 L0712314-11 12/11/2007 TTA-2	PMW85-05 L0712314-12 12/11/2007 TTA-2	PMW92-01 L0712431-10 12/13/2007 TTA-2	PMW92-02 L0712375-09 12/12/2007 TTA-2	PMW92-03 L0712375-10 12/12/2007 TTA-2	PMW92-04 L0712375-11 12/12/2007 TTA-2	PMW92-05 L0712375-12 12/12/2007 TTA-2	PMW92-06 L0712314-10 12/11/2007 TTA-2
Bromide	300		mg/L	<0.2	<0.2	<0.2	<0.2	0.428	0.119 J	0.121 J	<0.2	<0.2
Chloride	300		mg/L	23	31.3	26.7	27.3 J	11.5	20	26.7	23.4	23.9
Nitrate	300		mg/L	2.37	<0.6	3.1	2.21	<0.6	<0.6	<0 6	2.74 J	<0.6
Nitrite	300		mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Sulfate	300		mg/L	11.7	<1	9.44	9.4	<1	2.39	2.65	14.8	<1
Sulfide	376.1		mg/L	<1	<1	<1	<1	<1	<1	<1	0.763 J	<1
Alkalinity, Total	310.2		mg/L	59.1	1190	42.3	64.9 J	1090	209	212	47.8	519
Total Organic Carbon	9060MOD		mg/L	5.2	941	<1	<1	339	<1	39.4	<1	233
Arsenic, Total	6010B\3005A		mg/L	<0.01	0.00606 J	0.0375	<0.01	0.0117	<0.01	0.00619 J	<0.01	0.00501 J
Manganese, Total	6010B\3005A		mg/L	0.425	17.6	0.0103	0.234	6.79	0.0634	1.38	<0.01	1.63
Selenium, Total	6010B\3005A		mg/L	<0.01	0.0201	<0.01	<0.01	0.00836 J	<0.01	0.00681 J	<0.01	<0.01
Acetic Acid	830-MBA		mg/L	<1	718	<1	<1	358	<1	45.9	<1	214
Butyric Acid	830-MBA		mg/L	<1	67.6	<1	<1	7.41	<1	0.803 J	<1	10.1
Lactic Acid	830-MBA		mg/L	<1	124	<1	<1	<1	<1	<1	<1	<1
Propionic Acid	830-MBA		mg/L	<10	1320	<10	<10	185	<10	33.7	<10	270
Pyruvic Acid	830-MBA		mg/L	<0.1	1.08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021		ug/L	35000 J	350000	78000 J	75000 J	220000 J	100000 J	67000 J	42000 J	130000
Ethane	RSK175\5021		ug/L	<5	<25	<5	<13	<13	<13	<13	<13	<25
Ethene	RSK175\5021		ug/L	<5	<25	<5	<13	<13	<13	<13	<13	<25
Methane	RSK175\5021		ug/L	8.3	700	4 B	18	12000	1200	580	13	910
Hydrogen	AM20GAX		nM	1.4	–	–	1.7	2.8	1	2.1	–	4.4

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–: Not Sampled

TABLE D-7
MONITORED NATURAL ATTENUATION PARAMETERS
SIXTH QUARTER SAMPLES - EBT-6
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID	IW21-01A	IW21-01B	IW21-02A	IW21-02B	IW21-03A	IW21-03B	IW21-04A	IW21-04A DUP	IW21-04B	IW21-05A	IW21-05B
		Lab ID	L08030333-06	L08030333-07	L08030333-08	L08030333-09	L08030333-10	L08030333-11	L08030387-07	L08030387-14	L08030387-08	L08030387-09	L08030387-10
		Date	3/17/2008	3/17/2008	3/17/2008	3/17/2008	3/17/2008	3/17/2008	3/18/2008	3/18/2008	3/18/2008	3/18/2008	3/18/2008
		Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21
		Units											
Bromide	300	mg/L	<0.2	<0.2	<0.2	0.148 J	0.203 J	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chloride	300	mg/L	16.8 B	4.16 B	17.1 B	14.1 B	13.1 B	13.5 B	10.3	10.3	5.34	9.89	11.6
Nitrate	300	mg/L	<0.6	<0.6	0.171 J	1.88 J	1.41 J	0.115 J	<0.6	<0.6	<0.6	<0.6	<0.6
Nitrite	300	mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Sulfate	300	mg/L	1.35	0.823 J	7.94	3.62	19.6	2.68	9.74	9.8	2.06	3.61	8.1
Sulfide	376.1	mg/L	<1	0.698 J	0.726 J	<1	<1	<1	0.712 J	<1	0.887 J	0.845 J	1.16
Alkalinity, Total	310.2	mg/L	449	221	124	110	109	497	268	275 J	346	695	293 J
Total Organic Carbon	9060MOD	mg/L	693 J	87.6 J	16.2 J	29.9 J	5.8 J	404 J	47.4	52.4 J	31.8 J	352 J	98.2 J
Arsenic, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0.01	0.00515 J	<0.01	<0.01	<0.01	<0.01	0.0511	0.00954 J
Manganese, Total	6010B\3005A	mg/L	0.126	0.173	0.0217	0.0479	0.0342	0.051	0.0868	0.0896	0.224	0.172	0.0809
Selenium, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Acetic Acid	830-MBA	mg/L	420	28.2	14.3	18.3	0.644 J	214	34.9	31.1	27	258	82.1
Butyric Acid	830-MBA	mg/L	72	1.51	<1	0.75 J	<1	26.5	0.99 J	1.03	<1	32	3.34
Lactic Acid	830-MBA	mg/L	10.1	1.07	<1	<1	<1	22.8	<1	<1	<1	0.626 J	<1
Propionic Acid	830-MBA	mg/L	723	58.6	5.1 J	22.3	<10	289	47.8	50.3	9.23 J	369	90.7
Pyruvic Acid	830-MBA	mg/L	0.0571 J	<0.1	<0.1	<0.1	<0.1	0.406	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	220000 J	140000	110000	100000	120000 J	180000 J	100000 J	110000 J	240000 J	130000 J	140000 J
Ethane	RSK175\5021	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ethene	RSK175\5021	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methane	RSK175\5021	ug/L	7200	1100	59	260	210	6200	3500	3500	12000	10000	11000
Hydrogen	AM20GAX	nM	12	7.7	10	82	110	1.9	2.1	1.9	3.7	2.3	5.8

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–: Not Sampled

TABLE D-7
MONITORED NATURAL ATTENUATION PARAMETERS
SIXTH QUARTER SAMPLES - EBT-6
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

		Sample ID	MW-21	MW-115	PMW21-01	PMW21-02	PMW21-03	PMW21-04	PMW21-05	PMW21-05 DUP	IW101-01A	IW101-01B	IW101-01C
		Lab ID	L08030298-16	L08030333-05	L08030298-14	L08030333-02	L08030333-03	L08030333-04	L08030298-15	L08030298-18	L08030185-09	L08030185-10	L08030185-11
		Date	3/14/2008	3/17/2008	3/14/2008	3/17/2008	3/17/2008	3/17/2008	3/14/2008	3/14/2008	3/10/2008	3/10/2008	3/10/2008
		Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Method	Units											
Bromide	300	mg/L	0.192 J	<0.2	0.205	<0.2	<0.2	0.213 J	<0.2	<0.2	0.151 J	0.173 J	0.153 J
Chloride	300	mg/L	14.9 J	11.4 B	13.7 J	11.9 B	11.4 B	13 2 B	22 J	22.4 J	7.27	15	17.7
Nitrate	300	mg/L	4.04 J	4.11	3.79 J	4 79 J	4.76 J	4.14	4.39 J	4.42 J	<0.6	<0.6	0.916
Nitrite	300	mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Sulfate	300	mg/L	11.6	13.8	17.9	13.8	12.9	17.6	14.2	14.2	0.839 J	4.14	11.5
Sulfide	376.1	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.582 J	1.78
Alkalinity, Total	310.2	mg/L	79.3 J	78.2	104 J	81	78.2	111	60.3 J	59.2 J	959	256	211
Total Organic Carbon	9060MOD	mg/L	3.14	3.45	5.23	2.49	2.43	1.97	2.02	1.85	500	21.7	41
Arsenic, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0.01	0.005 J	<0.01	<0.01	<0.01	0.00565 J	0.00883 J	<0.01
Manganese, Total	6010B\3005A	mg/L	<0.01	0.0202	<0.01	0.0178	0.00672 J	<0.01	0.0193	0.0188	0.584	0.432	0.0218
Selenium, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Acetic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	456	20.7	42.1
Butyric Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	29.2	<1	2.66
Lactic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	39.1	<1	<1
Propionic Acid	830-MBA	mg/L	<10	<10	<10	<10	<10	<10	<10	<10	483	23.1	37.6
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.614	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	120000	81000	120000	110000 J	84000	100000	85000	68000	330000	48000 J	110000
Ethane	RSK175\5021	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<100	<50	<50
Ethene	RSK175\5021	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<100	<50	<50
Methane	RSK175\5021	ug/L	11	960	9.5 J	8.3 B	210	<10	12	17	3100	10000	1200
Hydrogen	AM20GAX	nM	1.4	1.5	1.2	1.3	1.8	1.6	1.4	1.4	1.3	3.2	29

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–: Not Sampled

TABLE D-7
MONITORED NATURAL ATTENUATION PARAMETERS
SIXTH QUARTER SAMPLES - EBT-6
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID	MW101-02A	MW101-02B	MW101-02C	MW101-03A	MW101-03B	MW101-03C	MW101-04A	MW101-04A DUP	MW101-04B	MW101-04C	MW101-05A
		Lab ID	L08030185-12	L08030220-07	L08030220-08	L08030220-09	L08030220-10	L08030220-11	L08030240-07	L08030240-15	L08030240-08	L08030269-01	L08030269-02
		Date	3/10/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008	3/12/2008	3/12/2008	3/12/2008	3/13/2008	3/13/2008
		Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
		Units											
Bromide	300	mg/L	<0.2	0.19 J	0.702	0.596	0.139 J	2.74	0.961	0.862	0.149 J	0.411	0.789
Chloride	300	mg/L	15.9	16.7 J	19.2 J	8.9 J	12 J	9.56 J	25.8	24.5	16.9	16.2	23.2
Nitrate	300	mg/L	<0.6	3.18	0.702	<0.6	1.18	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Nitrite	300	mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Sulfate	300	mg/L	1.92	23.4	5.29	0.781 J	8.57	<1	0.597 J	<1	6.44	0.725 J	3.9
Sulfide	376.1	mg/L	0.666 J	<1	1.32	1.38	0.66 J	0.831 J	<1	<1	<1	<1	<1
Alkalinity, Total	310.2	mg/L	612	133	281	499	137	522	1070 J	2010 J	275 J	284	2180
Total Organic Carbon	9060MOD	mg/L	263	1.99	115	235	16.7	276	2510 J	2400 J	9.39 J	23.4	1660
Arsenic, Total	6010B\3005A	mg/L	<0.01	<0.01	0.0126	0.00638 J	<0.01	0.00696 J	0.00869 J	0.0121	0.0138	0.0163	<0.01
Manganese, Total	6010B\3005A	mg/L	0.459	0.00951 J	0.0849	0.0739	0.0169	0.0338	0.201	0.209	0.404	0.244	0.093
Selenium, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0.01	0.00534 J	<0.01	0.00872 J	<0.01	<0.01	<0.01	<0.01
Acetic Acid	830-MBA	mg/L	156	<1	109	226	14.5	220	823	824	3.96	13.3	857
Butyric Acid	830-MBA	mg/L	19.3	<1	9.41	9.68	0.881 J	33.7	40.9	40.2	<1	<1	26.8
Lactic Acid	830-MBA	mg/L	2.34	<1	<1	2.32	<1	0.502 J	4580	4580	12.1 J	<1	52.3
Propionic Acid	830-MBA	mg/L	336	<10	113	220	12.8	312	1160	1150	12.8	30.5	2100
Pyruvic Acid	830-MBA	mg/L	0.103	<0.1	<0.1	1.36	<0.1	<0.1	41.1	41.6	0.109	<0.1	4.47
Carbon Dioxide	RSK175\5021	ug/L	63000	120000	100000	170000	71000	190000	330000	290000 J	100000	47000 J	330000 J
Ethane	RSK175\5021	ug/L	<50	<5	<5	<5	<5	<5	<5	<5	<5	<25	<10
Ethene	RSK175\5021	ug/L	<50	<5	<5	<5	<5	<5	<5	<5	<5	<25	<10
Methane	RSK175\5021	ug/L	14000	140	8000	14000	320	8700	8800	8500	11000	6000	9000
Hydrogen	AM20GAX	nM	3	1.9	43	1.7	3.1	45	–	–	–	–	–

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–: Not Sampled

TABLE D-7
MONITORED NATURAL ATTENUATION PARAMETERS
SIXTH QUARTER SAMPLES - EBT-6
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

		Sample ID	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07A DUP	IW101-07B	IW101-07C	IW101-08A	IW101-08B
		Lab ID	L08030269-03	L08030269-04	L08030298-04	L08030298-05	L08030298-06	L08030220-12	L08030220-05	L08030220-13	L08030240-11	L08030298-07	L08030298-08
		Date	3/13/2008	3/13/2008	3/14/2008	3/14/2008	3/14/2008	3/11/2008	3/11/2008	3/11/2008	3/12/2008	3/14/2008	3/14/2008
		Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Method	Units											
Bromide	300	mg/L	0.196 J	0.151 J	0.248	<0.2	<0.2	<0.2	<0.2	0.171 J	<0.2	0.144 J	<0.2
Chloride	300	mg/L	18.7	18.5	21.1	18.4	11.4	10 J	9.45 J	8.87 J	13.5	17.7 J	12.4 J
Nitrate	300	mg/L	2.98 J	0.236 J	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	0.301 J	0.321 J
Nitrite	300	mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Sulfate	300	mg/L	26 9	7.16	5.35	7.98	3.11	0.861 J	0.781 J	<1	0.815 J	9.64	4.79
Sulfide	376.1	mg/L	<1	0.806 J	<1	<1	0.752 J	1.94	1.17	2.06	<1	<1	<1
Alkalinity, Total	310.2	mg/L	144	212	406	144	204	203	201	235	241 J	270	191
Total Organic Carbon	9060MOD	mg/L	<1	40.3	284	34	88.5	48.2	49.9	61.7	151 J	24.9	10.4
Arsenic, Total	6010B\3005A	mg/L	<0.01	<0.01	0.00856 J	<0.01	<0.01	<0.01	0.00586 J	<0.01	0.00832 J	0.00764 J	0.00933 J
Manganese, Total	6010B\3005A	mg/L	0.0157	0.062	0.073	0.00702 J	0.0298	0.0517	0.0507	0.0374	0.0549	0.141	0.202
Selenium, Total	6010B\3005A	mg/L	<0.01	<0 01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Acetic Acid	830-MBA	mg/L	<1	17.5	150	30.1	77.6	43.7	43.1	56.7	96.4	20.2	4.64
Butyric Acid	830-MBA	mg/L	<1	0.91 J	3.3	<1	9.54	<1	<1	1.55	17.1	<1	<1
Lactic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	<10	42.8	303	29.1	82.1	54.5	53.8	69.3	178	12.1	<10
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	0.56	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	120000 J	120000 J	160000	130000	110000	68000	130000	75000	130000	130000	110000
Ethane	RSK175\5021	ug/L	<10	<10	<10	<10	<10	<5	<5	<5	<5	<10	<10
Ethene	RSK175\5021	ug/L	<10	<10	<10	<10	<10	<5	<5	<5	<5	<10	<10
Methane	RSK175\5021	ug/L	270	3500	4600	210	5400	4000	4800	4900	8700	4300	17000
Hydrogen	AM20GAX	nM	–	–	1.4	2.5	30	3.3	3.2	–	–	1.9	2.6

<: Not detected above Reporting Limit (RL)
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–: Not Sampled

TABLE D-7
MONITORED NATURAL ATTENUATION PARAMETERS
SIXTH QUARTER SAMPLES - EBT-6
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID	MW101-08C	MW101-09A	MW101-09B	MW101-09C	MW101-09C DUP	DR1-3	MW-101B	MW-101T	PMW101-01A	PMW101-01B	PMW101-02A
		Lab ID	L08030298-09	L08030240-12	L08030240-13	L08030240-14	L08030240-06	L08030298-17	L08030298-13	L08030298-12	L08030185-06	L08030185-07	L08030185-13
		Date	3/14/2008	3/12/2008	3/12/2008	3/12/2008	3/12/2008	3/14/2008	3/14/2008	3/14/2008	3/10/2008	3/10/2008	3/10/2008
		Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
		Units											
Bromide	300	mg/L	4.01	0.192 J	<0.2	<0.2	<0.2	0.181 J	0.19 J	0.188 J	0.144 J	0.148 J	0.146 J
Chloride	300	mg/L	6.29 J	31.7	9.56	14.4	13.6	20.1 J	21.3 J	19.4 J	17.9	17.8	16.7
Nitrate	300	mg/L	<0.6	3.64	<0.6	<0.6	<0.6	<0.6	2.19 J	3.76 J	<0.6	0.678	0.299 J
Nitrite	300	mg/L	<0.4	0.105 J	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Sulfate	300	mg/L	<1	38.1	<1	<1	<1	10.9	18.6	22.5	6.27	10	16.8
Sulfide	376.1	mg/L	<1	1.07	<1	0.66 J	<1	<1	<1	<1	<1	0.561 J	<1
Alkalinity, Total	310.2	mg/L	389 J	217 J	2080 J	927 J	945 J	205 J	169	136	1360	497	164
Total Organic Carbon	9060MOD	mg/L	137	15.5 J	1170 J	58.5 J	512 J	8.73	4.91	1.78	401	151	11.7
Arsenic, Total	6010B\3005A	mg/L	0.0101	<0.01	0.0172	<0.01	0.00607 J	0.00722 J	<0.01	<0.01	0.0734	0.0209	0.0452
Manganese, Total	6010B\3005A	mg/L	0.0672	<0.01	0.525	0.0309	0.0313	2.54	0.15	0.0395	1.63	0.195	6.69
Selenium, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02
Acetic Acid	830-MBA	mg/L	280	20.1	1030	505	499	<1	2.46	<1	76.3	50	11.3
Butyric Acid	830-MBA	mg/L	41.1	<1	160	67.6	71.6	<1	<1	<1	<1	6.06	<1
Lactic Acid	830-MBA	mg/L	0.788 J	7.9	121	3.2	2.59	<1	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	315	<10	1260	561	564	<10	<10	<10	766	198	<10
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	4 35	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	140000	87000 J	380000 J	230000 J	230000	370000	120000	120000	280000	120000	56000
Ethane	RSK175\5021	ug/L	<25	<5	<5	<5	<5	<10	<10	<10	<100	<50	<50
Ethene	RSK175\5021	ug/L	<25	<5	<5	<5	<5	<10	<10	<10	<100	<50	<50
Methane	RSK175\5021	ug/L	12000	150	8000	17000	13000	6100	3600	950	25000	13000	11000
Hydrogen	AM20GAX	nM	32	–	–	–	–	1.1	2.1	2.4	–	–	–

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TABLE D-7
MONITORED NATURAL ATTENUATION PARAMETERS
SIXTH QUARTER SAMPLES - EBT-6
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

		Sample ID	PMW101-02B	PMW101-03A	PMW101-03A DUP	PMW101-03B	PMW101-04A	PMW101-04B	PMW101-05A	PMW101-05B	PMW101-06A	PMW101-06B	PMW101-07A
		Lab ID	L08030185-08	L08030220-14	L08030220-15	L08030220-16	L08030220-17	L08030220-18	L08030240-02	L08030240-03	L08030240-04	L08030240-05	L08030269-10
		Date	3/10/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008	3/11/2008	3/12/2008	3/12/2008	3/12/2008	3/12/2008	3/13/2008
		Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Method	Units											
Bromide	300	mg/L	0.105 J	0.2	<0.2	<0.2	<0.2	<0.2	0.19 J	<0.2	0.271	<0.2	0.201
Chloride	300	mg/L	19.8	18.6 J	17.9 J	8.99 J	10.6 J	17.9 J	19.7	11.9	21.3	20.3	23.9
Nitrate	300	mg/L	<0.6	0.124 J	0.124 J	<0.6	0.108 J	0.374 J	<0.6	0.367 J	<0.6	<0.6	<0.6
Nitrite	300	mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Sulfate	300	mg/L	2.13	9.41	9.44	1.8	1.27	3.65	6.15	3.79	18.9	7.21	29.2
Sulfide	376.1	mg/L	<1	<1	<1	<1	<1	<1	<1	0.648 J	0.785 J	<1	<1
Alkalinity, Total	310.2	mg/L	219	300	298	294	488	197	398 J	230 J	139 J	187 J	173
Total Organic Carbon	9060MOD	mg/L	9.47	6.12	6.58	32	40.8	8.75	5.22 J	41.5 J	1.61 J	11.6 J	7.01
Arsenic, Total	6010B\3005A	mg/L	0.0205	<0.01	<0.01	0.0318	0.0331	0.0163	0.0186	0.00977 J	0.00716 J	0.0198	<0.01
Manganese, Total	6010B\3005A	mg/L	0.542	0.226	0.228	1.19	3.01	1.1	0.866	0.262	0.236	0.28	0.334
Selenium, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Acetic Acid	830-MBA	mg/L	9.71	4.43	4.86	33.3	75.3	7.33	<1	48.8	<1	12.1	<1
Butyric Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lactic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	<10	<10	<10	24.1	12.3	<10	<10	25.9	<10	<10	<10
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	56000	68000	63000	68000 J	51000 J	43000 J	95000	74000 J	54000	92000	130000 J
Ethane	RSK175\5021	ug/L	<50	<25	<25	<5	<5	<5	<5	<5	<5	<5	<10
Ethene	RSK175\5021	ug/L	<50	<25	<25	<5	<5	<5	<5	<5	<5	<5	<10
Methane	RSK175\5021	ug/L	10000	310	370	20000	2200	10000	9900	6900	4000	4600	1600
Hydrogen	AM20GAX	nM	–	–	–	–	–	–	–	–	–	–	–

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– Not Sampled

TABLE D-7
MONITORED NATURAL ATTENUATION PARAMETERS
SIXTH QUARTER SAMPLES - EBT-6
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID	PMW101-07A DUP	PMW101-07B	PMW101-08A	PMW101-08B	IW85-01	IW85-02	IW85-05	IW85-06	IW92-01	IW92-02	IW92-03
		Lab ID	L08030269-08	L08030269-11	L08030269-12	L08030269-13	L08030387-01	L08030387-02	L08030420-02	L08030420-04	L08030269-05	L08030298-02	L08030298-03
		Date	3/13/2008	3/13/2008	3/13/2008	3/13/2008	3/18/2008	3/18/2008	3/19/2008	3/19/2008	3/13/2008	3/14/2008	3/14/2008
		Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
		Units											
Bromide	300	mg/L	0.21	<0.2	0.225	0.148 J	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chloride	300	mg/L	25	13.7	30.6	8.15	21.1	25.3	19.5	25	18.8	16.1	11
Nitrate	300	mg/L	<0.6	4.44 J	2.15 J	3.9 J	0.204 J	0.804	<0.6	0.727 J	0.33 J	<0.6	<0.6
Nitrite	300	mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.157 J	<0.4	<0.4
Sulfate	300	mg/L	29.2	7.6	35.6	2.56	1.94	3.56	<1	3.07 J	9.21	6.62	<1
Sulfide	376.1	mg/L	<1	<1	<1	<1	1.01	<1	<1	<1	<1	<1	<1
Alkalinity, Total	310.2	mg/L	163	176	45.4	45 7	359	707	376	1060	267	409	1170
Total Organic Carbon	9060MOD	mg/L	3.61	1.31	3.47	0.945 J	252	436	149 J	772 J	130	305	1270 J
Arsenic, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.066	0.00694 J
Manganese, Total	6010B\3005A	mg/L	0.329	<0.01	0.171	<0.01	0.172	0.279	0.843	1.79	0.185	0.129	0.244
Selenium, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.00834 J
Acetic Acid	830-MBA	mg/L	<1	<1	<1	<1	114	241	87	383	97.8	135	385
Butyric Acid	830-MBA	mg/L	<1	<1	<1	<1	70.9	56.3	8.68	148	8.57	60.9	187
Lactic Acid	830-MBA	mg/L	<1	<1	<1	<1	5.31	6.31	15.1	1.33	2.16	369	1620
Propionic Acid	830-MBA	mg/L	<10	<10	<10	<10	250	455	137	707	105	203	786
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.076 J	0.147	<0.1	2.16	19.1
Carbon Dioxide	RSK175\5021	ug/L	120000 J	70000 J	130000 J	60000 J	110000 J	200000 J	160000 J	120000 J	33000 J	88000	150000
Ethane	RSK175\5021	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<5	<10	<10
Ethene	RSK175\5021	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<5	<10	<10
Methane	RSK175\5021	ug/L	1500	890	3400	1300	4400	9100	280	3400	560	2100	2300
Hydrogen	AM20GAX	nM	–	–	–	1.2	330	2.4	10	1.4	–	–	1.3

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TABLE D-7
MONITORED NATURAL ATTENUATION PARAMETERS
SIXTH QUARTER SAMPLES - EBT-6
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area / Units	IW92-04 L08030333-14 3/17/2008 TTA-2	IW92-05 L08030333-15 3/17/2008 TTA-2	IW92-06 L08030420-01 3/19/2008 TTA-2	IW92-07 L08030387-06 3/18/2008 TTA-2	IW92-07 DUP L08030387-03 3/18/2008 TTA-2	IW92-08 L08030420-05 3/19/2008 TTA-2	DR2-1 L08030185-04 3/10/2008 TTA-2	DR2-1 DUP L08030185-01 3/10/2008 TTA-2	DR2-5 L08030240-19 3/12/2008 TTA-2	IW-01 L08030269-07 3/13/2008 TTA-2	MW-85 L08030240-18 3/12/2008 TTA-2
Bromide	300	mg/L	<0.2	0.744 J	--	<0.2	<0.2	<0.2	0.109 J	<0.2	0.178 J	0.373	<0.2
Chloride	300	mg/L	13	19.3 B	--	29.2	28.4	24.5	24.1	24.3	17.4	21.2	17.9
Nitrate	300	mg/L	<0.6	<0.6	--	0.112 J	0.175 J	0.19 J	<0.6	<0.6	3.89	1.26 J	0.975
Nitrite	300	mg/L	<0.4	<0.4	--	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Sulfate	300	mg/L	<1	<1	--	4.55	7.25	1.14 J	11.2	10.4	8.56	15.3	8.66
Sulfide	376.1	mg/L	<1	<1	<1	<1	<1	<1	<1	0.536 J	<1	<1	<1
Alkalinity, Total	310.2	mg/L	--	539	--	1320 J	464 J	6720	190	219	37.2 J	56.8	130 J
Total Organic Carbon	9060MOD	mg/L	4350 J	3230 J	8010 J	747	571	7640 J	20.9	18.5	1.33 J	1.73 J	201 J
Arsenic, Total	6010B\3005A	mg/L	--	0.045	0.0325	0.00626 J	<0.01	<0.01	0.00561 J	0.00588 J	<0.01	0.00628 J	0.0095 J
Manganese, Total	6010B\3005A	mg/L	--	0.181	1.02	0.338	0.371	0.465	0.139	0.175	0.00504 J	0.47	4.11
Selenium, Total	6010B\3005A	mg/L	--	0.00936 J	<0.05	<0.01	<0.01	0.0118	<0.01	<0.01	<0.01	<0.01	<0.01
Acetic Acid	830-MBA	mg/L	1630	1620	--	593	570	3450	<1	<1	<1	<1	198
Butyric Acid	830-MBA	mg/L	754	172	--	218	211	786	<1	<1	<1	<1	7.22
Lactic Acid	830-MBA	mg/L	2900	3080	--	8.34	3.36	51	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	3610	2920	--	792	764	8200	<10	<10	<10	<10	217
Pyruvic Acid	830-MBA	mg/L	33.2	22.4	--	0.114	0.0528 J	0.825	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	340000 J	430000 J	560000 J	300000 J	320000 J	170000 J	160000	190000	38000 J	330000 J	140000 J
Ethane	RSK175\5021	ug/L	<10	<10	<10	<10	<10	<1	<50	<25	<5	<10	<10
Ethene	RSK175\5021	ug/L	<10	<10	<10	<10	<10	0.55 J	<50	<25	<5	<10	<10
Methane	RSK175\5021	ug/L	2300	4600	7500	9500	8100	220	9900	10000	4 J	8700	1100
Hydrogen	AM20GAX	nM	--	--	1.4	3.5	3.6	--	--	--	--	--	--

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TABLE D-7
MONITORED NATURAL ATTENUATION PARAMETERS
SIXTH QUARTER SAMPLES - EBT-6
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area / Units	PMW85-01 L08030269-06 3/13/2008 TTA-2	PMW85-04 L08030240-16 3/12/2008 TTA-2	PMW85-05 L08030240-17 3/12/2008 TTA-2	PMW92-01 L08030185-02 3/10/2008 TTA-2	PMW92-02 L08030185-03 3/10/2008 TTA-2	PMW92-03 L08030220-01 3/11/2008 TTA-2	PMW92-04 L08030220-02 3/11/2008 TTA-2	PMW92-05 L08030220-03 3/11/2008 TTA-2	PMW92-06 L08030220-04 3/11/2008 TTA-2
Bromide	300	mg/L	<0.2	<0.2	0.165 J	<0.2	<0.2	0.132 J	<0.2	<0.2	2.12
Chloride	300	mg/L	20.2	24.1	12.5	24.2	10.2	16.4 J	11.3 J	21.1 J	11 J
Nitrate	300	mg/L	0.507 J	<0.6	2.78	2.01	<0.6	<0.6	<0.6	1.83	<0.6
Nitrite	300	mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Sulfate	300	mg/L	4.19	<1	8.78	8.81	<1	3.82	3.86	10	<1
Sulfide	376.1	mg/L	<1	<1	<1	<1		0.68 J	<1	0.536 J	<1
Alkalinity, Total	310.2	mg/L	268	405 J	39 J	75.4	859	187	213	54.6	861
Total Organic Carbon	9060MOD	mg/L	105	174 J	1.15 J	2.88	31.5	5.04	24.3	2.63	425
Arsenic, Total	6010B\3005A	mg/L	0.00515 J	0.0111	<0.01	0.0388	–	<0.01	<0.01	<0.01	0.0101
Manganese, Total	6010B\3005A	mg/L	3.59	2.47	<0.01	0.153	–	0.442	0.89	<0.01	1.24
Selenium, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0.01	–	<0.01	<0.01	<0.01	<0.05
Acetic Acid	830-MBA	mg/L	97.4	152	<1	<1	39.4	<1	41	<1	415
Butyric Acid	830-MBA	mg/L	2.5	9.81	<1	<1	<1	<1	<1	<1	23.7
Lactic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	98.4	202	<10	<10	<10	<10	9.23 J	<10	436
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	76000 J	110000 J	94000 J	32000	140000	35000	110000	80000	150000
Ethane	RSK175\5021	ug/L	<10	<25	<5	<5	<50	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<10	<25	<5	<5	<50	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	340	4700	5.5	5.1	14000	3900	2000	3 J	1900
Hydrogen	AM20GAX	nM	–	–	–	–	–	–	–	–	–

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–: Not Sampled

TABLE D-8
MONITORED NATURAL ATTENUATION PARAMETERS
SEVENTH QUARTER SAMPLES - EBT-7
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area / Units	IW21-01A L08060495-05 6/17/2008 TTA-1 21	IW21-01A DUP L08060495-19 6/17/2008 TTA-1 21	IW21-01B L08060495-06 6/17/2008 TTA-1 21	IW21-02A L08060495-07 6/17/2008 TTA-1 21	IW21-02B L08060543-01 6/18/2008 TTA-1 21	IW21-03A L08060543-07 6/18/2008 TTA-1 21	IW21-03B L08060543-08 6/18/2008 TTA-1 21	IW21-04A L08060543-09 6/18/2008 TTA-1 21	IW21-04B L08060543-10 6/18/2008 TTA-1 21	IW21-05A L08060495-11 6/17/2008 TTA-1 21	IW21-05B L08060495-17 6/17/2008 TTA-1 21
Bromide	300	mg/L	5.26 J	5.11 J	<1	<1	0.189 J	<0.8	4.19	0.868	0.761	17.8 J	<1
Chloride	300	mg/L	18.5 J	18.7 J	11.9 J	18.8 J	13.1 J	13.4	16.3	15	12.2	16.7 J	11.6 J
Nitrate	300	mg/L	<3	<3	<3	0 905 J	1.35	0.98 J	<2.4	<2.4	<0.6	<3	<3
Nitrite	300	mg/L	<2	<2	<2	<2	<0.4	<1.6	<1.6	<1.6	<0.4	<2	<2
Sulfate	300	mg/L	2.6 J	<5	<5	10.5	2.75 J	19.2	2.48 J	<4	2.46	<5	4.4 J
Sulfide	376.1	mg/L	<1	<1	<1	<1	0.645 J	0.62 J	0.685 J	1.01	<1	<1	1.27
Alkalinity, Total	310.2	mg/L	945	280 B	731 B	104 B	96.6	125	591	542	525	521 B	598 B
Total Organic Carbon	9060MOD	mg/L	402	426	187	9.46	16.2	5.89	317	180	200	1750	77.2
Arsenic, Total	6010B\3005A	mg/L	0.00699 J	0.00819 J	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.00977 J
Manganese, Total	6010B\3005A	mg/L	0.0918	0.0915	0.0582	0.0177	0.0626	0.0246	0.0597	0.154	0.112	0.218	0.0619
Selenium, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Acetic Acid	830-MBA	mg/L	288	287	118	6.91	11.7	2.11	287	132	124	986	58.3
Butyric Acid	830-MBA	mg/L	70.3	55.2	16.5	<1	<1	<1	40.6	6.91	6.22	162	9.34
Lactic Acid	830-MBA	mg/L	1.52	1.55	0.692 J	<1	<1	<1	0.744 J	<1	<1	500	0.692 J
Propionic Acid	830-MBA	mg/L	477	472	285	<10	11.3	<10	394	230	258	1680	84.6
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	3.18	<0.1
Carbon Dioxide	RSK175\5021	ug/L	180000 J	58000 B	20000 B	37000 B	110000 R	140000 R	200000 R	160000 R	99000 R	440000 J	88000 B
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	11000	9900	5000	160	580	2100	14000 J	7600 J	2300	12000	13000
Hydrogen			73	640	18	6.2	22	120	3.5	13	7.1	5.9	4.1

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TABLE D-8
MONITORED NATURAL ATTENUATION PARAMETERS
SEVENTH QUARTER SAMPLES - EBT-7
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

		Sample ID	IW21-05B DUP	MW-21	MW-115	PMW21-01	PMW21-02	PMW21-03	PMW21-04	PMW21-05	PMW21-05 DUP	IW101-01A	IW101-01A DUP
		Lab ID	L08060495-18	L08060454-08	L08060413-07	L08060454-05	L08060454-06	L08060413-05	L08060413-06	L08060454-07	L08060454-15	L08060250-07	L08060250-08
		Date	6/17/2008	6/16/2008	6/13/2008	6/16/2008	6/16/2008	6/13/2008	6/13/2008	6/16/2008	6/16/2008	6/9/2008	6/9/2008
		Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 101	TTA-1 101
Analyte	Method	Units											
Bromide	300	mg/L	<1	0.186 J	<0.2	0.202	0.148 J	0.147 J	0.232	<0.2	<0.8	0.511	0.483
Chloride	300	mg/L	11.7 J	13.3	10.8	12.6	11.1	11	13.3	24.4	25.8	29.3	26.8
Nitrate	300	mg/L	<3	3.97	3.14	2.73	2.09	3.97	2.9	4.34	4.51	<0.6	<0.6
Nitrite	300	mg/L	<2	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.6	<0.4	<0.4
Sulfate	300	mg/L	4.87 J	11.1	12	16.9	11.7	13.1	17.9	15.1	15.2	<1	<1
Sulfide	376.1	mg/L	0.88 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity, Total	310.2	mg/L	279 B	72.3	87.6	98.5	88.2	80.4	113	63.4	66.7	2160	2240
Total Organic Carbon	9060MOD	mg/L	79.2	2	3.23	6.77	13.1	0.948 J	6.93	1.99	1.44	1130 J	1180
Arsenic, Total	6010B\3005A	mg/L	0.00875 J	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.00531 B	0.00773 B
Manganese, Total	6010B\3005A	mg/L	0.0642	<0.01	0.0393	0.00658 J	0.0422	0.0101	0.0055 J	0.00851 J	0.00813 J	0.938	0.954
Selenium, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0 02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Acetic Acid	830-MBA	mg/L	59.1	2.99	<1	3.48	11.3	<1	<1	3.47	2.79	600	523
Butyric Acid	830-MBA	mg/L	7	<1	<1	<1	<1	<1	<1	<1	<1	25.5	24.8
Lactic Acid	830-MBA	mg/L	0 658 J	0.795 J	0.789 J	0.934 J	4.28	1.01	1.59	0.923 J	0.746 J	325	295
Propionic Acid	830-MBA	mg/L	84.5	<10	<10	<10	17.9	<10	<10	<10	<10	705	643
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0 1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	52000 B	110000 J	120000 J	110000 J	110000 J	94000 J	150000 J	68000 J	95000 J	390000 J	390000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	18000	13 B	4700	31	18 B	660	17	260	320	17000	21000
Hydrogen			4.7	1.9	1.2	--	2200	1.4	--	1.6	1.2	2.4	1.2

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TABLE D-8
MONITORED NATURAL ATTENUATION PARAMETERS
SEVENTH QUARTER SAMPLES - EBT-7
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area	Units	MW101-01B L08060250-09 6/9/2008 TTA-1 101	MW101-01C L08060250-14 6/9/2008 TTA-1 101	MW101-02A L08060250-13 6/9/2008 TTA-1 101	MW101-02B L08060283-13 6/10/2008 TTA-1 101	MW101-02C L08060283-06 6/10/2008 TTA-1 101	MW101-03A L08060283-07 6/10/2008 TTA-1 101	MW101-03B L08060348-04 6/11/2008 TTA-1 101	MW101-03C L08060348-07 6/11/2008 TTA-1 101	MW101-03C DUP L08060348-01 6/11/2008 TTA-1 101	MW101-04A L08060413-01 6/13/2008 TTA-1 101	MW101-04B L08060413-02 6/13/2008 TTA-1 101
Bromide	300		mg/L	0.138 J	<2	<2	<0.2	<0.2	<0.8	<0.8	<0.8	<0.2	<0.8	0.211
Chloride	300		mg/L	20.8	16.4	17.6	13	17.4	20.1	20	13.5	12.3	15.8	16.7
Nitrate	300		mg/L	<0.6	1.13 J	<6	1.44	0.116 J	<2.4	0.552 J	<2.4	0.108 J	<2.4	<0.6
Nitrite	300		mg/L	<0.4	<4	<4	<0.4	<0.4	<1.6	<1.6	<1.6	<0.4	<1.6	<0.4
Sulfate	300		mg/L	6.25	10.1	<10	14.9	1.57	<4	4.45	<4	4.92	4.2	4.62
Sulfide	376.1		mg/L	<1	1.71	2.48	<1	1.5	1.24	<1	0.922 J	<1	<1	<1
Alkalinity, Total	310.2		mg/L	264	229	437	117	526	407	558 J	583 J	583 J	1980	326
Total Organic Carbon	9060MOD		mg/L	8.97 J	62.3 J	320 J	6.03	230	314	232 J	311 J	396 J	1320	4.88
Arsenic, Total	6010B\3005A		mg/L	0.0169 B	<0.01	<0.01	<0.01	0.00952 J	<0.01	0.00976 J	<0.01	<0.01	<0.01	0.0147
Manganese, Total	6010B\3005A		mg/L	0.342	0.0262	0.201	0.0293	0.0956	0.0736	0.101	0.0407	0.0401	0.158	0.393
Selenium, Total	6010B\3005A		mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05
Acetic Acid	830-MBA		mg/L	2.41	50.7	78.9	79.6	144	166	168	272	289	447	0.724 J
Butyric Acid	830-MBA		mg/L	<1	2.77	1.66	<1	10.7	3.28	16.2	26.1	26.5	34.3	<1
Lactic Acid	830-MBA		mg/L	1.03	1.18	629	2.98	5.02	1.57	2.96	3	2.65	1690	0.73 J
Propionic Acid	830-MBA		mg/L	6.54 J	40.8	108	<10	149	286	242	314	335	696	10.5
Pyruvic Acid	830-MBA		mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	0.657	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021		ug/L	98000 J	130000 J	170000 J	26000 B	790000 J	250000 J	190000 J	150000 J	130000 J	350000 J	55000 J
Ethane	RSK175\5021		ug/L	<0.5	<5	<5	<0.5	<5	<5	<5	<5	<5	<5	<5
Ethene	RSK175\5021		ug/L	<0.5	<5	<5	<0.5	<5	<5	<5	<5	<5	<5	<5
Methane	RSK175\5021		ug/L	13000	2000	14000	56	26000	15000	4500	7700	7600	17000 J	16000 J
Hydrogen				6.5	2.4	7.8	3.5	28	2.7	2.8	8.1	6.6	2.1	4

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MONITORED NATURAL ATTENUATION PARAMETERS
SEVENTH QUARTER SAMPLES - EBT-7
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

		Sample ID	IW101-04C	IW101-05A	IW101-05B	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B	IW101-07C	IW101-08A
		Lab ID	L08060413-03	L08060413-04	L08060454-09	L08060454-10	L08060454-11	L08060454-12	L08060454-13	L08060348-08	L08060348-09	L08060383-07	L08060454-14
		Date	6/13/2008	6/13/2008	6/16/2008	6/16/2008	6/16/2008	6/16/2008	6/16/2008	6/11/2008	6/11/2008	6/12/2008	6/16/2008
		Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Method	Units											
Bromide	300	mg/L	0.455	<0.8	0.194 J	<0.8	<0.8	<0.2	<0.8	<0.4	<0.8	<0.2	<0.8
Chloride	300	mg/L	16.1	23	16.9	15.9	18.2	16.3	9.9	14.3	9.92	14.4	17.7
Nitrate	300	mg/L	<0.6	<2.4	3.34	0.58 J	1.14 J	0.3 J	<2.4	<1.2	<2.4	<0.6	0.884 J
Nitrite	300	mg/L	<0.4	<1.6	<0.4	<1.6	<1.6	0.285 J	<1.6	<0.8	<1.6	<0.4	<1.6
Sulfate	300	mg/L	0.665 J	3.95 J	25.6	7.73	5.54	3.96	2.82 J	1.04 J	<4	0.789 J	13.1
Sulfide	376.1	mg/L	<1	<1	<1	0.513 J	<1	<1	<1	0.62 J	<1	<1	<1
Alkalinity, Total	310.2	mg/L	273	2080	135	283	736	230	261	242 J	238 J	442 J	264
Total Organic Carbon	9060MOD	mg/L	17.4	1350	3.23	76.1	329	39	91.2	77.9	50.7	142	9.25
Arsenic, Total	6010B\3005A	mg/L	0.0141	0.0229	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0104	<0.01
Manganese, Total	6010B\3005A	mg/L	0.356	0.107	0.00751 J	0.0905	0.0679	0.00758 J	0.0368	0.0722	0.0463	0.0522	0.0771
Selenium, Total	6010B\3005A	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0 01	<0.01	<0.01
Acetic Acid	830-MBA	mg/L	<1	584	2.93	10.2	226	35.5	76.8	51.3	28.2	87.8	10.2
Butyric Acid	830-MBA	mg/L	<1	29 1	<1	1.32	5.22	<1	7.18	1.1	1.24	10.7	<1
Lactic Acid	830-MBA	mg/L	1.02	1010	0.857 J	0.678 J	0.985 J	0.693 J	0.949 J	2.47	2.29	0.684 J	0.788 J
Propionic Acid	830-MBA	mg/L	19.2	1200	<10	66.3	432	35.3	87.1	80.6	51	137	<10
Pyruvic Acid	830-MBA	mg/L	<0.1	13.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	32000 J	430000 J	100000 J	160000 J	210000 J	130000 J	100000 J	120000 J	74000 J	120000 J	120000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5	<5
Methane	RSK175\5021	ug/L	15000 J	12000 J	140	5400	8300	510	6600	4100	6500	11000	4700 J
Hydrogen			3.1	1.9	1.6	2.8	2.5	3.8	18	2.9	4.6	2.4	3.1

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SEVENTH QUARTER SAMPLES - EBT-7
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID	IW101-08B	IW101-08B DUP	IW101-08C	IW101-09A	IW101-09B	IW101-09C	DR1-3	MW-101B	MW-101T	PMW101-01A	PMW101-01B
		Lab ID	L08060495-14	L08060495-10	L08060495-15	L08060383-08	L08060383-11	L08060383-12	L08060413-09	L08060283-09	L08060283-08	L08060250-01	L08060250-04
		Date	6/17/2008	6/17/2008	6/17/2008	6/12/2008	6/12/2008	6/12/2008	6/13/2008	6/10/2008	6/10/2008	6/9/2008	6/9/2008
		Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
		Units											
Bromide	300	mg/L	<1	<0.4	1.84 J	0.245	<0.8	<0.8	0.224	0.195 J	0.155 J	0.146 J	0.185 J
Chloride	300	mg/L	11.3 J	10.9 J	9.01 J	29.3	2.41	11.2	19.8	19.1	18.6	16.3	17.1
Nitrate	300	mg/L	<3	<1.2	<3	3.83	<2.4	<2.4	<0.6	1.82	3.61	0.111 J	0.779
Nitrite	300	mg/L	<2	<0.8	<2	<0.4	<1.6	<1.6	<0.4	<0.4	<0.4	<0.4	<0.4
Sulfate	300	mg/L	<5	1.59 J	<5	38.6	<4	<4	10.2	24.5	26.5	6.92	10.9
Sulfide	376.1	mg/L	<1	<1	<1	1.19	<1	<1	<1	<1	<1	<1	<1
Alkalinity, Total	310.2	mg/L	8.46 B	1450	297 B	223 J	2540 J	956 J	158	154	130	1310	330
Total Organic Carbon	9060MOD	mg/L	14.7	16.5	305	14	1180	711	3.86	2.32 B	1.43 B	173 J	59.1 J
Arsenic, Total	6010B\3005A	mg/L	0.0203	0.023	0.0142	<0.01	0.0222	0.00923 J	0.00709 J	<0.01	<0.01	0.0281 B	0.0162 B
Manganese, Total	6010B\3005A	mg/L	0.207	0.21	0.0931	<0.01	0.471	0.0436	2.3	0.127	0.022	0.508	0.157
Selenium, Total	6010B\3005A	mg/L	<0.02	<0.05	<0.02	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01
Acetic Acid	830-MBA	mg/L	3.8	3.55	248	24.1 J	735	495	<1	<1	<1	76.3	27.3
Butyric Acid	830-MBA	mg/L	<1	<1	21.6	<1	135	57.2	<1	<1	<1	3.71	1.57
Lactic Acid	830-MBA	mg/L	0.549 J	0.598 J	1.5	3.45	7.92	1.67	0.728 J	1.16	1.04	<1	<1
Propionic Acid	830-MBA	mg/L	<10	<10	377	<10	1040	496	<10	<10	<10	199	89
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	38000 B	41000 B	46000 B	170000 J	160000 J	260000 J	91000 J	110000 J	140000 J	400000 J	180000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	27000	37000	16000	200	11000 J	14000	6900 J	4100	450	36000	17000
Hydrogen			3.4	3.6	15	1.7	1.2	1.5	4.7	2.3	2.9	1.7	1.4

<: Not detected above Reporting Limit (RL)
J: Estimated, based on QC data or reported below RL
B: Estimated, possibly biased high or false positive based on blank data
R.Rejected
–: Not Sampled
NR: Not Reported

TABLE D-8
MONITORED NATURAL ATTENUATION PARAMETERS
SEVENTH QUARTER SAMPLES - EBT-7
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area	Units	PMW101-02A L08060283-12 6/10/2008 TTA-1 101	PMW101-02A DUP L08060283-15 6/10/2008 TTA-1 101	PMW101-02B L08060250-05 6/9/2008 TTA-1 101	PMW101-03A L08060283-01 6/10/2008 TTA-1 101	PMW101-03B L08060283-02 6/10/2008 TTA-1 101	PMW101-04A L08060348-17 6/11/2008 TTA-1 101	PMW101-04B L08060283-03 6/10/2008 TTA-1 101	PMW101-05A L08060348-10 6/11/2008 TTA-1 101	PMW101-05B L08060348-11 6/11/2008 TTA-1 101	PMW101-05B DUP L08060348-02 6/11/2008 TTA-1 101	PMW101-06A L08060383-02 6/12/2008 TTA-1 101
Bromide	300		mg/L	0.211	0.218	0.159 J	0.175 J	0.161 J	<0.4	0.181 J	0.166 J	<0.2	0.132 J	0.175 J
Chloride	300		mg/L	16.3	16.4	19.7	20.7	18.4	18.7	20	18.7	11.7	11.9	20.2
Nitrate	300		mg/L	0.418 J	0.431 J	<0.6	<0.6	<0.6	<1.2	0.168 J	<0.6	0.187 J	0.214 J	<0.6
Nitrite	300		mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.8	<0.4	<0.4	<0.4	<0.4	<0.4
Sulfate	300		mg/L	27.6	27.7	1.86	3.39	1.57	6.42	12.3	7.93	5.4	5.02	18.9
Sulfide	376.1		mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity, Total	310.2		mg/L	175	188	317	413	371	292 J	152	252 J	266 J	261 J	125 J
Total Organic Carbon	9060MOD		mg/L	3.55 B	5.7	7.83 J	7.32	27.3	2.36	2.36 B	3.46	43.3	46.4 J	2.53
Arsenic, Total	6010B\3005A		mg/L	0.0323	0.0337	0.0268	0.00633 J	0.0292	0.00919 J	0.0192	0.00639 J	0.00675 J	0.0172	0.00854 J
Manganese, Total	6010B\3005A		mg/L	5.55	5.76	0.522	1.91	1.63	0.999	1.05	0.655	0.365	0.361	0.202
Selenium, Total	6010B\3005A		mg/L	<0.02	0.0409 J	<0.01	<0.01	<0.02	<0.02	<0.01	<0.1	<0.01	<0.01	<0.01
Acetic Acid	830-MBA		mg/L	1.54	<1	1.69	1.23	34.9	<1	<1	<1	80	90.1	<1
Butyric Acid	830-MBA		mg/L	<1	<1	<1	<1	<1	<1	<1	<1	0.658 J	0.668 J	<1
Lactic Acid	830-MBA		mg/L	<1	2.02	<1	0.904 J	1.06	2.16	0.963 J	2.3	2.86	2.09	0.758 J
Propionic Acid	830-MBA		mg/L	<10	<10	<10	<10	7.96 J	<10	<10	<10	<10	<10	<10
Pyruvic Acid	830-MBA		mg/L	0.233	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021		ug/L	150000 J	37000 R	120000 J	69000 J	130000 J	26000 B	140000 J	240000 J	150000 J	49000 J	160000 J
Ethane	RSK175\5021		ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5
Ethene	RSK175\5021		ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5
Methane	RSK175\5021		ug/L	23000	24000	17000	11000	22000	300	15000	14000	13000	14000	3600
Hydrogen				1.6	1.9	1.2	1.5	1.4	0.95	--	1.3	2.1	1.9	2

< Not detected above Reporting Limit (RL)
J. Estimated, based on QC data or reported below RL
B· Estimated, possibly biased high or false positive based on blank data
R Rejected
--: Not Sampled
NR. Not Reported

TABLE D-8
MONITORED NATURAL ATTENUATION PARAMETERS
SEVENTH QUARTER SAMPLES - EBT-7
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area / Units	PMW101-06B L08060348-12 6/11/2008 TTA-1 101	PMW101-07A L08060383-03 6/12/2008 TTA-1 101	PMW101-07B L08060383-04 6/12/2008 TTA-1 101	PMW101-08A L08060383-05 6/12/2008 TTA-1 101	PMW101-08A DUP L08060383-01 6/12/2008 TTA-1 101	PMW101-08B L08060413-08 6/13/2008 TTA-1 101	IW85-01 L08060543-04 6/18/2008 TTA-2	IW85-02 L08060495-02 6/17/2008 TTA-2	IW85-05 L08060495-03 6/17/2008 TTA-2	IW85-06 L08060495-04 6/17/2008 TTA-2	IW92-01 L08060250-11 6/9/2008 TTA-2
Bromide	300	mg/L	0.164 J	<0.8	<0.2	0.193 J	<0.8	0.211	1.09	8.14 J	2.77 J	26.1 J	<0.8
Chloride	300	mg/L	19.5	22.9	13	24.4	24	7.23	24.8	31.1 J	21.7 J	20.7 J	21.5
Nitrate	300	mg/L	<0.6	<2.4	3.41	1.33	1.41 J	0.574 J	0.822	<3	<3	<3	<2.4
Nitrite	300	mg/L	<0.4	<1.6	<0.4	<0.4	<1.6	<0.4	<0.4	<2	<2	<2	<1.6
Sulfate	300	mg/L	5.29	29.2	8.04	29.3	29	0.823 J	5.92	<5	<5	<5	3.62 J
Sulfide	376.1	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.5
Alkalinity, Total	310.2	mg/L	185 J	183 J	56.2 J	222 J	218 J	154	1630	1740	680 B	2510	766
Total Organic Carbon	9060MOD	mg/L	9.47	3.46	1.42	17.5	19.3	71	985	870	388	1410	435 J
Arsenic, Total	6010B\3005A	mg/L	0.0159	0.0112	<0.01	0.00902 J	0.00851 J	<0.01	<0.01	<0.01	0.0082 J	0.0576	<0.01
Manganese, Total	6010B\3005A	mg/L	0.272	0.363	0.0139	0.284	0.266	0.0449	0.333	0.297	0.351	2.09	0.359
Selenium, Total	6010B\3005A	mg/L	<0.1	<0.02	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01
Acetic Acid	830-MBA	mg/L	<1	<1	<1	21	20.3	56.7	481	563	224	1020	253
Butyric Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	2.57	312	84.1	51	247	38.6
Lactic Acid	830-MBA	mg/L	2.47	0.748 J	0.755 J	0.742 J	0.977 J	0.932 J	12.9	1.16	1.65	0.644 J	163
Propionic Acid	830-MBA	mg/L	<10	<10	<10	14.7	15.1	75.5	1120	1020	470	1420	299
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	160000 J	150000 J	91000 J	170000 J	160000 J	29000 B	330000 R	390000 J	190900 J	390000 J	96000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	5400	2600	3800	3700	4300	6900	9000 J	16000	5700	11000	8100
Hydrogen			1.2	1.5	1.2	2	1.9	5700	–	–	–	2.1	–

<: Not detected above Reporting Limit (RL)
J: Estimated, based on QC data or reported below RL
B: Estimated, possibly biased high or false positive based on blank data
R:Rejected
–: Not Sampled
NR: Not Reported

TABLE D-8
MONITORED NATURAL ATTENUATION PARAMETERS
SEVENTH QUARTER SAMPLES - EBT-7
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

1013306

		Sample ID	IW92-02	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-08	DR2-1	DR2-5	IW-01	MW-85
		Lab ID	L08060283-14	L08060283-10	L08060348-15	L08060348-16	L08060413-11	L08060413-12	L08060495-01	L08060250-10	L08060543-06	L08060454-04	L08060454-03
		Date	6/10/2008	6/10/2008	6/11/2008	6/11/2008	6/13/2008	6/13/2008	6/17/2008	6/9/2008	6/16/2008	6/16/2008	6/16/2008
		Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Method	Units											
Bromide	300	mg/L	<0.2	<0.2	<0.8	3.1	<0.8	<0.8	<1	<0.2	<0.2	<0.8	<0.2
Chloride	300	mg/L	17.6	23.1	2.21	6.71	8.54	26	<1	25.4	16.7	18.8	13.1
Nitrate	300	mg/L	<0.6	<0.6	<2.4	<1.2	<2.4	<2.4	<3	0.143 J	3.73	0.492 J	0.899
Nitrite	300	mg/L	<0.4	<0.4	<1.6	<0.8	<1.6	<1.6	<2	<0.4	<0.4	<1.6	<0.4
Sulfate	300	mg/L	<1	<1	<4	<2	<4	<4	<5	15.8	7.54	4.63	10.1
Sulfide	376.1	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity, Total	310.2	mg/L	554	2860	3960 J	9480 J	5080	2560	7280	119	39.7	354	277
Total Organic Carbon	9060MOD	mg/L	169	3260	5930 J	5860	4570	1530	5530	10.3 J	1.13	121	62.8
Arsenic, Total	6010B\3005A	mg/L	<0.01	<0.01	0.0161	0.0124	0.00981 J	0.065	<0.01	<0.01	<0.01	0.00981 J	<0.01
Manganese, Total	6010B\3005A	mg/L	0.28	0.656	1.07	0.239	0.349	0.32	0.569	0.0797	<0.01	4.81	1.39
Selenium, Total	6010B\3005A	mg/L	<0.02	0.00534 B	<0.01	<0.1	<0.01	<0.05	0.451	<0.01	<0.01	<0.05	<0.02
Acetic Acid	830-MBA	mg/L	115	1010	1070	3440	2140	974	2970	<1	<1	80.1	77.4
Butyric Acid	830-MBA	mg/L	8.4	198	225	134	174	242	693	<1	<1	14.7	<1
Lactic Acid	830-MBA	mg/L	4.04	1510	116	4090	29.1	114	2.26	0 855 J	<1	0.737 J	0.91 J
Propionic Acid	830-MBA	mg/L	120	2140	2240	5750	3340	1560	6710	<10	<10	126	49.6
Pyruvic Acid	830-MBA	mg/L	<0.1	<5	<0.1	<1	<0.1	<0.1	0.663	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	160000 J	600000 J	510000 J	690000 J	500000 J	390000 J	390000 J	140000 J	27000 J	300000 J	110000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	4900	7900	4500	10000 J	6900 B	12000 J	2500	12000	23	9900 J	3700 J
Hydrogen			--	--	--	--	--	11	--	--	--	1.8	--

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TABLE D-8
MONITORED NATURAL ATTENUATION PARAMETERS
SEVENTH QUARTER SAMPLES - EBT-7
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

		Sample ID	PMW85-01	PMW85-04	PMW85-05	PMW92-01	PMW92-02	PMW92-03	PMW92-04	PMW92-05	PMW92-06
		Lab ID	L08060543-05	L08060543-02	L08060543-03	L08060250-12	L08060283-11	L08060348-18	L08060383-13	L08060383-14	L08060454-02
		Date	6/18/2008	6/18/2008	6/18/2008	6/9/2008	6/10/2008	6/11/2008	6/12/2008	6/12/2008	6/16/2008
		Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Method	Units									
Bromide	300	mg/L	0.228	<0.8	1.09	<20	<0.2	0.16 J	<0.8	<0.2	<0.8
Chloride	300	mg/L	21.7	27.4 J	29.7 J	33.5	11.5	19.7	22.8	23.4	17.5
Nitrate	300	mg/L	1.15	<2.4	0.822	<60	<0.6	<0.6	<2.4	2.26	<2.4
Nitrite	300	mg/L	<0.4	<1.6	<0.4	<40	<0.4	<0.4	<1.6	<0.4	<1.6
Sulfate	300	mg/L	8.85	<4	5.92 J	<100	<1	4.82	3.62 J	15	<4
Sulfide	376.1	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1
Alkalinity, Total	310.2	mg/L	146	1730	121	7840	1260	211 J	220 J	58.5	1250
Total Organic Carbon	9060MOD	mg/L	18.2	1080	41	9010 J	43.3	3.95	12.5	2.33	647
Arsenic, Total	6010B\3005A	mg/L	<0.01	0.00838 J	<0.01	0.0173 B	<0.01	<0.01	0.00587 J	<0.01	0.0109
Manganese, Total	6010B\3005A	mg/L	0.353	6.2	0.39	52.5	1.96	2.17	1.08	0.023	1.21
Selenium, Total	6010B\3005A	mg/L	<0.01	<0.5	<0.01	<0.05	<0.02	<0.02	<0.02	<0.01	<0.1
Acetic Acid	830-MBA	mg/L	32.5	676	20	1120	31.3	<1	27.9	<1	620
Butyric Acid	830-MBA	mg/L	0.866 J	547	8.25	1760	<1	<1	<1	<1	57.3
Lactic Acid	830-MBA	mg/L	<1	<1	7.64	15800	1.74	2.31	0.877 J	1.34	0.575 J
Propionic Acid	830-MBA	mg/L	22.1	965	36.9	1470	<10	<10	<10	<10	661
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	38000 J	160000 R	89000 R	720000 J	60000 B	550000 J	88000 J	130000 J	250000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	260	16000 J	37	200	16000	20000	2600	10 B	9200
Hydrogen			–	–	–	19	–	–	1.4	–	–

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B: Estimated, possibly biased high or false positive based on blank data
R.Rejected
–: Not Sampled
NR: Not Reported

TABLE D-9
MONITORED NATURAL ATTENUATION PARAMETERS
EIGHT QUARTER SAMPLES - EBT-8
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area / Units	IW21-01A L08120452-12 12/15/2008 TTA-1 21	IW21-01B L08120452-13 12/15/2008 TTA-1 21	IW21-01B DUP L08120452-15 12/15/2008 TTA-1 21	IW21-02A L08120452-14 12/15/2008 TTA-1 21	IW21-02B L08120478-01 12/16/2008 TTA-1 21	IW21-03A L08120478-02 12/16/2008 TTA-1 21	IW21-03B L08120478-03 12/16/2008 TTA-1 21	IW21-04A L08120478-06 12/16/2008 TTA-1 21	IW21-04B L08120478-07 12/16/2008 TTA-1 21	IW21-05A L08120478-08 12/16/2008 TTA-1 21	IW21-05B L08120478-09 12/16/2008 TTA-1 21
Total Organic Carbon	9060MOD	mg/L	5290	4430	4140	2640	2760	209	3380	4530	2710	858	3850
Acetic Acid	830-MBA	mg/L	1630	1200	1200	960	1730	105	1520	1810	1520	379	960
Butyric Acid	830-MBA	mg/L	1150	1330	1130	759	522	52.6	3130	1500	545	348	2130
Lactic Acid	830-MBA	mg/L	1810	326	340	1100	453	2.38	9.25	219	90.8	29	493
Propionic Acid	830-MBA	mg/L	3940	2950	2660	2000	2410	231	3390	4380	2710	639	2640
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	680000	700000	730000	770000	490000	71000 J	560000	730000	650000	670000	270000 J
Ethane	RSK175\5021	ug/L	<100	<100	<100	<5	<100	<50	<100	<100	<100	<100	<100
Ethene	RSK175\5021	ug/L	<100	<100	<100	<5	<100	<50	<100	<100	<100	<100	<100
Methane	RSK175\5021	ug/L	4800	2100	2400	470	1500	960	9200	9700	10000	5100	3300

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–: Not Sampled

TABLE D-9
MONITORED NATURAL ATTENUATION PARAMETERS
EIGHT QUARTER SAMPLES - EBT-8
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

		Sample ID	MW-21	MW-115	MW-115 DUP	PMW21-01	PMW21-01 DUP	PMW21-02	PMW21-03	PMW21-04	PMW21-05	IW101-01A	IW101-01B
		Lab ID	L08120376-15	L08120394-13	L08120394-09	L08120376-13	L08120376-11	L08120394-10	L08120394-11	L08120394-12	L08120376-14	L08120243-02	L08120243-03
		Date	12/11/2008	12/12/2008	12/12/2008	12/11/2008	12/11/2008	12/12/2008	12/12/2008	12/12/2008	12/11/2008	12/8/2008	12/8/2008
		Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 101	TTA-1 101
Analyte	Method	Units											
Total Organic Carbon	9060MOD	mg/L	1.09	30.7	35.9	957	973	427	13.7	1870	1	5350	3600
Acetic Acid	830-MBA	mg/L	5.19	23.1	25.4	275	278	224	17.9	739	12.6	1380	1080
Butyric Acid	830-MBA	mg/L	<1	<1	<1	150	249	84.8	<1	374	<1	1380	388
Lactic Acid	830-MBA	mg/L	<1	6.51	4.49	1500	1520	272	<1	2010	<1	2990	3240
Propionic Acid	830-MBA	mg/L	<10	39.8	46.1	312	309	226	13.2	785	<10	3870	2220
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	110000 J	88000	50000 J	350000	330000	390000 J	72000 J	410000	40000 J	<500000	400000 J
Ethane	RSK175\5021	ug/L	<5	<25	<10	<25	<25	<50	<10	<25	<5	<250	<250
Ethene	RSK175\5021	ug/L	<5	<25	<10	<25	<25	<50	<10	<25	<5	<250	<250
Methane	RSK175\5021	ug/L	2.8 J	7700	5500	<25	6.8 J	1000	7100	310	1.9 J	6200	9700

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TABLE D-9
MONITORED NATURAL ATTENUATION PARAMETERS
EIGHT QUARTER SAMPLES - EBT-8
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID	MW101-01C	MW101-02A	MW101-02B	MW101-02C	MW101-02C DUP	MW101-03A	MW101-03B	MW101-03C	MW101-04A	MW101-04B	MW101-04C
		Lab ID	L08120243-04	L08120243-05	L08120243-06	L08120243-07	L08120243-01	L08120343-01	L08120343-02	L08120343-03	L08120452-06	L08120452-07	L08120452-10
		Date	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/8/2008	12/10/2008	12/10/2008	12/10/2008	12/15/2008	12/15/2008	12/15/2008
		Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
		Units											
Total Organic Carbon	9060MOD	mg/L	4330	615	4290	2610	2840	802	2070	2060	7470	2050	5020
Acetic Acid	830-MBA	mg/L	1850	319	696	1360	1250	593	1500	1220	835	1350	1610
Butyric Acid	830-MBA	mg/L	630	78.1	194	443	451	39.1	322	454	2010	183	1400
Lactic Acid	830-MBA	mg/L	2040	72.5	2960	25.5	17.6	<1	<1	4.47	6810	57.3 J	2640
Propionic Acid	830-MBA	mg/L	3990	704	1580	2380	2190	917	2370	2200	3580	2420	4010
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	31.6
Carbon Dioxide	RSK175\5021	ug/L	<500000	190000 J	390000 J	470000 J	<200000	180000 J	450000 J	530000 J	410000	200000	380000
Ethane	RSK175\5021	ug/L	<250	<250	<100	<250	<100	<250	<250	<250	<100	<100	<100
Ethene	RSK175\5021	ug/L	<250	<250	<100	<250	<100	<250	<250	<250	<100	<100	<100
Methane	RSK175\5021	ug/L	4900	13000	4100	11000	4000	9200	5700	7200	4700	4500 J	3200

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TABLE D-9
MONITORED NATURAL ATTENUATION PARAMETERS
EIGHT QUARTER SAMPLES - EBT-8
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area / Units	IW101-05A L08120394-02 12/12/2008 TTA-1 101	IW101-05A DUP L08120394-01 12/12/2008 TTA-1 101	IW101-05B L08120394-03 12/12/2008 TTA-1 101	IW101-05C L08120452-11 12/15/2008 TTA-1 101	IW101-06A L08120394-04 12/12/2008 TTA-1 101	IW101-06B L08120394-05 12/12/2008 TTA-1 101	IW101-06C L08120394-06 12/12/2008 TTA-1 101	IW101-07A L08120343-04 12/10/2008 TTA-1 101	IW101-07B L08120376-03 12/11/2008 TTA-1 101	IW101-07C L08120376-04 12/11/2008 TTA-1 101	IW101-08A L08120376-07 12/11/2008 TTA-1 101
Total Organic Carbon	9060MOD	mg/L	4960	4060	854	1170	1530	1490	1090	1580	2230	2390	2830
Acetic Acid	830-MBA	mg/L	458	468	413	668	1040	675	586	1110	1270	1270	554
Butyric Acid	830-MBA	mg/L	1540	1700	149	412	71.7	385	154	84.1	253	519	748
Lactic Acid	830-MBA	mg/L	4840	5230	238	<1	617	220	<1	<1	<1	25.2	2630
Propionic Acid	830-MBA	mg/L	2280	2480	774	1160	1530	1410	1190	1960	2340	2510	1650
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	750000	730000	450000	230000	680000 J	400000 J	220000 J	450000 J	620000 J	650000 J	740000 J
Ethane	RSK175\5021	ug/L	<50	<50	<50	<100	<50	<50	<100	<250	<250	<250	<250
Ethene	RSK175\5021	ug/L	<50	<50	<50	<100	<50	<50	<100	<250	<250	<250	<250
Methane	RSK175\5021	ug/L	3900	3500	4600	2700	11000	3200	8300	12000	13000	9900 J	16000

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TABLE D-9
MONITORED NATURAL ATTENUATION PARAMETERS
EIGHT QUARTER SAMPLES - EBT-8
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area / Units	MW101-08B L08120394-07 12/12/2008 TTA-1 101	MW101-08C L08120394-08 12/12/2008 TTA-1 101	MW101-09A L08120376-08 12/11/2008 TTA-1 101	MW101-09B L08120376-09 12/11/2008 TTA-1 101	MW101-09C L08120376-10 12/11/2008 TTA-1 101	MW101-09C DUP L08120376-01 12/11/2008 TTA-1 101	DR1-3 L08120376-18 12/11/2008 TTA-1 101	MW-101B L08120343-06 12/10/2008 TTA-1 101	MW-101T L08120343-05 12/10/2008 TTA-1 101	PMW101-01A L08120243-09 12/8/2008 TTA-1 101	PMW101-01B L08120243-10 12/8/2008 TTA-1 101
Total Organic Carbon	9060MOD	mg/L	632	4080	13.4	5760	9030	4690	1.78	16.6	107	705	61.6
Acetic Acid	830-MBA	mg/L	400	1660	<1	2360	1280	1260	16.6	<1	61.2	230	40.5 J
Butyric Acid	830-MBA	mg/L	84.9	1000	<1	2290	1610	1570	<1	<1	<1	26.8	12.3
Lactic Acid	830-MBA	mg/L	1.76	175	<1	<1	<1	<1	50.1	<1	<1	397	<1
Propionic Acid	830-MBA	mg/L	689	4090	9.54 J	4610	3500	3520	<10	14.6	134	760	63.4
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	320000 J	480000 J	99000 J	1400000 J	820000 J	570000 J	62000 J	<500000	<500000	<500000	<500000
Ethane	RSK175\5021	ug/L	<50	<50	<50	<250	<250	<250	<10	<250	<250	<250	<250
Ethene	RSK175\5021	ug/L	<50	<50	<50	<250	<250	<250	<10	<250	<250	<250	<250
Methane	RSK175\5021	ug/L	11000	3500	1300	15000	11000	6500	7200	10000	16000	11000	8500 J

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TABLE D-9
MONITORED NATURAL ATTENUATION PARAMETERS
EIGHT QUARTER SAMPLES - EBT-8
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area	Units	PMW101-02A L08120243-13 12/8/2008 TTA-1 101	PMW101-02B L08120243-14 12/8/2008 TTA-1 101	PMW101-03A L08120243-15 12/8/2008 TTA-1 101	PMW101-03A DUP L08120243-08 12/8/2008 TTA-1 101	PMW101-03B L08120243-16 12/8/2008 TTA-1 101	PMW101-04A L08120243-17 12/8/2008 TTA-1 101	PMW101-04B L08120343-08 12/10/2008 TTA-1 101	PMW101-05A L08120343-09 12/10/2008 TTA-1 101	PMW101-05B L08120343-10 12/10/2008 TTA-1 101	PMW101-06A L08120343-11 12/10/2008 TTA-1 101	PMW101-06A DUP L08120343-07 12/10/2008 TTA-1 101
Total Organic Carbon	9060MOD		mg/L	12.9	7.9	1.25 J	6	10.3	5.67	3.62	1.8 J	4.94	3.07 -	3.84
Acetic Acid	830-MBA		mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Butyric Acid	830-MBA		mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lactic Acid	830-MBA		mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Propionic Acid	830-MBA		mg/L	14.1	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Pyruvic Acid	830-MBA		mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021		ug/L	<1000000	<500000	<1000000	<500000	<500000	<500000	<500000	<500000	<500000	<500000	<500000
Ethane	RSK175\5021		ug/L	<500	<250	<500	<250	<250	<250	<250	<250	<250	<250	<250
Ethene	RSK175\5021		ug/L	<500	<250	<500	<250	<250	<250	<250	<250	<250	<250	<250
Methane	RSK175\5021		ug/L	14000	8100	16000	15000	2300	9300	16000	22000	16000	9000	7100

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TABLE D-9
MONITORED NATURAL ATTENUATION PARAMETERS
EIGHT QUARTER SAMPLES - EBT-8
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area	Units	PMW101-06B L08120343-12 12/10/2008 TTA-1 101	PMW101-07A L08120343-13 12/10/2008 TTA-1 101	PMW101-07B L08120343-16 12/10/2008 TTA-1 101	PMW101-08A L08120376-16 12/11/2008 TTA-1 101	PMW101-08B L08120376-17 12/11/2008 TTA-1 101	PMW101-08B DUP L08120376-12 12/11/2008 TTA-1 101	IW85-01 L08120452-03 12/15/2008 TTA-2	IW85-02 L08120394-15 12/12/2008 TTA-2	IW85-05 L08120452-04 12/15/2008 TTA-2	IW85-06 L08120394-16 12/12/2008 TTA-2	IW92-01 L08120478-11 12/16/2008 TTA-2
Total Organic Carbon	9060MOD		mg/L	5.33	3.8	2.7	429	4360	5240	13600	9350	258	7620	2080
Acetic Acid	830-MBA		mg/L	<1	<1	<1	345	884	929	1110 B	2560	963	2720	888
Butyric Acid	830-MBA		mg/L	<1	<1	<1	137	641	577	4490	1870	731	1150	936
Lactic Acid	830-MBA		mg/L	<1	<1	<1	2.51	7400	6900	17800	5820	290	7750	58.3
Propionic Acid	830-MBA		mg/L	<10	<10	<10	333	1500	1650	4730	5320	2650	6690	1870
Pyruvic Acid	830-MBA		mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021		ug/L	<500000	<500000	<500000	420000	540000	670000 J	630000	530000 J	680000	670000	490000 J
Ethane	RSK175\5021		ug/L	<250	<250	<250	<50	<100	<250	<100	<50	<100	<250	<100
Ethene	RSK175\5021		ug/L	<250	<250	<250	<50	<100	<250	<100	<50	<100	<250	<100
Methane	RSK175\5021		ug/L	17000	6000 J	9100	4700	8800	21000	1700	4600	4200	5200	2900

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TABLE D-9
MONITORED NATURAL ATTENUATION PARAMETERS
EIGHT QUARTER SAMPLES - EBT-8
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

		Sample ID	IW92-02	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-08	DR2-1	DR2-5	IW-01	MW-85
		Lab ID	L08120478-12	L08120452-02	L08120512-08	L08120512-04	L08120512-05	L08120512-01	L08120512-02	L08120394-17	L08120512-03	L08120343-20	L08120512-06
		Date	12/16/2008	12/15/2008	12/17/2008	12/17/2008	12/17/2008	12/17/2008	12/17/2008	12/12/2008	12/17/2008	12/10/2008	12/17/2008
		Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Method	Units											
Total Organic Carbon	9060MOD	mg/L	292	2190	3620	10400	11900	7670	5260	3.12	<4	52.6	2.96
Acetic Acid	830-MBA	mg/L	151	663	1050	4110	2410	2070	1490	9.22	5.53	374	11.7
Butyric Acid	830-MBA	mg/L	51.1	941	1030	<1	<1	2080	1550	<1	<1	773	<1
Lactic Acid	830-MBA	mg/L	1.7	1580	3.27	267	818	430	42	3.49	<1	6.18	<1
Propionic Acid	830-MBA	mg/L	302	1510	2520	9440	9350	4510	3670	<10	<10	1130	<10
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	220000 J	590000	330000 J	580000 J	610000 J	460000 J	660000 J	79000	23000 J	550000	64000 J
Ethane	RSK175\5021	ug/L	<100	<100	<100	<100	<100	<100	<100	<10	<5	<250	<5
Ethene	RSK175\5021	ug/L	<100	<100	<100	<100	<100	<100	<100	<10	<5	<250	<5
Methane	RSK175\5021	ug/L	3000	2600	5100	5600	4300	3000	3000	2800	<5	9100	4600

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–: Not Sampled

TABLE D-9
MONITORED NATURAL ATTENUATION PARAMETERS
EIGHT QUARTER SAMPLES - EBT-8
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area / Units	PMW85-01 L08120243-20 12/8/2008 TTA-2	PMW85-04 L08120243-21 12/8/2008 TTA-2	PMW85-05 L08120243-22 12/8/2008 TTA-2	PMW92-01 L08120376-20 12/11/2008 TTA-2	PMW92-02 L08120376-21 12/11/2008 TTA-2	PMW92-03 L08120376-23 12/11/2008 TTA-2	PMW92-04 L08120343-18 12/10/2008 TTA-2	PMW92-05 L08120343-19 12/10/2008 TTA-2	PMW92-06 L08120243-19 12/8/2008 TTA-2
Total Organic Carbon	9060MOD	mg/L	217	378	1380	12200	60	3.09	3.79	459	71.3
Acetic Acid	830-MBA	mg/L	84.2	717	274	1590	25.7	11	<1	45.4	73.2
Butyric Acid	830-MBA	mg/L	7.87	20.6	258	3020	<1	<1	<1	18.3	10.2
Lactic Acid	830-MBA	mg/L	<1	<1	2160	23000	8.53	4.6	<1	1240	<1
Propionic Acid	830-MBA	mg/L	145	81.1	686	4020	92.8	<10	<10	23.9	54.6
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	0.31	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	76000	150000 J	110000	660000	<500000	120000 J	<500000	<500000	<500000
Ethane	RSK175\5021	ug/L	<5	<250	<25	<50	<250	<100	<250	<250	<250
Ethene	RSK175\5021	ug/L	<5	<250	<25	<50	<250	<100	<250	<250	<250
Methane	RSK175\5021	ug/L	21	11000	450	2000	11000	6900	4800	1000	5200

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data
–: Not Sampled

TABLE D-10
MONITORED NATURAL ATTENUATION PARAMETERS
NINTH QUARTER SAMPLES - EBT-9
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area	Units	IW21-01A L09030379-07 3/16/2009 TTA-1 21	IW21-01B L09030418-07 3/17/2009 TTA-1 21	IW21-02A L09030379-01 3/16/2009 TTA-1 21	IW21-02A DUP L09030379-06 3/16/2009 TTA-1 21	IW21-02B L09030379-02 3/16/2009 TTA-1 21	IW21-03A L09030379-03 3/16/2009 TTA-1 21	IW21-03B L09030379-04 3/16/2009 TTA-1 21	IW21-04A L09030418-01 3/17/2009 TTA-1 21	IW21-04B L09030418-04 3/17/2009 TTA-1 21	IW21-05A L09030418-08 3/17/2009 TTA-1 21	IW21-05B L09030418-09 3/17/2009 TTA-1 21
Total Organic Carbon	9060MOD		mg/L	3070	4860	1400	1490	4670	567	3930	3550	718	1330	4850
Acetic Acid	830-MBA		mg/L	1180	1470	823	880	1700	280	1980	1280	240	427	1650
Butyric Acid	830-MBA		mg/L	750	1970	369	394	781	125	384	899	207	319	787
Lactic Acid	830-MBA		mg/L	889	24.5	1.39	1.74	3210	7.36	172	<10	0.76 J	898	84
Propionic Acid	830-MBA		mg/L	3970	4150	1380	1460	4100	761	5290	4290	814	1280	4370
Pyruvic Acid	830-MBA		mg/L	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<1
Carbon Dioxide	RSK175\5021		ug/L	440000 J	870000 J	490000 J	610000 J	480000 J	330000 J	380000 J	480000 J	290000 J	400000 J	340000 J
Ethane	RSK175\5021		ug/L	<130	<130	<130	<130	<130	<50	<130	<130	<130	<130	<130
Ethene	RSK175\5021		ug/L	<130	<130	<130	<130	<130	<50	<130	<130	<130	<130	<130
Methane	RSK175\5021		ug/L	2100	2400	1200	1400	2100	4300	4300	6800	6800	3400	6700

<: Not detected above Reporting Limit (RL)
J: Estimated result based on QC data or reported below RL
B: Estimated result possibly biased high or false positive based on blank data
–: Not Sampled

TABLE D-10
MONITORED NATURAL ATTENUATION PARAMETERS
NINTH QUARTER SAMPLES - EBT-9
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID	MW-21	MW-115	PMW21-01	PMW21-02	PMW21-02 DUP	PMW21-03	PMW21-04	PMW21-05	IW101-01A	IW101-01A DUP	IW101-01B
		Lab ID	L09030334-01	L09030323-15	L09030323-10	L09030323-11	L09030323-09	L09030323-12	L09030323-13	L09030323-14	L09030224-14	L09030224-13	L09030224-15
		Date	3/13/2009	3/12/2009	3/12/2009	3/12/2009	3/12/2009	3/12/2009	3/12/2009	3/12/2009	3/9/2009	3/9/2009	3/9/2009
		Area	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 21	TTA-1 101	TTA-1 101	TTA-1 101
		Units											
Total Organic Carbon	9060MOD	mg/L	1.55	36.4	1320	1540	1420	34.8	1180	2.49	2080	1920	3200
Acetic Acid	830-MBA	mg/L	6.36	25.9	363	800	777	39.9	445	12	939	860	1430
Butyric Acid	830-MBA	mg/L	<1	<1	153	477	485	<1	653	<1	239	223	191
Lactic Acid	830-MBA	mg/L	<1	<1	1580	700	704	<1	5.11	<1	<1	<1	1740
Propionic Acid	830-MBA	mg/L	<10	52.1	719	1220	1180	35.6	1120	<10	3150	2890	3020
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	100000 J	<500000	320000 J	510000 J	410000 J	<500000	260000 J	83000 J	610000 J	610000 J	580000 J
Ethane	RSK175\5021	ug/L	<5	<250	<50	<250	<250	<250	<100	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<250	<50	<250	<250	<250	<100	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	<5	9100	1000	4300	3500	11000	3700	<5	14000	13000	18000

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–. Not Sampled

TABLE D-10
MONITORED NATURAL ATTENUATION PARAMETERS
NINTH QUARTER SAMPLES - EBT-9
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area / Units	MW101-01C L09030224-16 3/9/2009 TTA-1 101	MW101-02A L09030224-05 3/9/2009 TTA-1 101	MW101-02B L09030265-06 3/10/2009 TTA-1 101	MW101-02C L09030265-07 3/10/2009 TTA-1 101	MW101-03A L09030265-08 3/10/2009 TTA-1 101	MW101-03A DUP L09030265-05 3/10/2009 TTA-1 101	MW101-03B L09030265-09 3/10/2009 TTA-1 101	MW101-03C L09030265-10 3/10/2009 TTA-1 101	MW101-04A L09030323-01 3/12/2009 TTA-1 101	MW101-04B L09030323-02 3/12/2009 TTA-1 101	MW101-04C L09030323-03 3/12/2009 TTA-1 101
Total Organic Carbon	9060MOD	mg/L	3900	280	73	2200	1540	1600	1850	4900	7380	42100	6440
Acetic Acid	830-MBA	mg/L	1310	148	58	1000	926	927	900	2260	841	2370	2120
Butyric Acid	830-MBA	mg/L	759	21.5	3.12	281	71.1	86.5	143	666	1800	241	1080
Lactic Acid	830-MBA	mg/L	876	<1	<1	<10	<1	<1	<10	840	7770	1150	3470
Propionic Acid	830-MBA	mg/L	3950	397	92.3	2680	2290	2260	2250	6240	4820	4460	6360
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	520000 J	270000 J	69000 J	330000 J	220000 J	440000 J	460000 J	830000 J	520000 J	460000 J	510000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<250	<250	<250
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<250	<250	<250
Methane	RSK175\5021	ug/L	4700	15000	3900	7300	3700	10000	6700	4600	5100	11000	3700

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TABLE D-10
MONITORED NATURAL ATTENUATION PARAMETERS
NINTH QUARTER SAMPLES - EBT-9
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

		Sample ID	IW101-05A	IW101-05B	IW101-05B DUP	IW101-05C	IW101-06A	IW101-06B	IW101-06C	IW101-07A	IW101-07B	IW101-07C	IW101-08A
		Lab ID	L09030323-06	L09030334-05	L09030334-04	L09030334-06	L09030334-07	L09030334-08	L09030334-09	L09030297-10	L09030297-11	L09030297-12	L09030379-08
		Date	3/12/2009	3/13/2009	3/13/2009	3/13/2009	3/13/2009	3/13/2009	3/13/2009	3/11/2009	3/11/2009	3/11/2009	3/16/2009
		Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Method	Units											
Total Organic Carbon	9060MOD	mg/L	9470	1030	1040	2300	3030	2270	3680	997	8530	4690	477
Acetic Acid	830-MBA	mg/L	256	561	1150	1080	1250	1000	1100	748	2080	1940	292
Butyric Acid	830-MBA	mg/L	1500	97.5	90.3	432	205	353	805	32.6	882	495	24.4
Lactic Acid	830-MBA	mg/L	9350	98	80	47.2	1430	208	138	<1	13400	376	<10
Propionic Acid	830-MBA	mg/L	2500	1460	3190	2870	3070	2850	3600	1980	5280	5270	649
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1
Carbon Dioxide	RSK175\5021	ug/L	390000 J	330000 J	350000 J	540000 J	500000 J	450000 J	360000 J	210000 J	690000 J	680000 J	350000 J
Ethane	RSK175\5021	ug/L	<250	<50	<50	<130	<130	<130	<130	<5	<5	<5	<25
Ethene	RSK175\5021	ug/L	<250	<50	<50	<130	<130	<130	<130	<5	<5	<5	<25
Methane	RSK175\5021	ug/L	4400	4500	5000	5000	7200	4000	4800	5600	5600	4400	2700

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–: Not Sampled

TABLE D-10
MONITORED NATURAL ATTENUATION PARAMETERS
NINTH QUARTER SAMPLES - EBT-9
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area / Units	IW101-08B L09030379-11 3/16/2009 TTA-1 101	IW101-08C L09030379-12 3/16/2009 TTA-1 101	IW101-09A L09030297-13 3/11/2009 TTA-1 101	IW101-09B L09030323-07 3/12/2009 TTA-1 101	IW101-09C L09030323-08 3/12/2009 TTA-1 101	DR1-3 L09030323-16 3/12/2009 TTA-1 101	MW-101B L09030297-15 3/11/2009 TTA-1 101	MW-101T L09030297-14 3/11/2009 TTA-1 101	PMW101-01A L09030224-06 3/9/2009 TTA-1 101	PMW101-01B L09030265-12 3/10/2009 TTA-1 101	PMW101-02A L09030224-07 3/9/2009 TTA-1 101
Total Organic Carbon	9060MOD	mg/L	1400	5290	194	5120	6910	5.35	4.88	4.47	476	71.8	59.6
Acetic Acid	830-MBA	mg/L	761	1000	130	1920	1260	11.2	<1	<1	273	2	75.1
Butyric Acid	830-MBA	mg/L	331	2060	7.69	1500	2360	<1	<1	<1	<1	1.12	<1
Lactic Acid	830-MBA	mg/L	<1	1030	<1	12	814	<1	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	1880	4650	243	4960	4920	<10	<10	<10	657	46.1	36.8
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	360000 J	310000 J	100000 J	600000 J	570000 J	<500000	160000 J	170000 J	180000 J	130000 J	180000 J
Ethane	RSK175\5021	ug/L	<130	<130	<5	<250	<250	<250	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<130	<130	<5	<250	<250	<250	<5	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	13000	8800	6800	5800	3200	6900	10000	5900	23000	8900	16000

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TABLE D-10
MONITORED NATURAL ATTENUATION PARAMETERS
NINTH QUARTER SAMPLES - EBT-9
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

		Sample ID	PMW101-02B	PMW101-03A	PMW101-03B	PMW101-03B DUP	PMW101-04A	PMW101-04B	PMW101-05A	PMW101-05B	PMW101-05B DUP	PMW101-06A	PMW101-06B
		Lab ID	L09030224-10	L09030224-11	L09030224-12	L09030224-04	L09030265-13	L09030265-14	L09030265-15	L09030265-16	L09030265-11	L09030265-17	L09030297-02
		Date	3/9/2009	3/9/2009	3/9/2009	3/9/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/10/2009	3/11/2009
		Area	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101	TTA-1 101
Analyte	Method	Units											
Total Organic Carbon	9060MOD	mg/L	3.23	4.73	5.25	3.3	5.33	7.94	3.12	8.53	9.28	4.07	6.12
Acetic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	0.976 J	<1	<1	<1
Butyric Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lactic Acid	830-MBA	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Propionic Acid	830-MBA	mg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	120000 J	68000 J	150000 J	100000 J	82000 J	120000 J	130000 J	140000 J	120000 J	64000 J	100000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methane	RSK175\5021	ug/L	6100	12000	15000	11000	4000	11000	11000	11000	5700	3900	9600

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TABLE D-10
MONITORED NATURAL ATTENUATION PARAMETERS
NINTH QUARTER SAMPLES - EBT-9
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID Lab ID Date Area Units	PMW101-07A L09030297-03 3/11/2009 TTA-1 101 mg/L	PMW101-07B L09030297-04 3/11/2009 TTA-1 101 mg/L	PMW101-08A L09030297-07 3/11/2009 TTA-1 101 mg/L	PMW101-08A DUP L09030297-01 3/11/2009 TTA-1 101 mg/L	PMW101-08B L09030297-08 3/11/2009 TTA-1 101 mg/L	IW85-01 L09030334-11 3/13/2009 TTA-2 mg/L	IW85-02 L09030334-12 3/13/2009 TTA-2 mg/L	IW85-05 L09030334-02 3/13/2009 TTA-2 mg/L	IW85-06 L09030334-03 3/13/2009 TTA-2 mg/L	IW92-01 L09030297-18 3/11/2009 TTA-2 mg/L	IW92-01 DUP L09030297-16 3/11/2009 TTA-2 mg/L
Total Organic Carbon	9060MOD	mg/L	5.17	3.04 B	356	333	4290	23800	17900	20200	8300	4310	4150
Acetic Acid	830-MBA	mg/L	<1	<1	271	208	824	2410	3810	1880	3680	1570	2130
Butyric Acid	830-MBA	mg/L	<1	<1	98.4	98.2	635	1750	1220	1110	476	1070	1360
Lactic Acid	830-MBA	mg/L	<1	<1	0.95 J	0.774 J	7920	35100	33400	36500	98.5	931	987
Propionic Acid	830-MBA	mg/L	<10	<10	360	295	2150	8730	12100	6570	10100	4230	5550
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	100000 J	100000 J	140000 J	250000 J	300000 J	700000 J	850000 J	680000 J	390000 J	700000 J	800000 J
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<130	<130	<130	<130	<5	<5
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	1.4 J	<130	<130	<130	<130	<5	<5
Methane	RSK175\5021	ug/L	4100	7600	4000	6900	7900	2000	5000	2000	4200	2700	4100

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–: Not Sampled

TABLE D-10
MONITORED NATURAL ATTENUATION PARAMETERS
NINTH QUARTER SAMPLES - EBT-9
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

		Sample ID	IW92-02	IW92-03	IW92-04	IW92-05	IW92-06	IW92-07	IW92-08	DR2-1	DR2-5	IW-01	MW-85
		Lab ID	L09030297-19	L09030265-02	L09030297-20	L09030265-03	L09030224-02	L09030224-03	L09030323-18	L09030323-20	L09030334-15	L09030379-17	L09030418-13
		Date	3/11/2009	3/10/2009	3/11/2009	3/10/2009	3/9/2009	3/9/2009	3/12/2009	3/12/2009	3/13/2009	3/16/2009	3/17/2009
		Area	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2	TTA-2
Analyte	Method	Units											
Total Organic Carbon	9060MOD	mg/L	934	26300	21400	34100	28600	30100	9340	2.54	2.22	8640	9.06
Acetic Acid	830-MBA	mg/L	571	882	2190	2370	1750	2220	3450	6.71	13.8	1970	6.87
Butyric Acid	830-MBA	mg/L	134	519	4050	1000	1540	1470	1760	<1	<1	1780	<1
Lactic Acid	830-MBA	mg/L	6.74	49300	54800	76200	48500	35900	3110	<1	<1	2600	<1
Propionic Acid	830-MBA	mg/L	1650	2090	8550	6680	4810	6430	9800	<10	<10	6280	<10
Pyruvic Acid	830-MBA	mg/L	<0.1	<1	<0.1	<10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	490000 J	190000 J	570000 J	170000 J	400000 J	680000 J	490000 J	<500000	84000 J	740000 J	<250000
Ethane	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<250	<250	<5	<130	<130
Ethene	RSK175\5021	ug/L	<5	<5	<5	<5	<5	<5	<250	<250	<5	<130	<130
Methane	RSK175\5021	ug/L	2900	410	2000	770	2600	3500	1700	3900	12	8300	2800

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–: Not Sampled

TABLE D-10
MONITORED NATURAL ATTENUATION PARAMETERS
NINTH QUARTER SAMPLES - EBT-9
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

Analyte	Method	Sample ID / Lab ID / Date / Area / Units	PMW85-01 L09030334-14 3/13/2009 TTA-2	PMW85-04 L09030418-05 3/17/2009 TTA-2	PMW85-05 L09030418-06 3/17/2009 TTA-2	PMW92-01 L09030379-14 3/16/2009 TTA-2	PMW92-02 L09030379-15 3/16/2009 TTA-2	PMW92-03 L09030379-16 3/16/2009 TTA-2	PMW92-04 L09030418-11 3/17/2009 TTA-2	PMW92-05 L09030418-12 3/17/2009 TTA-2	PMW92-06 L09030323-19 3/12/2009 TTA-2
Total Organic Carbon	9060MOD	mg/L	27.6	348	785	39500	101	5.49	4.07	1070	9.77
Acetic Acid	830-MBA	mg/L	37.7	417	276	2280	21.2	<1	2.63	461	25
Butyric Acid	830-MBA	mg/L	<1	<1	171	1920	<1	<1	<1	519	<1
Lactic Acid	830-MBA	mg/L	1.77	<1	516	59900	<1	<1	<1	16.4	<1
Propionic Acid	830-MBA	mg/L	33.7	274	670	5770	134	<10	<10	1130	5.58 J
Pyruvic Acid	830-MBA	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carbon Dioxide	RSK175\5021	ug/L	93000 J	160000 J	520000 J	850000 J	150000 J	63000 J	<250000	520000 J	<500000
Ethane	RSK175\5021	ug/L	<5	<130	<130	<130	<130	<130	<130	<130	<250
Ethene	RSK175\5021	ug/L	<5	<130	<130	<130	<130	<130	<130	<130	<250
Methane	RSK175\5021	ug/L	69	6900	3200	2800	9800	3800	4200	5000	4900

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–: Not Sampled

APPENDIX E

DATA QUALITY EVALUATION

DATA QUALITY EVALUATION

Monitoring for enhanced bioremediation treatment (EBT) at the Main Installation during Year Two included groundwater sampling of injection and monitoring wells during five events. Groundwater samples were submitted to Microbac Laboratories, Inc. (Microbac), formerly Kemron Environmental Services, Inc. in Marietta, Ohio for analysis. The sampling and laboratory analyses were performed in accordance with past practice and the *Remedial Action Sampling and Analysis Plan* (RA SAP) (MACTEC, 2005).

The data quality evaluation (DQE) process involves assessment of all field and laboratory procedures, including independent data validation completed by Diane Short and Associates, Inc (DSA) in accordance with the RA SAP. The data validation forms are included in this appendix. This assessment is designed to evaluate problems with the quality assurance (QA)/quality control (QC) associated with the laboratory data and potential impact to the data quality objectives (DQOs). The DQE findings are summarized in the following sections.

FIELD ACTIVITIES AND FIELD QUALITY CONTROL

The field effort included the collection of groundwater samples from injection and performance monitoring wells. The well locations in the three treatment areas (TTA-1 MW21, TTA-1 MW101, and TTA-2) are provided in Figures 3 and 4 of this report. Field QC samples were collected at selected wells to evaluate sampling technique and decontamination procedures. These samples included field duplicates, trip blanks, and field equipment (rinsate) blanks. Additional samples were collected at selected locations for matrix spike/matrix spike duplicate (MS/MSD) analyses in the laboratory. Documentation of the sampling was performed in the field to ensure that the sample collected, labeling, chain-of-custody, and request for analysis were in agreement. Sample bottles met EPA requirements for environmentally clean containers. Sample labels were pre-printed and chain-of-custody forms were created by scanning the labels electronically (using a personal data assistant or PDA) to facilitate sample tracking from the field through the laboratory to the final laboratory report. Custody seals were placed on each cooler before shipment by common carrier.

ANALYTICAL METHODS

The groundwater samples were analyzed for VOCs by method 8260B, dissolved gases (ethane, ethane, methane, and carbon dioxide) by method RSK-175, selected metals (arsenic, manganese, and selenium) by method 6010B, anions (bromide, chloride, nitrate, nitrate, and sulfate) by method 300.0, total organic

carbon (TOC) by method 9060B, alkalinity by method 310.1, sulfide by method 376.1, and MFAs by method 850 MBA (Kemron, Inc) and dissolved hydrogen by method AM20GAX (Microseeps Corporation).

LABORATORY QUALITY CONTROL

The laboratory QC program, including sample handling, laboratory control, and reporting, is documented in the RA SAP. Sample handling includes documentation of sample receipt, placement in storage, laboratory personnel using the sample, and disposal. The laboratory control consists of instrument calibration and maintenance, laboratory control samples (LCS), method blanks and matrix spikes. Reporting of the laboratory control data was planned prior to the collection of the data, allowing the laboratory to place the appropriate information into the data package so that the DQE could be completed in a timely manner.

DQE SUMMARY

DQE was completed on the data reported for the EBT-5, EBT-6, EBT-7, EBT-8, and EBT-9 sampling events at the Main Installation. The objective was to review the chemical data reports submitted by the laboratory and to assess the data in relation to the DQOs stated in the RA SAP. The DQE consisted of review of laboratory QC data and field QC parameters, and flagging of the data as usable, usable with qualification, or unusable following the DQE standard operating procedures (SOPs) using the criteria stated in the RA SAP for each analytical method performed. The following information was reviewed:

- Sample Integrity (Deliverables)
- Sample Completeness
- Sample Holding Times
- Laboratory Methods for Extraction and Analysis (Calibration, Internal Standards)
- Method Accuracy and Precision (Surrogates, Matrix Spike/Matrix Spike Duplicate, LCS Recoveries)
- Laboratory Performance Criteria (Blanks, Instrument Performance Check)

Field QC parameters were evaluated through field duplicates, field blanks, field documentation, and shipping criteria. The DQE was summarized by use of flags that indicate to the reviewer that the data being considered has been qualified using the established criteria. Sample delivery group (SDG)

narratives detailing the evaluation of the laboratory data by DSA are included as attachments to this appendix. The SDGs and associated groundwater samples are listed on Table E-1.

The following sections provide summary discussions of the required data qualifications for each sampling event. A Level III DQE was performed and the data quality indicators (DQIs), expressed in terms of precision, accuracy, representativeness, comparability, completeness, and sensitivity, were assessed. This included the evaluation of sample integrity, holding times, trip blanks, field blanks, method blanks, internal standards, surrogate recoveries, matrix spike/matrix spike duplicate (MS/MSD) recoveries, LCSs, and field duplicate precision. The results of the DQI assessment are provided below.

Precision

Field duplicates were collected to assess sampling precision. They consisted of replicate grab samples collected concurrently with the associated field samples. Precision is best expressed in terms of relative percent difference (RPD). The precision goals were determined to be acceptable. Complete discussion of the duplicates is provided in the attached DQE narratives.

Accuracy

Accuracy was measured through the analyses of LCSs and MS/MSDs. Sample specific accuracy is measured through surrogate recovery. Accuracy is expressed as percent recovery (%R). Complete discussion of the LCS and MS/MSD recoveries is provided in the attached DQE narratives.

Recoveries for LCSs in associated groundwater samples indicated estimated ("J" flagged) data qualification for certain geochemical and VOC results. In instances where the LCS recovery was high and there were no positive results in any of the associated samples, no qualifications were necessary. Where qualifications were necessary for low LCS recoveries, the analytes qualified do not significantly impact the use of the data. MS/MSD recoveries resulted in qualification for various analytes including VOCs, MFA, and inorganics data in project samples as discussed in the sections below for each sampling event.

Representativeness

Representativeness refers to the degree sample data accurately and precisely describes the population of samples at a sampling point or under certain environmental conditions. Samples that are not properly preserved or are analyzed beyond holding times may not be considered representative. Review of sampling procedures, laboratory preparation, analysis holding times, trip blank and field blank analysis help in providing this assessment.

Sampling procedures followed the work plan and were considered representative of the matrices collected. Laboratory preparation and analysis followed method guidelines. Therefore, representativeness goals were met. Complete discussion is provided in the sections below and the attached DQE narratives.

Comparability

The selection of standardized methods and consistent laboratory practices facilitates the comparison of data between EBT events. Previous event data have been determined to be comparable to later event data.

Completeness

Completeness is determined for both field and analytical objectives. Field completeness is calculated from the number of samples proposed verses the actual number of samples collected. Analytical completeness is expressed in terms of usable data. The project completeness goal stated in the DDMT RA SAP for DDMT is 90%. Data from the five EBT events exceeded 99% completeness and therefore met this DQI.

Sensitivity

Analytical sensitivity is the concentration at which the measurement system can quantitate target analytes in the environmental matrices of concern. Analytical sensitivity is expressed in terms of the reporting limit (RL), which is provided by the respective laboratories as their reasonable and defensible quantitation limit for environmental samples above the method detection limit (MDL), which is established by each laboratory using pure water or clean matrix. The RL varies among laboratories dependent upon their SOPs and expertise. The analytical method RLs and MDLs were compared to groundwater protection or screening standards as provided in RA SAP and were determined to meet the overall project objectives. Dilutions were necessary in some cases to achieve the proper quantification of high-level targets, which raises the RLs for all other targets in the run. In such cases, both results are provided in hard copy except for the analytes that are above the upper range in the initial run. These are only shown for the re-analysis. Any elevated RLs due to dilution or other QC issues are discussed below or in the attached narratives.

The following sections discuss only those deficiencies encountered during the evaluation that resulted in qualified and/or unusable data.

EBT-5 Sampling Event – December 2007

During the December 2007 EBT-5 sampling event, 117 groundwater samples including 88 field samples and 29 QA/QC samples (duplicates, MS/MSD, trip blanks, rinsate blanks) were collected from 87 injection and performance monitoring wells. Samples were collected from two screened intervals in MW101. Samples were analyzed for VOCs and geochemical parameters. Any result reported below the reporting limit (RL) but above the method detection limit (MDL) was flagged "J" and considered an estimated result (unless overridden by other QC flags).

The December 2007 data are usable with the following qualifications:

Geochemical

- Carbon dioxide had a number of closing calibrations which did not meet the 30% D criterion specified for RSK-175; the associated samples were flagged as estimated J. When the closing calibration has drifted, it indicates that at least some of the sample results prior to the CCV may be biased, and for this reason the results are qualified as J.
- There is one LCS run for carbon dioxide in SDG L0712562 which is out of limits. There are five associated carbon dioxide results (PMW21-02, PMW21-03, PMW21-04, MW 21, and MW115), and are qualified estimated J to indicate a potential low bias roughly proportional to the LCS outlier.
- All eleven samples for nitrate in SDG L0712375 were qualified estimated J based upon exceedance of the % relative standard deviation (%RSD) outside of criteria. Only one sample had a detection above the RL.
- Three total alkalinity results for three samples (IW21-02A, PMW101-06B, IW101-09A) , chloride results for four samples (IW21-02A, PMW101-06B, IW101-09A, PMW101-01A) and nitrite results for one sample (PMW101-01A) could be biased low based on low matrix spike/matrix spike duplicate analyte recoveries and were qualified estimated J.

VOCs

- Analytes were observed in some method blanks. Whenever methylene chloride or acetone is detected in associated samples at a level less than 10x the method blank (corrected for dilution), the result is qualified as UB. Such results are usable as nondetects. The "B"- qualified data were reported at levels below the reporting limit and, therefore, should not adversely impact data quality. Several analytes were detected in the rinsate blanks above reporting limits. When

analytes are present in both the field blank and the associated samples, the results in the samples are qualified in the same manner as for method blanks. Since these analytes are not significant contaminants of concern at the site, data quality should not be adversely impacted.

- The cis-1,3-dichloropene result in sample PMW101 (SDG L0712444) was qualified as estimated J based on MS/MSD performance.

EBT-6 Sampling Event – March 2008

During the March 2008 EBT-6 sampling event, 115 groundwater samples including 88 field samples and 27 QA/QC samples (duplicates, MS/MSD, trip blanks, rinsate blanks) were collected from 87 injection and performance monitoring wells. Samples were collected from two screened intervals in MW101. Samples were analyzed for VOCs and geochemical parameters. Any result reported below the reporting limit (RL) but above the method detection limit (MDL) was flagged "J" and considered an estimated result (unless overridden by other QC flags).

The March 2008 data are usable with the following qualifications:

Geochemical

- Carbon dioxide had a number of closing calibrations which did not meet the 30% D criterion specified for RSK-175; the associated samples were flagged as estimated J. When the closing calibration has drifted, it indicates that at least some of the sample results prior to the CCV may be biased, and for this reason the results are qualified as J.
- One sample for lactic acid, IW101-04B (SDG L08030240) was qualified as estimated J based on a low LCS recovery.
- Samples from three SDGs for TOC (L08030387,-420, and -333) and one for nitrate and sulfate (L08030240) were qualified estimated J based on the possibility of some bias associated with calibration drift, where a discrepancy in % D is observed.
- Three samples for alkalinity, chloride, and TOC were qualified estimated J based on MS/MSD recoveries (IW101-04B, IW21-05B, IW101-08C)
- Samples from primarily four SDGs (L08030387, -333,-298, and -269) were qualified as estimate J for nitrate and nitrite with respect to exceedances for holding time. This has happened where the holding time was 48 hours. These qualifications are not expected to significantly impact the data usability.

VOCs

- Methylene chloride and 1,4-dichlorobenzene were detected in the rinsate blanks slightly above reporting limits. When analytes are present in both the field blank and the associated samples, the results in the samples are qualified in the same manner as for method blanks. Since these analytes are not significant contaminants of concern at the site, data quality should not be adversely impacted.

EBT-7 Sampling Event –June 2008

During the June 2008 EBT-7 sampling event, 117 groundwater samples including 88 field samples and 29 QA/QC samples (duplicates, MS/MSD, trip blanks, rinsate blanks) were collected from 87 injection and performance monitoring wells. Samples were collected from two screened intervals in MW101. Samples were analyzed for VOCs and geochemical parameters. Any result reported below the reporting limit (RL) but above the method detection limit (MDL) was flagged "J" and considered an estimated result (unless overridden by other QC flags).

The June 2008 data are usable with the following qualifications:

Geochemical

- A number of reanalyses for carbon dioxide and methane (SDG L08060383, -413, -454, and 543) were outside of the 14-day holding time for this analysis. These were documented in the Case Narratives and in the laboratory holding time reports. Based on the high concentrations, it is not anticipated that the low bias will have a significant impact on data usability with respect to holding time.
- The calibration of carbon dioxide is problematic and the number of %D results were extremely high, some greater than 90% with a low bias. This is a significant bias so, the undetected carbon dioxide data for 9 samples were qualified rejected R (PMW92-02, PMW85-05, IW21-04B, IW21-02B, IW21-03A, PMW85-04, IW21-04A, IW21-03B, and IW85-01). Detected data were qualified estimated J.
- One sample, PMW85-04 (SDG L08060543), was qualified J based on a low LCS recovery.
- Samples from three SDGs (L08060250, -348, and -495) for TOC and bromide were qualified estimated J based on the possibility of some bias associated with calibration drift, where a discrepancy in % D is observed.

- Several samples for alkalinity, chloride, sulfate, and selenium were qualified estimated J based on MS/MSD recoveries.

VOCs

- IW92-07-EBT-7 in SDG L08060413 had two surrogates recovered high in the initial analysis, which is within hold. The reanalysis conducted had surrogates in control but was 16 days from the sample date. Results for the reanalysis are qualified as J, indicating that the sample was run 2 days after the holding time had expired. Since these samples are acid-preserved and were at pH<2, little degradation would be expected.
- Results for carbon disulfide in four samples (IW85-02, IW85-05, IW21-01A, and IW21-05A) all in SDG L08060 495 were qualified estimated J based on the possibility of some bias associated with calibration drift, where a discrepancy in % D is observed.
- Sample IW-101-09A (SDG L08060383) had a 49.6% recovery of internal standard 1,4-dichlorobenzene-d4, Associated compounds with this internal standard are qualified as estimated J, indicating the possibility of some small bias due to the internal standard repression.
- Three compounds were qualified estimated J for MEK, chloroform, and MTBE in 3 SDGs (L08060413. -454, and -495) based on elevated LCS recoveries. Seven samples were qualified for MEK (IW101-04A, IW101-04B, IW101-04C, IW92-06, PMW92-06, MW-85, and IW-01); five samples were qualified for chloroform (IW92-08, IW85-02, IW85-05, IW85-06, and IW21-02A) and five samples were qualified for MTBE (PMW21-01, PMW21-03, PMW21-04, MW-115, and MW-21), respectively.
- Results for analytes in parent samples IW92-07 (SDG L08060413) and IW101-03B and PMW101-06B (SDG L08060348) were qualified estimated J based on low MS/MSD recoveries.

EBT-8 Sampling Event – December 2008

During the December 2008 EBT-8 sampling event, 116 groundwater samples including 88 field samples and 28 QA/QC samples (duplicates, MS/MSD, trip blanks, rinsate blanks) were collected from 87 injection and performance monitoring wells. Samples were collected from two screened intervals in MW101. Samples were analyzed for VOCs and geochemical parameters. Any result reported below the reporting limit (RL) but above the method detection limit (MDL) was flagged "J" and considered an estimated result (unless overridden by other QC flags).

The December 2008 data are usable with the following qualifications:

Geochemical

- Carbon dioxide analyses, which is typically problematic, had samples with detections in all seven SDGs (L09030224, -265, -297, -323, -334, -379, and -418) for which a number of opening and closing calibrations do not meet the 25% QAPP criterion specified for RSK-175. In such cases, detected levels of carbon dioxide are qualified as estimated J. Such results may be biased due to calibration drift. As the detected levels are high it is not anticipated that this will significantly impact the use of the data.
- One parent sample for pyruvic acid, IW101-04C (SDG L09030323) was qualified as rejected R based on poor MS/MSD recovery.

VOCs

- Methylene chloride and bromomethane were observed in some method blanks. Whenever methylene chloride or acetone is detected in associated samples at a level less than 10x the method blank (corrected for dilution), the result is qualified as UB. Such results are usable as nondetects. Acetone and MEK were detected in the field blanks above reporting limits. When analytes are present in both the field blank and the associated samples, the results in the samples are qualified in the same manner as for method blanks. Since these analytes are not significant contaminants of concern at the site, data quality should not be adversely impacted.
- A re-analysis for MEK was conducted on sample DR2-1 and was 4 days out of hold. The result is qualified as J for this sample for potential low bias.
- Results for 1,2-dichloroethane in six samples (PMW101-05B, PMW92-05, IW-01, IW21-03A, IW92-08 and DR2-5) in 3 SDGs were qualified estimated J based on the possibility of some bias associated with calibration drift, where a discrepancy in % D is observed.
- For outliers, with respect to continuing calibration, detected targets were qualified estimated J and where %D is > 40, non-detects were qualified rejected R. 1,2-dichloroethane in one sample IW101-03C), acetone in six samples (MW-101T , MW-101B , PMW101-04B, PMW101-05A, PMW101-07A, and IW92-02), dichlorofluoromethane in three samples (IW101-04B, IW21-01B, andIW21-02A), and bromomethane in six samples (IW21-02B, IW21-03B, IW21-04A, IW21-04B, IW21-05B, and IW92-01) were qualified J. Only vinyl acetate had %D values > 40%. Associated non-detect data were qualified rejected R in 34 samples.
- Results for bromomethane in two samples (PMW101-01B and IW101-07C), cis-DCE and MEK in one sample (PMW101-01B), bromomethane, chloromethane, dichlorofluoromethane, and

trichlorofluoromethane in one sample (IW101-07C) and carbon disulfide in one sample (IW21-03B) were qualified estimated J based on MS/MSD recoveries.

- When a high LCS % recovery is associated with a non-detect in samples, no qualifier is added since the indicated bias is high. When the target is detected, the result is qualified as estimated J since data could be biased high proportional to the LCS %R. All results associated with low recoveries are qualified as estimated J. Although several analytes were qualified in the samples, the only significant contaminants of concern qualified were carbon tetrachloride and chloroform. Carbon tetrachloride was qualified in four samples (PMW85-01, PMW85-04, PMW85-05 and DR2-5) and chloroform in six samples (PMW85-01, PMW85-04, PMW85-05, MW-21, PMW101-08B, and PMW92-01) based on LCS recoveries.

EBT-9 Sampling Event – March 2009

During the March 2009 EBT-9 sampling event, 116 groundwater samples including 88 field samples and 28 QA/QC samples (duplicates, MS/MSD, trip blanks, rinsate blanks) were collected from 87 injection and performance monitoring wells. Samples were collected from two screened intervals in MW101. Samples were analyzed for VOCs and geochemical parameters. Any result reported below the reporting limit (RL) but above the method detection limit (MDL) was flagged "J" and considered an estimated result (unless overridden by other QC flags).

The March 2009 data are usable with the following qualifications:

Geochemical

- Carbon dioxide analyses, which is typically problematic, had samples with detections in 5 SDGs (L08120243, -376, -394, 478, and -512) for which a number of opening and closing calibrations do not meet the 25% QAPP criterion specified for RSK-175. In such cases, detected levels of carbon dioxide are qualified as estimated J. Such results may be biased due to calibration drift. As the detected levels are high it is not anticipated that this will significantly impact the use of the data.

VOCs

- Contamination was observed in some method blanks. Whenever methylene chloride, acetone, 2-butanone or phthalate esters are detected in associated samples at a level less than 10x the method blank (corrected for dilution), the result is qualified as UB, Such results are usable as nondetects. For other targets, the factor used is 5x. Several analytes were reported in field blanks. When analytes are present in both the field blank and the associated samples, the results in the samples are

qualified in the same manner as for method blanks. Since these analytes are not significant contaminants of concern at the site, data quality should not be adversely impacted.

- When a high LCS recovery is associated with a non-detect in samples, no qualifier is added since the indicated bias is high. Two samples for MEK (IW92-03, IW101-02B) in SDG L09030265 were qualified as estimated J based on elevated LCS recovery. Chloromethane and dichlorofluoromethane were qualified J in nine samples from SDG L09030323, acetone and 2,2 dichloropropane were qualified J in seven samples in SDG L09030418, carbon disulfide was estimated J in six samples in SDGs L09030265 and -297 and vinyl acetate was qualified J in nine samples in SDGs, L09030334, -379-, and -418 based on low LCS recoveries which indicates the potential for a low bias. Since these analytes are not chemicals of concern at the site, this does not impact the use of the data.
- Results for cis-DCE in one sample, IW101-08A (SDG 9030379) and for vinyl acetate in a second sample, IW21-04A (SDG 9030418) were qualified estimated J based on MS/MSD recoveries.

SUMMARY

The sample data collected from December 2007 through March 2009 from the injection and performance monitoring wells in the TTA-1 and TTA-2 areas have met the data quality objectives and are therefore determined to be valid and sufficient to support decisions regarding effectiveness of the EBT system performance.

TABLE E-1
SDG SUMMARY TABLE
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

SDG	Groundwater Samples			Quality Control Samples
EBT-5 Sampling Event - December 2007				
L0712280	IW101-05A-EBT-5	IW101-01B-EBT-5	PMW85-01-EBT-5	DUP3-EBT-5
	IW101-05B-EBT-5	IW101-01C-EBT-5	MW-85-EBT-5	DUP4-EBT-5
	IW101-05C-EBT-5	IW101-02A-EBT-5	DR2-1-EBT-5	DUP5-EBT-5
	IW101-01A-EBT-5	IW101-02B-EBT-5	DR2-5-EBT-5	DUP8-EBT-5
				TB-121007-EBT-5
L0712314	IW101-02C-EBT-5	PMW92-06-EBT-5	IW101-06A-EBT-5	RB1-EBT-5
	IW101-03A-EBT-5	PMW85-04-EBT-5	IW101-06B-EBT-5	IW101-03B-EBT-5/MS
	IW101-03B-EBT-5	PMW85-05-EBT-5	IW101-06C-EBT-5	IW101-03B-EBT-5/MSD
	MW-101T-EBT-5	IW-01-EBT-5	IW101-07A-EBT-5	TB-121107-EBT-5
	MW-101B-EBT-5			
L0712375	IW101-03C-EBT-5	IW101-07B-EBT-5	PMW92-03-EBT-5	TB-121207-EBT-5
	IW101-04A-EBT-5	IW101-07C-EBT-5	PMW92-04-EBT-5	
	IW101-04B-EBT-5	IW101-08B-EBT-5	PMW92-05-EBT-5	
	IW101-04C-EBT-5	PMW92-02-EBT-5		
L0712430	IW101-02B			
L0712431	PMW101-01A-EBT-5	IW92-01-EBT-5	IW101-09A-EBT-5	DUP7-EBT-5
	PMW101-01B-EBT-5	PMW92-01-EBT-5	IW101-09B-EBT-5	DUP9-EBT-5
	PMW101-03A-EBT-5	DR1-3-EBT-5	IW101-08C-EBT-5	PMW101-01A-EBT-5/MS
	PMW101-03B-EBT-5	IW101-08A-EBT-5		PMW101-01A-EBT-5/MSD
				IW101-09A-EBT-5/MS
				IW101-09A-EBT-5/MSD
				TB-121307-EBT-5
L0712444	PMW101-02A-EBT-5	PMW101-06B-EBT-5	IW101-09C-EBT-5	DUP6-EBT-5
	PMW101-02B-EBT-5	IW21-04A-EBT-5	IW92-02-EBT-5	PMW101-06B-EBT/MS
	PMW101-04A-EBT-5	IW21-05A-EBT-5	IW92-03-EBT-5	PMW101-06B-EBT/MSD
	PMW101-04B-EBT-5	IW21-05B-EBT-5		TB-121407-EBT-5
L0712497	IW92-06-EBT-5	IW21-02B-EBT-5	PMW101-06A-EBT-5	DUP1-EBT-5
	IW92-07-EBT-5	IW21-03A-EBT-5	PMW101-07A-EBT-5	IW21-02A-EBT-5/MS
	IW21-01A-EBT-5	IW21-03B-EBT-5	PMW101-08A-EBT-5	IW21-02A-EBT-5/MSD
	IW21-01B-EBT-5	IW21-04B-EBT-5	PMW101-08B-EBT-5	TB-121707-EBT-5
	IW21-02A-EBT-5			
L0712500	IW21-05-EBT-5			
L0712562	PMW21-05-EBT-5	IW92-05-EBT-5	PMW21-02-EBT-5	DUP2-EBT-5
	IW85-02-EBT-5	IW92-08-EBT-5	PMW21-03-EBT-5	TB-121807-EBT-5
	PMW101-05A-EBT-5	IW85-01-EBT-5	PMW21-04-EBT-5	
	PMW101-05B-EBT-5	PMW21-01-EBT-5	MW-21-EBT-5	
	PMW101-07B-EBT-5	MW-115-EBT-5		
L0712601	IW92-04-EBT-5	IW85-06-EBT-5	IW85-05-EBT-5	RB2-EBT-5
				TB-121907-EBT-5

TABLE E-1
SDG SUMMARY TABLE
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

SDG	Groundwater Samples			Quality Control Samples
EBT-6 Sampling Event - March 2008				
L08030185	PMW92-01-EBT-6	PMW101-01B-EBT-6	IW101-01C-EBT-6	DUP9-EBT-6
	PMW92-02-EBT-6	PMW101-02B-EBT-6	IW101-02A-EBT-6	TB-031008-EBT-6
	DR2-1-EBT-6	IW101-01A-EBT-6	PMW101-02A-EBT-6	
	PMW101-01A-EBT-6	IW101-01B-EBT-6		
L08030220	PMW92-03-EBT-6	IW101-03B-EBT-6	IW101-07B-EBT-6	DUP4-EBT-6
	PMW92-04-EBT-6	IW101-03C-EBT-6	PMW101-03A-EBT-6	DUP7-EBT-6
	PMW92-05-EBT-6	IW101-07A-EBT-6	PMW101-03B-EBT-6	TB-031108-EBT-6
	PMW92-06-EBT-6	IW101-02C-EBT-6	PMW101-04A-EBT-6	
	IW101-02B-EBT-6	IW101-03A-EBT-6	PMW101-04B-EBT-6	
L08030240	PMW101-05A-EBT-6	IW101-04B-EBT-6	PMW85-04-EBT-6	DUP3-EBT-6
	PMW101-05B-EBT-6	IW101-07C-EBT-6	PMW85-05-EBT-6	DUP5-EBT-6
	PMW101-06A-EBT-6	IW101-09A-EBT-6	MW-85-EBT-6	IW101-04B-EBT-6-MS
	PMW101-06B-EBT-6	IW101-09B-EBT-6	DR2-5-EBT-6	IW101-04B-EBT-6-MSD
	IW101-04A-EBT-6	IW101-09C-EBT-6		TB-031208-EBT-6
L08030269	IW101-04C-EBT-6	IW92-01-EBT-6	PMW101-07B-EBT-6	DUP8-EBT-6
	IW101-05A-EBT-6	PMW85-01-EBT-6	PMW101-08A-EBT-6	PMW101-08B-EBT-6-MS
	IW101-05B-EBT-6	IW-01-EBT-6	PMW101-08B-EBT-6	PMW101-08B-EBT-6-MSD
	IW101-05C-EBT-6	PMW101-07A-EBT-6		TB-031308-EBT-6
L08030298	IW92-02-EBT-6	IW101-08A-EBT-6	PMW21-01-EBT-6	DUP2-EBT-6
	IW92-03-EBT-6	IW101-08B-EBT-6	PMW21-05-EBT-6	IW101-08C-EBT-6-MS
	IW101-06A-EBT-6	IW101-08C-EBT-6	MW-21-EBT-6	IW101-08C-EBT-6-MSD
	IW101-06B-EBT-6	MW-101T-EBT-6	DR1-3-EBT-6	TB-031408-EBT-6
	IW101-06C-EBT-6	MW-101B-EBT-6		
L08030333	PMW21-02-EBT-6	IW21-01A-EBT-6	IW21-03A-EBT-6	RB1-EBT-6
	PMW21-03-EBT-6	IW21-01B-EBT-6	IW21-03B-EBT-6	RB2-EBT-6
	PMW21-04-EBT-6	IW21-02A-EBT-6	IW92-04-EBT-6	TB-031708-EBT-6
	MW-115-EBT-6	IW21-02B-EBT-6	IW92-05-EBT-6	
L08030387	IW85-01-EBT-6	IW92-05-EBT-6	IW21-04B-EBT-6	DUP1-EBT-6
	IW85-02-EBT-6	IW92-07-EBT-6	IW21-05A-EBT-6	DUP6-EBT-6
	IW92-04-EBT-6	IW21-04A-EBT-6	IW21-05B-EBT-6	IW21-05B-EBT-6-MS
				IW21-05B-EBT-6-MSD
				TB-031808-EBT-6
L08030420	IW92-06-EBT-6	IW85-06-EBT-6	IW92-08-EBT-6	TB-031908-EBT-6
	IW85-05-EBT-6			

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SDG SUMMARY TABLE
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SDG	Groundwater Samples			Quality Control Samples
EBT-7 Sampling Event - June 2008				
L08060250	PMW101-01A-EBT-7 PMW101-01B-EBT-7 PMW101-02B-EBT-7 IW101-01A-EBT-7	IW101-01B-EBT-7 DR2-1-EBT-7 IW92-01-EBT-7	PMW92-01-EBT-7 IW101-02A-EBT-7 IW101-01C-EBT-7	DUP4-EBT-7 PMW101-01A-EBT-7/MS PMW101-01A-EBT-7/MSD TB060908EBT-7
L08060283	PMW101-03A-EBT PMW101-03B-EBT PMW101-04B-EBT IW101-02C-EBT-7	IW101-03A-EBT-7 MW-101T-EBT-7 MW-101B-EBT-7 IW92-03-EBT-7	PMW92-02-EBT-7 PMW101-02A-EBT-7 IW101-02B-EBT-7 IW92-02-EBT-7	DUP-7 RB1-EBT-7 TB-061008-EBT-7
L08060348	IW101-02B-EBT-7 IW101-03B-EBT-7 IW101-03C-EBT-7 IW101-07A-EBT-7 IW101-07B-EBT-7	PMW101-05A-EBT-7 PMW101-05B-EBT-7 PMW101-06B-EBT-7 PMW101-02A	IW92-04-EBT-7 IW92-05-EBT-7 PMW101-04A-EBT-7 PMW92-03-EBT-7	DUP5-EBT-7 DUP8-EBT-7 IW101-03B-EBT-7-MS IW101-03B-EBT-7-MSD PMW101-06B-EBT-7-MS PMW101-06B-EBT-7-MSD TB-061108-EBT-7
L08060383	PMW101-06A-EBT PMW101-07A-EBT PMW101-07B-EBT PMW101-08A-EBT	IW101-07C-EBT-7 IW101-09A-EBT-7 IW101-09B-EBT-7	IW101-09C-EBT-7 PMW92-04-EBT-7 PMW92-05-EBT-7	DUP9-EBT-7 IW101-09A-EBT-7-MS IW101-09A-EBT-7-MSD TB-061208-EBT-7
L08060413	IW101-04A-EBT-7 IW101-04B-EBT-7 IW101-04C-EBT-7 IW101-05A-EBT-7	PMW21-03-EBT-7 PMW21-04-EBT-7 MW-115-EBT-7 PMW101-08B-EBT-7	DR1-3-EBT-7 IW92-06-EBT-7 IW92-07-EBT-7	TB-061308-EBT-7
L08060454	PMW92-06-EBT-7 MW-85-EBT-7 IW-01-EBT-7 PMW21-01-EBT-7 PMW21-02-EBT-7	PMW21-05-EBT-7 MW-21-EBT-7 IW101-05B-EBT-7 IW101-05C-EBT-7	IW101-06A-EBT-7 IW101-06B-EBT-7 IW101-06C-EBT-7 IW101-08A-EBT-7	DUP-3 TB-061608-EBT-7
L08060495	IW92-08-EBT-7 IW85-02-EBT-7 IW85-05-EBT-7 IW85-06-EBT-7	IW21-01A-EBT-7 IW21-01B-EBT-7 IW21-02A-EBT-7 IW21-05A-EBT-7	IW101-08B-EBT-7 IW101-08C-EBT-7 IW101-05B-EBT-7	DUP-1 DUP-2 DUP6-EBT-7 RB2-EBT-7 IW21-02A-EBT-7-MS IW21-02A-EBT-7-MSD TB-061708-EBT-7
L0706201	IW21-02B-EBT-7 PMW85-04-EBT-7 PMW85-05-EBT-7 IW85-01-EBT-7	PMW85-01-EBT-7 DR2-5-EBT-7 IW21-03A-EBT-7	IW21-03B-EBT-7 IW21-04A-EBT-7 IW21-04B-EBT-7	TB061808-EBT-7

TABLE E-1
SDG SUMMARY TABLE
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

SDG	Groundwater Samples			Quality Control Samples
EBT-8 Sampling Event - December 2008				
L08120243	IW101-01A	PMW101-01A	PMW101-04A	DUP4
	IW101-01B	PMW101-01B	PMW92-06	DUP7
	IW101-01C	PMW101-02A	PMW85-01	PMW101-01B-MS
	IW101-02A	PMW101-02B	PMW85-04	PMW101-01B-MSD
	IW101-02B	PMW101-03A	PMW85-05	TB-121909
	IW101-02C	PMW101-03B		
L08120343	IW101-03A	PMW101-04B	PMW101-07A	DUP8
	IW101-03B	PMW101-05A	PMW101-07B	PMW101-07A-MS
	IW101-03C	PMW101-05B	PMW92-04	PMW101-07A-MSD
	IW101-07A	PMW101-06A	PMW92-05	TB-121008
	MW-101T	PMW101-06B	IW-01	
	MW-101B			
L08120376	IW101-07B	IW101-09C	PMW101-08B	DUP 2
	IW101-07C	PMW21-01	DR1-3	DUP 6
	IW101-08A	PMW21-05	PMW92-01	DUP 9
	IW101-09A	MW-21	PMW92-02	RB 1
	IW101-09B	PMW101-08A	PMW92-03	IW101-07C-MS
				IW101-07C-MSD
				TB-121108
L08120394	IW101-05A	IW101-08B	MW-115	DUP 3
	IW101-05B	IW101-08C	IW85-02	DUP 5
	IW101-06A	PMW21-02	IW85-06	TB-121208
	IW101-06B	PMW21-03	DR2-1	
	IW101-06C	PMW21-04		
L08120452	IW92-03	IW101-04B	IW21-01A	DUP1
	IW85-01	IW101-04C	IW21-01B	RB2
	IW85-05	IW101-05C	IW21-02A	IW101-04B-MS
	IW101-04A			IW101-04B-MSD
				TB-121308
L08120478	IW21-02B	IW21-04A	IW21-05B	IW21-03B-MS
	IW21-03A	IW21-04B	IW92-01	IW21-03B-MSD
	IW21-03B	IW21-05A	IW92-02	TB-121608
L08120512	IW92-07	IW92-05	MW-85	TB-121708
	IW92-08	IW92-06	IW92-04	
	DR2-5			

TABLE E-1
SDG SUMMARY TABLE
YEAR TWO REMEDIAL ACTION OPERATIONS REPORT
Main Installation - Defense Depot Memphis, Tennessee

SDG	Groundwater Samples			Quality Control Samples
EBT-9 Sampling Event - March 2009				
L09030224	IW92-06-EBT-9	IW101-01B-EBT-9	PMW101-02B-EBT	DUP3-EBT-9
	IW92-07-EBT-9	IW101-01C-EBT-9	PMW101-03A-EBT	DUP7-EBT-9
	IW101-02A-EBT-9	PMW101-01A-EBT	PMW101-03B-EBT	PMW101-02A-EBT - MS
	IW101-01A-EBT-9	PMW101-02A-EBT		PMW101-02A-EBT - MSD
				TB-030909
L09030265	IW92-03-EBT-9	IW101-03A-EBT-9	PMW101-04B -EBT-9	DUP4-EBT-9
	IW92-05-EBT-9	IW101-03B-EBT-9	PMW101-05A -EBT-9	DUP8-EBT-9
	IW92-06-EBT-9	IW101-03C-EBT-9	PMW101-05B -EBT-9	TB-031009
	IW101-02B-EBT-9	PMW101-01B -EBT-9	PMW101-06A -EBT-9	
	IW101-02C-EBT-9	PMW101-04A -EBT-9		
L09030297	IW92-01-EBT-9	IW101-07C-EBT-9	PMW101-07A-EBT-9	DUP6-EBT-9
	IW92-02-EBT-9	IW101-09A-EBT-9	PMW101-07B-EBT-9	DUP9-EBT-9
	IW92-04-EBT-9	MW101T-EBT-9	PMW101-08A-EBT-9	PMW101-07B-EBT-9-MS
	IW101-07A-EBT-9	MW101B-EBT-9	PMW101-08B-EBT-9	PMW101-07B-EBT-9-MSD
	IW101-07B-EBT-9	PMW101-06B-EBT-9		RB1-EBT-9
				TB-031109
L09030323	IW92-08-EBT-9	IW101-09C-EBT-9	PMW21-04-EBT-9	DUP2-EBT-9
	IW101-04A-EBT-9	PMW92-06-EBT-9	PMW21-05-EBT-9	IW101-04C-EBT-9-MS
	IW101-04B-EBT-9	PMW21-01-EBT-9	MW-115--EBT-9	IW101-04C-EBT-9-MSD
	IW101-04C-EBT-9	PMW21-02-EBT-9	DR1-3-EBT-9	TB-031209
	IW101-05A-EBT-9	PMW21-03-EBT-9	DR2-1-EBT-9	
	IW101-09B-EBT-9			
L09030334	IW85-01-EBT-9	IW101-06A-EBT-9	IW85-06-EBT-9	DUP5-EBT-9
	IW85-02-EBT-9	IW101-06B-EBT-9	MW-21-EBT-9	TB-031309
	IW101-05B-EBT-9	IW101-06C-EBT-9	PMW85-01-EBT-9	
	IW101-05C-EBT-9	IW85-05-EBT-9	DR2-5-EBT-9	
L09030379	IW21-01A-EBT-9	IW101-08A-EBT-9	PMW92-02-EBT-9	DUP1-EBT-9
	IW21-02A-EBT-9	IW101-08B-EBT-9	PMW92-03-EBT-9	IW101-08A-EBT-9-MS
	IW21-02B-EBT-9	IW101-08C-EBT-9	IW-01-EBT-9	IW101-08A-EBT-9-MSD
	IW21-03A-EBT-9	PMW92-01-EBT-9		RB2-EBT-9
	IW21-03B-EBT-9			TB-031609
L09030418	IW21-01B-EBT-9	IW21-05A-EBT-9	PMW85-05-EBT-9	IW21-04A-EBT-9-MS
	IW21-04A-EBT-9	IW21-05B-EBT-9	PMW92-04-EBT-9	IW21-04A-EBT-9-MSD
	IW21-04B-EBT-9	PMW85-04-EBT-9	PMW92-05-EBT-9	TB-031709
	MW-85-EBT-9			

ORGANIC DATA QUALITY REVIEW REPORT
VOLATILE ORGANICS SW-846 METHOD 8260B/5030B

8260B/5030B
SDG: L071: 2562, 2497, 2610, 2280, 2444, 2314, 2375, 2431

PROJECT: Memphis Defense Depot, EBT-5 for e2m, Texas

LABORATORY: Kemron Environmental Services, Marietta, OH

SAMPLE MATRIX: Water

SAMPLING DATE (Month/Year): December 2007

NO. OF SAMPLES: 8260B/5030B (Waters) – 106 samples including (8 Trip Blanks and 2 Rinse Blanks)

ANALYSES REQUESTED: SW-846 8260B

SAMPLE NO.: See attached result forms

DATA REVIEWER: Sammy Huntington and John Huntington (Gateway Enterprises)

QA REVIEWER: Diane Short and Associates Inc. INITIALS/DATE: _____

Telephone Logs included Yes____ No _X__

Contractual Violations Yes____ No _X___

The EPA Contract Laboratory Program National Functional Guidelines for Organic Review (NFG), 2001/ 2007, and the SW-846 Method 8260B has been referenced by the reviewer to perform this data validation review. The EPA qualifiers have been expanded to include a descriptor code and value to define QC violations and their values, per the approval of the Project Manager. Per the Scope of Work, the review of these samples includes Level III validation of all chains of custody, calibrations and QC forms referencing the QC limits in the above documents.

I. DELIVERABLES

A. All deliverables were present as specified in the Statement of Work (SOW), SW-846, or in the project contract.

Yes __X_ No _____

This report has been requested to include the following review: Holding times and sample integrity (chains of custody, sample log in), Calibrations, Summary QC

B. Chain of Custody Documentation was complete and accurate.

Yes __X____ No ___

The chain of custody issues has been discussed in detail in previous reports, and those general comments apply. All chain of custody documents in this set were properly signed and dated.

C. Samples were received at the required temperature, preservation and intact with no bubbles.

Yes _____ No __ X __

Most of the SDGs had at least one cooler that was under 2°C but the Sample Checklist states that the samples weren't frozen. No qualifiers are required under these circumstances.

In addition, new EPA regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be less than 6° C. Thus the sample receipt conditions are fully compliant with applicable regulations.

L0712375: Sample Receipt Form states that they received (3) IW101-04A VOA on 12/12/07 11:03 with handwritten labels. This is different from practice but does not require validation action unless there are errors.

L0712497: Sample Receipt Form states that the trip blank had a bubble bigger than a pea. This could bias the results for this trip blank low.

L0712562: Sample Receipt Form states that the trip blank had a pea size headspace.

As there is more than 1 vial for VOA samples, it is assumed that a vial with no, or minimum headspace was used. No qualifiers have been applied.

II. ANALYTICAL REPORT FORMS

A. The Analytical Report or Data Sheets are present and complete for all requested analyses.

Yes _X_ No ____

B. Holding Times

1. The contract holding times were met for all analyses (Time of sample receipt to time of analysis (VOA) or extraction and from extraction to analysis).

Yes __X___ No_____

2. The Clean Water Act (40 CFR 136) or method holding times were met for all analyses (14 days from time of sample collection to analysis or extraction).

Yes _X__ No____

III. INSTRUMENT CALIBRATION – GC/MS

A. Initial Calibration

1. The Response (RF) and Relative Response Factors (RRF) and average RRF for all compounds for all analyses met the contract criteria of >0.01.

Yes __X__ No ____ NA____

Per the project manager, the 2001/ 2007 EPA CLP validation guidance has been applied to the common "poor responders". Acetone, 2-butanone, and 4-methyl-2-pentanone are the compounds for which any calibration response factors below 0.05 have been observed. The validation guidance used for this project allows for a response of 0.01 for these compounds if spectral integrity can be verified at low concentrations. These spectra

are not commonly provided and are not part of the deliverable for these data sets. The laboratory has been tasked with providing to the client verification that the 0.01 RF is valid. Given the spectral verification is available, the data are not qualified for response >0.01 < 0.05. No data have been qualified.

The low-responding compounds are highly water-soluble and capable of hydrogen bonding with water. This decreases their purge efficiency and results in the relatively low response. The implication of this low purge efficiency is that a relatively low absolute recovery of such compounds is achieved in the purge step of the analysis. If this recovery is consistent, reasonable accuracy and precision can be achieved in a given matrix, which is indicated for the lab matrix by acceptable recoveries in LCS and calibration checks. However, this causes these targets to be more sensitive to matrix variations that impact purge efficiency (such as ionic strength or the presence of varying levels of soluble non-target organic material) than are the more hydrophobic compounds typically analyzed by this method, and as a result they are more likely to exhibit matrix bias. The likelihood of matrix bias for these compounds in this site matrix is assessed in the MS/MSD section of this report.

2a.The relative standard deviation (RSD) for the five point calibration was within the 30% limit for the CCCs.
Yes _X__ No____ NA____
This is a method requirement and indicates that the analytical system is in control.

2b.The relative standard deviation (RSD) for the five point calibration was within the 30% limit for all other compounds or a linear curve was used. Note the 2007 CLP guidance allows for 40% for the low responders.
Yes __X___ No ____ NA____

3. The 12 hour system Performance Check was performed as required in SW-846.
Yes __X__ No_____ NA____

B. Continuing Calibrations
1. The midpoint standard was analyzed for each analysis at the required frequency and the QC criteria of > 0.05 (.01 for CLP 2001) were met.
Yes __X___ No ____ NA____
The CCVs were analyzed at the proper frequency. The same compounds showed low responses in the continuing calibration as were observed in the initial calibrations. Qualifiers are not added for these outliers since none were below the lower limit of 0.01. No data have been qualified from the response factors and RRFs are not noted since they are essentially the same as the ICAL. This consistency of response for the poor-responding compounds is an indication that there is no significant bias for the laboratory water matrix.

2. The percent difference (%D) limits of ± 25% were met (40% for poor responders, for closing CCV: 50% poor responders per 2007 NFG)
Yes _____ No __X__ NA___
See the table below. When there are no detections, unless the %D is biased low and so large as to indicate a significant probability of false negatives, no qualifiers are added for %D outliers when targets are not detected.

SDG	CCV Date	Batch #	Analyte	%D outliers	Qualifiers Added
L0712431	12/20/07 16:28	WG259136	Vinyl Acetate	49.6	None, ND
	12/21/07 8:48	WG259163	Vinyl Acetate	36.6	None, ND
	12/20/07 17:59	WG259149	All in control		None
L0712280	12/17/07 10:14	WG258681	All in control		None
	12/17/07 6:41	WG258681	All in control		None
	12/18/07 9:45	WG258681	Vinyl Acetate	26.0	None, ND
L0712375	12/20/07 7:58	WG259050	All in control		None
	12/19/07 8:06	WG258929	Vinyl Acetate	81.2	None, ND
	12/19/07 19:25	WG259028	Vinyl Acetate	83.6	None, ND

SDG	CCV Date	Batch #	Analyte	%D outliers	Qualifiers Added
L0712314	12/18/07 9:45	WG258838	Vinyl Acetate	26.0	None, ND
	12/18/07 10:08	WG258838	Vinyl Acetate	77.1	None, ND
	12/19/07 8:06	WG258929	Vinyl Acetate	81.2	None, ND
L0712444	12/20/07 16:28	WG259136	Vinyl Acetate	49.6	None, ND
	12/21/07 8:48	WG259163	Vinyl Acetate	36.6	None, ND
L0712601	12/27/07 13:12	WG259507	All in control		None
L0712497	12/21/07 18:54	WG259270	Bromomethane	36.0	None, ND
			Vinyl Acetate	44.9	None, ND
	12/26/07 10:02	WG259330	Naphthalene	33.8	None, ND
			Vinyl Acetate	32.7	None, ND

IV. GC/MS INSTRUMENT PERFORMANCE CHECK

The BFB (VOA) performance check was injected once at the beginning of each 12-hour period and relative abundance criteria for the ions were met.

Yes __X___ No ____ NA____

V. INTERNAL STANDARDS

The Internal Standards met the 100% upper and -50% lower limits criteria and the Retention times were within the required windows.

Yes __X___ No ____ NA____

VI. SURROGATE

Surrogate spikes were analyzed with every sample.

Yes __X__ No ____

And met the recovery limits defined in the current contract, which are the current laboratory limits.

Yes __X___ No ____

VII. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

A. Matrix spike (MS) and matrix spike duplicates (MSD) were analyzed for every analysis performed and for every 20 samples or for every matrix whichever is more frequent.

Yes ___X__ No _____

There are 5 MS/MSDs which meets the 1:20 ratio.

Method	SDG	Client Sample ID	Lab Sample ID
8260B\5030B	L0712314	IW101-03B-EBT-5	L0712314-04
	L0712431	IW101-09A-EBT-5	L0712431-14
		PMW101-01A-EBT	L0712431-02
	L0712444	PMW101-06B-EBT	L0712444-06
	L0712497	IW21-02A-EBT-5	L0712497-05

B. The MS and MSD percent recoveries were within the limits defined in the contract, which are the current laboratory control chart limits.

Yes _____ No __X___NA___

The full target list has been spiked. Most MS/MSD recoveries and RPDs are in control. Instances where spike recoveries are out of limits are shown in the table below. In several instances, the sample amount is 4x the spike level or greater. In such cases, the recovery cannot realistically be calculated, because the anticipated normal analytical variability is on the order of the spike level. Thus no qualifiers are added. If recoveries are elevated and the parent sample has no detection of the target, no qualifiers are added. Data are qualified JS#, where # is the spike recovery. Data could be biased high or low proportional to the spike recovery.

SDG	Client Sample ID	Lab Sample ID	Analyte	MS/MSD/RPD	Qualifiers
L0712497	IW21-02A-EBT-5	5	Tetrachloroethene	OK/-10.3/OK	None, parent>4x spike
L0712314	IW101-03B-EBT-5	4	Tetrachloroethene	44/29.7/OK	None, parent>4x spike
L0712444	PMW101-06B-EBT	6	cis-1,3-Dichloropropene	69/68/OK	JS68 parent
L0712431	PMW101-01A-EBT	2	2-Butanone	228/218/OK	None, parent>4x spike

C. The MSD relative percent differences (RPD) were within the defined contract limits.
Yes __X__ No ____NA____

D. The MS/MSD were client samples.
Yes __X_ No ____NA____

VIII. LABORATORY CONTROL SAMPLE

A. Laboratory Control Samples (LCS) was analyzed for every analysis performed and for every 20 samples.
Yes _X___ No ____

B. The LCS percent recoveries were within the limits defined in the contract (the MS limits are used as a reference or laboratory-specific limits for this matrix are defined).
Yes _____ No __X____
The full target list has been spiked. There are a few elevated recoveries observed as shown in the table within the body of this report. When a high recovery is associated with a non-detect in samples, no qualifier is added since the indicated bias is high. When the target is detected, the result is qualified as JL#, where # is the elevated recovery. No targets have required qualification for LCS outliers.

SDG	Batch	Targets Detected	LCS/LCSD/RPD	Qualifiers
L0712497	WG259345	Bromodichloromethane	128	None, ND
L0712280	WG258681	Bromodichloromethane	126	None, ND
L0712314	WG258823	Bromodichloromethane	126	None, ND

IX. BLANKS

A. Method Blanks were analyzed at the required frequency and for each matrix and analysis.
Yes _X___ No____

B. No blank contamination was found in the Method Blank.
Yes____ No _X___
Contamination was observed in some method blanks indicated in the table, below the reporting limit. Whenever methylene chloride or acetone is detected in associated samples at a level less than 10x the method blank (corrected for dilution), the result is qualified as UB#, where # is the corrected method blank level. Such results are usable as nondetects. Qualifiers added are summarized in the table below. For other targets, the factor used is 5x.

SDG	Batch	Targets Detected	Results	Qualifiers
L0712562	WG259441	1,2,3-Trichlorobenzene	.407F	None, ND
		1,2,4-Trichlorobenzene	.345F	None, ND
		1,2-Dichlorobenzene	.189F	None, ND
		1,4-Dichlorobenzene	.164F	None, ND
		Hexachlorobutadiene	.293F	None, ND
		Naphthalene	.396F	None, ND
L0712497	WG259345	1,2,3-Trichlorobenzene	.151F	None, ND
L0712601	WG259507	1,2,3-Trichlorobenzene	.380F	None, ND
		1,2,4-Trichlorobenzene	.218F	None, ND

SDG	Batch	Targets Detected	Results	Qualifiers
		Hexachlorobutadiene	.335F	None, ND
		Methylene Chloride	.261F	UB.26 detection
		Naphthalene	.356F	UB.36 detection
L0712280	WG258823	1,2,3-Trichlorobenzene	.160F	None, ND
L0712375	WG259028	Hexachlorobutadiene	.605*	None, ND
		1,2,3-Trichlorobenzene	.394F	None, ND
		1,2,4-Trichlorobenzene	.267F	None, ND
L0712431	WG259149	Methylene Chloride	.513*	None, ND
L0712314	WG258823	1,2,3-Trichlorobenzene	.160F	None, ND

C. If Field Blanks were identified, no blank contamination was found.
Yes____ No __X__
There are 8 trip blanks and 2 rinse blanks. There are detections observed below the reporting limit as shown in the table. Some of these are qualified UB (see table above) due to detections in the associated method blank, thus are not used for qualifying associated samples. When analytes are present in both the field blank and the associated samples, the results in the samples are qualified in the same manner as for method blanks. For clarity, the qualifiers used in this case are UTB# for trip blanks and UFB# for rinse blanks.

Method	SDG	Sample ID	Sample Date	Analyte	Result	Qualifier
8260B	L0712280	TB-121007-EBT-5	12/10/2007 12:01 AM	Methylene chloride	0.344F	None, ND
	L0712314	RB1-EBT-5	12/11/2007 08:51 AM	1,4-Dichlorobenzene	1.89	UFB1.9 detect
				Acetone	12.8	UFB13 detects
				Benzene	0.404	None, ND
				m-,p-Xylene	0.749F	None, ND
				MEK (2-Butanone)	7.48F	UFB7.5 detects
				Naphthalene	0.324F	None, ND
				o-Xylene	0.301F	None, ND
				Toluene	16.4	UFB16 detect
	L0712314	TB-121107-EBT-5	12/11/2007 12:01 AM		All OK	None
	L0712375	TB-121207-EBT-5	12/12/2007 07:05 AM		All OK	None
	L0712431	TB-121307-EBT-5	12/13/2007 06:36 AM		All OK	None
	L0712444	TB-121407-EBT-5	12/14/2007 06:15 AM		All OK	None
	L0712497	TB-121707-EBT-5	12/17/2007 06:11 AM		All OK	None
	L0712562	TB-121807-EBT-5	12/18/2007 06:27 AM		All OK	None
	L0712601	RB2-EBT-5	12/19/2007 09:18 AM	1,4-Dichlorobenzene	1.34	UFB1.3 detects
				Acetone	12.4	UFB12.4 detects
				Benzene	0.296F	None, ND
				Chloromethane	0.481F	UFB.48 detects
				MEK (2-Butanone)	7.63F	UFB7.6 results < 10x FB
				Naphthalene	0.228F	None, ND
				Toluene	3.83	UFB3.8
		TB-121907-EBT-5	12/19/2007 06:50 AM		All OK	None

X. FIELD QC
If Field duplicates were identified, they met guidance RPD of < 35% for water or < 50% for soils. For values reported at < 5 x the reporting limit (RL), a difference of 2 x RL is used as guidance (4 x RL for soils). Data are not qualified for field duplicates as these are evaluated for the total project by the client.
Yes __X____ No ___ NA____
There are 9 identified field duplicates. Observations are summarized in the table. All are in control.

SDG	Parent Sample ID	Field Dup	Observations
L0712280	IW101-01A -EBT-5	DUP3	In control
L0712280	IW101-02B -EBT-5	DUP4	In control
L0712280	IW101-05C -EBT-5	DUP5	In control

SDG	Parent Sample ID	Field Dup	Observations
L0712280	MW-85-EBT-5	DUP8	In control
L0712431	IW101-08A -EBT-5	DUP9	In control
L0712431	PMW101-03B -EBT-5	DUP7	In control
L0712444	PMW101-02A -EBT-5	DUP6	In control
L0712497	IW21-01A -EBT-5	DUP1	In control
L0712562	PMW21-03-EBT-5	DUP2	In control

XI. SYSTEM PERFORMANCE

A. The RICs, chromatograms, tunes and general system performance were acceptable for all instruments and analytical systems.

Yes ____ No____ NA__X__

Not part of this review level

B. The suggested EQLs for the sample matrices in this set were met.

Yes __X__ No____ NA____

Dilutions were necessary in some cases to achieve the proper quantification of high-level targets, which raises the EQLs for all other targets in the run. In such cases, the both results are provided in hardcopy except for the analytes that are above the upper range in the initial run. These are only shown for the reanalysis.

In the EDD, only the initial run is provided for most analytes, and only the reanalysis is provided for the analytes which are above the upper linear range in the first run.

XII. TCL COMPOUNDS

A. The identification is accurate and all retention times, library spectra and reconstructed ion chromatograms (RIC) were evaluated for all detected compounds.

Yes ____ No____ NA __X__

Not part of this review level

B. Quantitation was checked to determine the accuracy of calculations for representative compounds in each internal standards quantitation set.

Yes ____ No____ NA__X__

Not part of this review level

XIII. TENTATIVELY IDENTIFIED COMPOUNDS

TICs were properly identified and met the library identification criteria.

Yes____ No____ NA__X___

Not part of this review level

XIV. OVERALL ASSESSMENT OF THE CASE

The laboratory has complied with the requested method. Data are fully usable after consideration of qualifiers.

The following is noted:

Sample Condition:

Most of the SDGs had at least one cooler that was under 2°C but the Sample Checklist states that the samples weren't frozen. No qualifiers are required under these circumstances.

In addition, new EPA regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be less than 6° C. Thus the sample receipt conditions are fully compliant with applicable regulations.

L0712375: Sample Receipt Form states that they received (3) IW101-04A VOA on 12/12/07 11:03 with handwritten labels. This is different from practice but does not require validation action unless there are errors.

L0712497: Sample Receipt Form states that the trip blank had a bubble bigger than a pea. This could bias the results for this trip blank low.
L0712562: Sample Receipt Form states that the trip blank had a pea size headspace.
As there is more than 1 vial for VOA samples, it is assumed that a vial with no, or minimum headspace was used. No qualifiers have been applied.

LCS Recoveries:
The full target list has been spiked. There are a few elevated recoveries observed as shown in the table within the body of this report. When a high recovery is associated with a non-detect in samples, no qualifier is added since the indicated bias is high. When the target is detected, the result is qualified as JL#, where # is the elevated recovery. No targets have required qualification for LCS outliers.

Matrix Spikes:
There are 5 MS/MSDs which meets the 1:20 ratio.
The full target list has been spiked. Most MS/MSD recoveries and RPDs are in control. Instances where spike recoveries are out of limits are shown in the table below. In several instances, the sample amount is 4x the spike level or greater. In such cases, the recovery cannot realistically be calculated, because the anticipated normal analytical variability is on the order of the spike level. Thus no qualifiers are added. If recoveries are elevated and the parent sample has no detection of the target, no qualifiers are added.
Data are qualified JS#, where # is the spike recovery. Data could be biased high or low proportional to the spike recovery.

Method Blanks:
Contamination was observed in some method blanks indicated in the table within the report, below the reporting limit. Whenever methylene chloride or acetone is detected in associated samples at a level less than 10x the method blank (corrected for dilution), the result is qualified as UB#, where # is the corrected method blank level. Such results are usable as nondetects. Qualifiers added are summarized in the table within this report body. For other targets, the factor used is 5x.

Field Blanks:
There are 8 trip blanks and 2 rinse blanks. There are detections observed below the reporting limit as shown in the table within this report body. Some of these are qualified UB (see table above) due to detections in the associated method blank, thus are not used for qualifying associated samples. When analytes are present in both the field blank and the associated samples, the results in the samples are qualified in the same manner as for method blanks. For clarity, the qualifiers used in this case are UTB# for trip blanks and UFB# for rinse blanks.

EQLs:
Dilutions were necessary in some cases to achieve the proper quantification of high-level targets, which raises the EQLs for all other targets in the run. In such cases, the both results are provided in hardcopy except for the analytes that are above the upper range in the initial run. These are only shown for the reanalysis.

In the EDD, only the initial run is provided for most analytes, and only the reanalysis is provided for the analytes which are above the upper linear range in the first run.

Field QC:
There are 9 identified field duplicates. Observations are summarized in the table within the report body. All are in control.

ORGANIC DATA QUALITY REVIEW REPORT
GC REPORT FOR Metabolic Acids by HPLC; Ethane, Methane, Ethene, Carbon dioxide by EPA SOP RSK-175; and Hydrogen by AM20GAX (GC/RGD).

RSK-175:
SDG: L071: 2562, 2497, 2610, 2280, 2444, 2314, 2375, 2431

Metabolic acids:
SDG: L071: 2562, 2497, 2610, 2280, 2444, 2314, 2375, 2431

AM20GAX (Hydrogen):
SDG: P071: 2380, 2312, 2311

PROJECT: Memphis Defense Depot, EBT-5 for e2m, Texas

LABORATORY: Kemron Environmental Services, Marietta, OH; Hydrogen subcontracted to Microseeps, Inc, Pittsburg, PA

SAMPLE MATRIX: Water and Vapor

SAMPLING DATE (Month/Year): December 2007

NO. OF SAMPLES: Metabolic acids –97 waters including 2 rinse blanks; RSK-175 – 99 waters including 2 rinse blanks, AM20GAX – 82 vapor samples

ANALYSES REQUESTED: Metabolic Acids by HPLC; EPA SOP RSK-175, Microseeps AM20GAX

SAMPLE NO.: Attached

DATA REVIEWER: Sammy Huntington and John Huntington (Gateway Enterprises)

QA REVIEWER: Diane Short & Associates, Inc., INITIALS/DATE:

Telephone Logs included Yes____ No __X_

Contractual Violations Yes____ No __X_

The project QAPP, EPA Contract Laboratory Program National Functional Guidelines for Organic Review, 2001 (SOP), the EPA SW 846 Methods for Evaluating Solid Waste, Physical/ Chemical Methods Third Edition, (SW-846), current updates, and the project-specific methods have been referenced by the reviewer to perform this data validation review. The EPA qualifiers have been expanded to include a descriptor code and value to define QC violations and their values, per the approval of the Project Manager. The review has been tasked as Level III for review of all calibrations, holding times, and QC for all samples.

I. DELIVERABLES

All deliverables were present as specified in the Statement of Work (SOW), SW-846, or in the project contract.

Yes __X__ No ____

This report is tasked for review of holding times, sample integrity, calibrations and summary QC.

II. ANALYTICAL REPORT FORMS

The Analytical Report or Data Sheets are present and complete for all requested analyses.

Yes __ X___ No ____

III. HOLDING TIMES

A. The contract holding times were met for all analyses (Time of sample receipt to time of extraction and from extraction to analysis.)

Yes __X___ No ____

See Section B. below. Per EPA guidance, for validation purposes we calculate the holding time to the nearest day in cases where the regulation or method specifies holding time units of days.

B. The Clean Water Act (40 CFR 136) or method holding times were met for all analyses (Time of sample collection to time of extraction and from extraction to analysis.)

Yes __X___ No ____

Metabolic Acids: The reviewer has not been able to find documented holding times for the metabolic acids. The normal holding time for an analogous HPLC method 8310 is 14 days for preserved water samples. Metabolic acid holding times were all within 14 days except as noted in the table below. It has been verified on other projects that no holding time is established for these compounds. Samples are preserved with acid for this analysis, and the laboratory uses 28 days as a holding time specification based on the holding time tables provided. These compounds should be stable if protected from further microbial degradation, so we have not qualified results for holding times > 14 but < 28 days.

SDG	Sample ID	Lab Sample ID	HT
L0712497	DUP1-EBT-5	L0712497-13	16
L0712497	IW21-01A-EBT-5	L0712497-03	16
L0712497	IW21-01B-EBT-5	L0712497-04	16
L0712497	IW21-03B-EBT-5	L0712497-10	16
L0712497	IW92-06-EBT-5	L0712497-01	16
L0712497	IW92-07-EBT-5	L0712497-02	16
L0712497	PMW101-06A-EBT-5	L0712497-14	15
L0712497	PMW101-07A-EBT-5	L0712497-15	15
L0712497	PMW101-08A-EBT-5	L0712497-16	15
L0712497	PMW101-08B-EBT-5	L0712497-17	15
L0712500	LW21-05-EBT-5	L0712500-02	15
L0712500	LW21-05-EBT-5	L0712500-02	16
L0712562	DUP2-EBT-5	L0712562-10	16
L0712562	IW85-01-EBT-5	L0712562-09	16
L0712562	IW85-01-EBT-5	L0712562-09	17
L0712562	IW85-02-EBT-5	L0712562-02	16
L0712562	IW85-02-EBT-5	L0712562-02	17
L0712562	IW92-08-EBT-5	L0712562-08	16
L0712562	IW92-08-EBT-5	L0712562-08	17

SDG	Sample ID	Lab Sample ID	HT
L0712562	MW-115-EBT-5	L0712562-16	17
L0712562	MW-21-EBT-5	L0712562-15	17
L0712562	PMW101-05A-EBT-5	L0712562-03	16
L0712562	PMW101-05B-EBT-5	L0712562-04	16
L0712562	PMW101-07B-EBT-5	L0712562-05	16
L0712562	PMW21-01-EBT-5	L0712562-11	16
L0712562	PMW21-02-EBT-5	L0712562-12	16
L0712562	PMW21-03-EBT-5	L0712562-13	16
L0712562	PMW21-04-EBT-5	L0712562-14	17
L0712562	PMW21-05-EBT-5	L0712562-01	16
L0712601	IW85-05-EBT-5	L0712601-05	16
L0712601	IW85-06-EBT-5	L0712601-03	16
L0712601	RB2-EBT-5	L0712601-04	16

RSK-175: For RSK-175, pH should not be adjusted when CO_2 is determined, which is the case in this project. It is not explicitly stated in the documentation whether samples for RSK-175 were pH-adjusted or not, but it appears that they were not. In the absence of definitive information we have assumed that no acidification occurred.
When pH is adjusted, the holding time is 14 days per the method, and we have used this as the acceptable holding time. One sample (PMW101-04B-EBT-4 in SDB L0709399) was reanalyzed at a dilution for methane and carbon dioxide 21 days after sampling. These results are qualified as JH7 to indicate that they were analyzed 7 days after the expiration of the 14-day holding time and could be biased.

AM20GAX (Hydrogen): This method is a procedure developed by Microseeps, Inc. Recommended holding times in the procedure are 14 days. All samples were analyzed within 14 days and no qualifiers are issued.

C. All chains of custody are complete with signatures and dates.
Yes ___X_ No ____
The project manager is informed of the following and the chains are updated for the project record. No qualifiers have been added for chain of custody issues. The chain of custody on use has been discussed in detail in previous reports, and those general comments apply. All chain of custody documents for RSK-175 and metabolic acids were properly signed and dated.

All chain of custody documents for hydrogen analysis were properly signed and dated.

D. Samples were received at the proper temperature and preservation.
Yes ___ No __X___
Most of the SDGs had at least one cooler that was under 2°C but the Sample Checklist states that the samples weren't frozen. No qualifiers are required under these circumstances.

In addition, new EPA regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be less than 6° C. Thus the sample receipt conditions are fully compliant with applicable regulations.

We could not locate a record of the cooler temperature on receipt for the hydrogen samples.

L0712444: Sample Receipt Form states that metabolic acid sample IW21-05A-EB5 lid was broken – no sample left; sample IW21-05B-EBT-5 metabolic acid bottle also had a broken lid but the sample was ok and so a new lid was put on it.
L0712601: Sample Receipt Form states that RB2-EB (Metabolic Acid) sample had a broken lid but the sample was intact. Chain 63300 had sample IPW-121807 labeled IPW-121907.
L0712497: Sample Receipt Form states that IW92-07-EBT-5 metabolic acid had a pH of 3.5 and IW92-06-EBT-5 metabolic acid had a pH at 6.0.
L0712562: Sample Receipt Form states that all metabolic acids had a pH of 2.5 except IV92-08-5.

This is a common occurrence for samples at this site. The proper sample bottles have been issued and used. There is a buffering capacity to these matrices that results in slightly elevated pH. The pH is adjusted as soon as the samples reach the laboratory and the impact on the sample data is considered to be minimal.

IV. INSTRUMENT CALIBRATION (IC) AND CONTINUING CALIBRATION (CC) VERIFICATION

A. The GC standards were analyzed at the required frequency.
Yes ___X___ No_____

B. The chromatographic resolution and separation criteria were met.
Yes __X__ No_____

C. The suggested columns were used and the EQLs were met.
Yes __X___ No_____

D. Calibration factors for IC met the 20% RSD limit or the regression curves were prepared with a correlation coefficient 'r' greater than 0.99, per SW-846, Method 8000B.
Yes __X___ No _____
MBA: The initial calibration reports for the metabolic acids are inaccurate. The calibration report provides only a %RSD for each analyte, with a note at the bottom that the linear calibration model is used. However, the observed r or r^2 values are not reported, although the criteria used are shown. In the Case Narrative, the laboratory has indicated that all initial calibrations have used linear regression, and that all acceptance criteria are met. No further action is required.

In a previous level IV data review for this project, we were able to confirm from the raw data that regression curves were in fact used and that they met criteria. We cannot confirm this for the present Level III review, but have assumed that the laboratory Case Narrative is correct and have not qualified the results for the %RSDs in the initial calibration reports that are out of limits.

RSK-175: All initial calibrations are in control.

AM20GAX (Hydrogen): All initial calibrations are conducted using a linear regression curve and all are in control.

E. Percent Difference (%D's) for Continuing Calibration Factors and retention times (RT) were within the 25% Limits.
Yes ____ No ___X__
RSK-175: The laboratory conducts opening and closing calibrations (bracketing the samples during the analytical run). For RSK-175 there is not a specific requirement in the procedure for closing calibrations, and only calibration verification each 12 hours is specified. SW-846 guidance (method 8000B), however

specifically requires such closing calibrations for external standard methods. For detected analytes, SW-846 specifies that the closing calibration must meet the same criteria as the opening calibration. This has been achieved for all analytes but for carbon dioxide, for which a number of opening and closing calibrations do not meet the 30% D method criterion specified for RSK-175.

In such cases, detected levels of carbon dioxide are qualified as JC#, where # is the applicable opening or closing CCV outlier., Such results may be biased due to calibration drift.

It should be noted in this regard that the laboratory appears to use a different criterion for carbon dioxide, since a few CCV results were flagged as being outside of limits, but it is not clear to this reviewer where the laboratory limit is set. This method has not been published as a promulgated method by EPA (it rather exists as an open literature publication and an internal EPA SOP), and it may not have been fully developed for carbon dioxide. Thus the laboratory limits may be realistic for this analyte. Nonetheless, the results appear to indicate a probable bias which should be considered in using the data.)
MBA: All calibrations are in control.

AM20GAX: All calibrations are in control. The laboratory is employing the external standard method.

V. BLANKS

A. Laboratory blanks

1. Laboratory blanks were analyzed for every sample set and for each matrix type or once in every ten samples, whichever is more frequent.
Yes __X__ No_____

2. No blank contamination was found in the method blank.
Yes __X___ No ____

3. Instrument blank analysis was performed following all samples that contained analytes at high concentrations.
Yes _____ No____ NA__X___

B. Field Blanks

If field blanks were identified, no blank contamination was found.
Yes _____ No__X ___ NA_____
The table below shows the field blank outliers and the qualifiers added.
AM20GAX (Hydrogen): No rinse blanks are present. For hydrogen such blanks are unnecessary.
For metabolic acids and RSK-175, the table below summarizes the results.

Method	SDG	Sample ID	Sample Date	Analyte	Result	Qualifier
830-MBA	L0712314	RB1-EBT-5	12/11/2007 08:51 AM	Lactic Acid	1.31	UFB# results < 5x FB
	L0712601	RB2-EBT-5	12/19/2007 09:18 AM		All OK	None
RSK175	L0712314	RB1-EBT-5	12/11/2007 08:51 AM	Methane	0.48F	UFB# one sample < 5x FB
	L0712601	RB2-EBT-5	12/19/2007 09:18 AM	Carbon Dioxide	770	UFB# one sample < 5x FB

VI. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

A. Matrix spike (MS) and matrix duplicate or matrix spike duplicate (MSD) were analyzed for every analyses performed for every 20 samples or for every matrix whichever is more frequent.
Yes __X___ No ____

RSK-175: There were five (5) MS/MSDs which meet the 20 to 1 ratio.

Metabolic Acids: There were five (5) MS/MSDs which meet the 20 to 1 ratio.

AM20GAX: There are no MS/MSDs for this method. They are not required or possible for hydrogen analysis.

The MS/MSDs conducted are summarized in the table below.

Method	SDG	Client Sample ID	Lab Sample ID
Method	SDG	Client Sample ID	Lab Sample ID
830-MBA	L0712314	IW101-03B-EBT-5	L0712314-04
	L0712431	IW101-09A-EBT-5	L0712431-14
		PMW101-01A-EBT	L0712431-02
	L0712444	PMW101-06B-EBT	L0712444-06
	L0712497	IW21-02A-EBT-5	L0712497-05
RSK175\5021	L0712314	IW101-03B-EBT-5	L0712314-04
	L0712431	IW101-09A-EBT-5	L0712431-14
		PMW101-01A-EBT	L0712431-02
	L0712444	PMW101-06B-EBT	L0712444-06
	L0712497	IW21-02A-EBT-5	L0712497-05

B. The MS and MSD percent recoveries (%R) were within the limits defined by the laboratory or in the contract.
Yes _____ No __X__
RSK-175: Methane is recovered high in one MS/MSD as shown in the table below.

MBA: All are in control except for cases where the parent sample is greater than 4x the spike level. In such circumstances, the analytical variability is on the order of the spike level, and so recovery calculations are not meaningful. No qualifiers are added.

MS/MSD Outliers

Method	SDG	Client Sample ID	Lab Sample ID	Analyte	MS/MSD/RPD	Qualifiers
RSK-175	L0712431	PMW101-01A-EBT	2	Methane	165/179/OK	None, parent > 4x spike
M.A.	L0712431	PMW101-01A-EBT	2	Acetic Acid	51.6/53.7/OK	None, parent > 4x spike
				Propionic Acid	19.1/19.0/OK	None, parent > 4x spike

C. The MSD relative percent differences (RPD) were within the defined contract or laboratory limits.
Yes __X___ No _____
See the section above. No RPDs are out of limits and also as spikes meet validation criteria (4x rule), samples are not qualified for RPD outliers.

D. The MS/MSD were client samples.
Yes __X__ No _____

VII. LABORATORY CONTROL SAMPLE AND DUPLICATE (LCS/LCSD)

A. Laboratory Control Sample (LCS) and LCS duplicate were analyzed for every analyses performed and for every 20 samples or for every matrix whichever is more frequent.
Yes __X___ No_____

B. The LCS percent recovery (%R) are within the limits defined by the laboratory or in the contract.

Yes ____ No __X__
MBA: All LCS recoveries are in control.

RSK-175: There is one LCS run for carbon dioxide which is out of limits. There are associated carbon dioxide results, and these are qualified as JL# to indicate a potential low bias roughly proportional to the LCS outlier.

AM20GAX (Hydrogen): All LCS recoveries are in control.

Method	SDG	Lab Sample #	Batch	Targets Detected	LCS/LCSD/RPD	Qualifiers
RSK-175	L0712562	12-16	WG259490	Carbon Dioxide	37	JL37

VIII. SURROGATE RECOVERY
A. The Surrogate spike was analyzed with every sample.
Yes _____ No ____ NA_X___
RSK-175: Surrogates are not required for this analysis.

Metabolic Acids: Surrogates are not required for this analysis.

AM20GAX (Hydrogen): Surrogates are not applicable to this method.

B. And met the recovery limits defined in the current contract. If recovery limits were exceeded, the sample was re-extracted and re-analyzed.
Yes _____ No_____ NA __X___

IX. INTERNAL STANDARDS
The Internal Standards met the 100% upper and -50% lower limits criteria and the Retention times were within the required windows. Note: Internal standards are not required for GC analysis, but if they are used, SW-846 stipulates that they meet the same recovery requirements as those specified for GCMS methods.
Yes ____ No _____ NA__X__
RSK-175, Metabolic Acids, AM20GAX: The laboratory uses the external standard procedure, so no internal standards are present or required.

X. FIELD QC
If Field duplicates were identified, they met guidance RPD of < 35% for water or < 50% for soils and gases. For values reported at < 5 x the reporting limit (RL), a difference of 2 x RL is used as guidance (4 x RL for soils). Data are not qualified for field duplicates as these are evaluated for the total project by the client.
Yes _____ No __X__ NA_____
There are 9 identified field duplicates. All are in control except as indicated in the table below.

SDG	Parent Sample ID	Field Dup	Observations
L0712280	IW101-01A -EBT-5	DUP3	In control
L0712280	IW101-02B -EBT-5	DUP4	In control
L0712280	IW101-05C -EBT-5	DUP5	40% RPD for hydrogen
L0712280	MW-85-EBT-5	DUP8	In control; not present in hydrogen set
L0712431	IW101-08A -EBT-5	DUP9	In control
L0712431	PMW101-03B -EBT-5	DUP7	RPD 65% for carbon dioxide; RPD 50% for hydrogen
L0712444	PMW101-02A -EBT-5	DUP6	in control; dup not present for RSK
L0712497	IW21-01A -EBT-5	DUP1	In control

SDG	Parent Sample ID	Field Dup	Observations
L0712562	PMW21-03-EBT-5	DUP2	In control

XI. COMPOUND IDENTIFICATION

A. All raw data chromatograms and data system printouts were evaluated for all detected compounds and the identification is accurate.
Yes ____ No _____ NA __X___
This evaluation is not performed at this level of review.

B. Retention time limits or peak pattern identifications are met.
Yes _____ No _____ NA__X___
This evaluation is not performed at this level of review.

C. If two column or two detector confirmation was performed, the value of the confirmation was within 25%D of the quantitation value for results > 5 x RL. If the laboratory has flagged data 'COL' for %D > 40%, a JP qualifier has been added for low level results. For values below (5 x RL), the difference is not considered to impact the precision of the data.
Yes ____ No ____ NA __X__
Not part of this level of review. Dual columns are not required for these methods.

XII. COMPOUND QUANTITATION AND REPORTED CRQLS

A. Raw data examination verified that all sample results were correctly calculated.
Yes _____ No_____ NA__X___
This evaluation is not performed at this level of review.

B. The chromatograms and general system performance were acceptable for all instruments and analytical systems.
Yes _____ No _____ NA__X___
This evaluation is not performed at this level of review.

XIII. OVERALL ASSESSMENT OF THE CASE

The method criteria have been met and the quality of the data, after consideration of qualifiers, is considered acceptable and usable as far as can be determined at this level of review.
The following is noted:

Sample Condition:
Most of the SDGs had at least one cooler that was under 2°C but the Sample Checklist states that the samples weren't frozen. No qualifiers are required under these circumstances.

In addition, new EPA regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be less than 6° C. Thus the sample receipt conditions are fully compliant with applicable regulations.

We could not locate a record of the cooler temperature on receipt for the hydrogen samples.

L0712444: Sample Receipt Form states that metabolic acid sample IW21-05A-EB5 lid was broken – no sample left; sample IW21-05B-EBT-5 metabolic acid bottle also had a broken lid but the sample was ok and so a new lid was put on it.

L0712601: Sample Receipt Form states that RB2-EB (Metabolic Acid) sample had a broken lid but the sample was intact. Chain 63300 had sample IPW-121807 labeled IPW-121907.
L0712497: Sample Receipt Form states that IW92-07-EBT-5 metabolic acid had a pH of 3.5 and IW92-06-EBT-5 metabolic acid had a pH at 6.0.
L0712562: Sample Receipt Form states that all metabolic acids had a pH of 2.5 except IV92-08-5.

This is a common occurrence for samples at this site. The proper sample bottles have been issued and used. There is a buffering capacity to these matrices that results in slightly elevated pH. The pH is adjusted as soon as the samples reach the laboratory and the impact on the sample data is considered to be minimal.

Holding times:
Metabolic Acids: The reviewer has not been able to find documented holding times for the metabolic acids. The normal holding time for an analogous HPLC method 8310 is 14 days for preserved water samples. Metabolic acid holding times were all within 14 days except as noted in the table below. It has been verified on other projects that no holding time is established for these compounds. Samples are preserved with acid for this analysis, and the laboratory uses 28 days as a holding time specification based on the holding time tables provided. These compounds should be stable if protected from further microbial degradation, so we have not qualified results for holding times > 14 but < 28 days.

Continuing Calibrations:
RSK-175: The laboratory conducts opening and closing calibrations (bracketing the samples during the analytical run). For RSK-175 there is not a specific requirement in the procedure for closing calibrations, and only calibration verification each 12 hours is specified. SW-846 guidance (method 8000B), however specifically requires such closing calibrations for external standard methods. For detected analytes, SW-846 specifies that the closing calibration must meet the same criteria as the opening calibration. This has been achieved for all analytes but for carbon dioxide, for which a number of opening and closing calibrations do not meet the 30% D criterion specified for RSK-175.

In such cases, detected levels of carbon dioxide are qualified as JC#, where # is the applicable opening or closing CCV outlier. Such results may be biased due to calibration drift.

It should be noted in this regard that the laboratory appears to use a different criterion for carbon dioxide, since a few CCV results were flagged as being outside of limits, but it is not clear to this reviewer where the laboratory limit is set. This method has not been published as a promulgated method by EPA (it rather exists as an open literature publication and an internal EPA SOP), and it may not have been fully developed for carbon dioxide. Thus the laboratory limits may be realistic for this analyte. Nonetheless, the results appear to indicate a probable bias which should be considered in using the data.)

MBA: All calibrations are in control.

AM20GAX: All calibrations are in control. The laboratory is employing the external standard method.

LCS Recoveries:
MBA: All LCS recoveries are in control.

RSK-175: There is one LCS run for carbon dioxide which is out of limits. There are associated carbon dioxide results, and these are qualified as JL# to indicate a potential bias roughly proportional to the LCS outlier.

AM20GAX (Hydrogen): All LCS recoveries are in control.

MS/MSD Recoveries:
RSK-175: There were five (5) MS/MSDs which meet the 20 to 1 ratio.

Metabolic Acids: There were five (5) MS/MSDs which meet the 20 to 1 ratio.
AM20GAX: There are no MS/MSDs for this method. They are not required or possible for hydrogen analysis.

RSK-175: Methane is recovered high in one MS/MSD as shown in the table below.

MBA: All are in control except for cases where the parent sample is greater than 4x the spike level. In such circumstances, the analytical variability is on the order of the spike level, and so recovery calculations are not meaningful. No qualifiers are added. No RPDs are out of limits and also as spikes meet validation criteria (4x rule), samples are not qualified for RPD outliers.

Field Duplicates:
There are 9 identified field duplicates. All are in control except as indicated in the table within the body of this report.

Field Blanks:
The table within the body of this report shows the field blank outliers and the qualifiers added.
AM20GAX (Hydrogen): No rinse blanks are present. For hydrogen such blanks are unnecessary.
For metabolic acids and RSK-175, the table in the text summarizes the results.

INORGANIC DATA QUALITY REVIEW REPORT

METALS BY ICP, Sulfide 376.1, Anions 300.0, Alkalinity 310.2, and Total Organic Carbon 415.1

SDG: L0712562, L0712430, L0712497, L0712610, L0712280, L0712444, L0712314, L0712375, L0712431,

PROJECT: Memphis Defense Depot

LABORATORY: Kemron Laboratories, Marietta, OH

SAMPLE MATRIX: Water SAMPLING DATE (Month/Year): 12/2007

ANALYSES REQUESTED: SW-846 Method 6010 (ICP); MCAWW: 376.1, 300.0, 310.2, and 415.1

NO. OF SAMPLES: 103 Total Water

SAMPLE NO: See Attached

DATA REVIEWER: Joseph J Egry IV

QA REVIEWER: Diane Short and Associates Inc. INITIALS/DATE: _____

Telephone Logs included Yes____ No _X___

Contractual Violations Yes____ No _X___

The project Sampling and Analysis Plan (SAP), the EPA Contract Laboratory Program National Functional Guidelines for Inorganic Review, 2002 and the SW-846 Methods and the MCAAAWW methods have been referenced by the reviewer to perform this data validation review. The EPA qualifiers have been expanded to include a descriptor code and value to define QC violations and their values, per the approval of the Project Manager. Per the Scope of Work, the review includes validation of all calibrations, chains of custody (for sample holding time and preservation only), and QC forms referencing the above documents.

I. DELIVERABLES

All deliverables were present as specified in the Statement of Work or project contract.
Yes__X__ No____
The following is noted for clarification:
Per the contract, all packages were reviewed for holding time, summary QC and calibration (Level III). No raw data were required for review except where needed to review calibrations. L0712562 was also reviewed for ICB/CCBs.
There are 3 ICP analytes, Arsenic, Manganese, and Selenium plus wet chemistry parameters.

II. CALIBRATIONS

A. All initial instrument calibrations were performed as defined in the contract or Statement of Work (SOW). All correlation coefficients of the 3 point curve were > 0.995.
Yes____ No_X__ NA____
The following analytes exceed the QC limits:

SDG	Analysis	%RSD	Qualifier
L0712375	Nitrate	11.9	JC12

Data is qualified JC#, where # is the percent RSD of the Calibration. The %RSD indicates the deviation from the relative response factor per the relative standard deviation (RSD). As the value increases, the range of the quantification could possibly increase, therefore increasing the estimation of the reported value.

B. The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were analyzed at the required frequency.
Yes__X__ No____
Sequencing was not required, but sufficient calibrations were present to verify that the frequencies were met for client samples.

C. And the ICV and CCV standard percent recovery results were within the required control limits of 90 – 110% (Mercury 80 – 120%).
Yes__X_ No____

III. CRDL STANDARDS

The 2 x CRDL standards were analyzed as required in the SOW.
Yes____ No____ NA__X_
Not required.

IV. BLANKS

Note: the highest blank associated with any particular analyte is used for the qualification process and is the value entered after the "B" blank descriptor.

A. The initial calibration blanks (ICB) and continuing calibration blanks (CCB) were analyzed at the required frequency.
Yes__X_ No____ NA____
Sequencing was not required, but sufficient calibration blanks were present to verify that the frequencies were met for client samples.

B. And the ICB and CCB results were within the required control limits.
Yes__X_ No____ NA_____

C. And all analytes in the Leach Blank were less than the CRDL, or less than 2x the instrument detection limit (IDL), whichever is lower.
Yes____ No____ NA__X__
No TCLP analysis was performed.

V. PREPARATION BLANKS
A. Preparation blanks were prepared and analyzed at the required frequency.
Yes__X__ No____

B. And all analytes in the preparation blank were less than the CRDL, or less than the instrument detection limit (IDL), whichever is lower.
Yes____No__X__
Analytes were found in the preparation blank at levels requiring qualification for the following parameters.

SDG	QC Batch	Analysis	Result	Qualifier
L0712444	WG258853	Sulfide	0.636	UPB.636
L0712375	WG258853	Sulfide	0.636	None, ND
L0712431	WG258853	Sulfide	0.636	None, ND

Analytes reported as contaminants in the preparation blank are qualified UPB# in the affected samples, where # is the value of the blank corrected to the units of the sample. Sample detects whose values are less than 5x blank are qualified UPB and are fully usable as undetected values at that level.

C. Field, trip, decon rinse or other field blanks are contained and identified in the package.
Yes __X__ No____ NA____

D. And the reported results are less than the CRDL or less than the IDL, whichever is lower.
Yes ____ No __X_ NA____
Below is a table of analytes that were found in the rinse blanks.

SDG	Sample	Analysis	Result	Qualifier

L0712601	RB-2-EBT-5	Chloride	0.1	None, 5X
	RB-2-EBT-5	Alkalinity	41.0	UFB41

Data have been qualified UFB#, where # is the value of the associated blank. Data are qualified only when sample results are <5 x blank. When data are >5 x the blank and require no qualification, it is indicated as such in the table.

VIA. ICP INTERFERENCE CHECK SAMPLE

A. The Interference Check Sample (ICS) was analyzed as required in the SOW or contract.

Yes__X__ No____ NA____

B. And the ICS percent recovery results were reported for all required ICS analytes and were within required control limits of 80% to 120%.

Yes__X__ No____ NA____

C. ICP analysis results for analytes not required to be present in a given ICS standard were within acceptable limits.

Yes____No____ NA__X__

Not requested by client and data not provided by laboratory.

VIB. INTERELEMENT CORRECTION FACTORS

The Interelement Correction Factors are included and complete for all possible interferent analytes.

Yes____No____ NA__X__

Review of possible other contaminants was not requested by the client.

VII. SPIKE SAMPLE RECOVERY

A. A matrix (pre-digestion) spike sample was analyzed for each digestion group and/or matrix or as required in the SOW.

Yes __X___ No____

The following samples were identified as client-specific MS/MSD samples.

SDG	Sample ID
L0712314	IW101-03B -EBT-5
L0712431	IW101-09A -EBT-5
L0712431	PMW101-01A -EBT-5
L0712444	PMW101-06B -EBT-5
L0712497	IW21-02A -EBT-5

B. And the Matrix spike percent recoveries were within the required control limits of 75 – 125%.

Yes ____ No__X_ NA____
The following matrix spike recoveries resulted in sample qualification.

SDG	Sample	Analysis	Recovery	Qualifier
L0712497	IW21-02A-EBT-5	Chloride	72/73	JS72
	IW21-02A-EBT-5	Alkalinity	35/32	JS32
L0712444	PMW101-06B-EBT-5	Chloride	70/70	JS70
	PMW101-06B-EBT-5	Alkalinity	40/35	JS35
L0712431	IW101-09A-EBT-5	Chloride	33/32	JS32
	PMW101-01A-EBT-5	Chloride	37/37	
	PMW101-01A-EBT	Nitrite	66/66	JS66
	IW101-09A-EBT-5	Alkalinity	74.9/76	JS75
	PMW101-01A-EBT	TOC	155/335	None, 4X

Detected results were qualified JS#, where the # is the percent recovery of that particular analyte. A low matrix spike recovery indicates a possible low bias to the reported result proportional to the spike recovery. When the spike is less than four times (4x) the concentration of the analyte in the parent sample, no qualification is required as the recovery is statistically invalid. The lab limits are 80 – 120%. Per the QAPP, the CLP limits are used for validation.

B. A Post-digest spike was analyzed if required.
Yes__X__No____ NA____

C. The MS/MSD samples included client samples
Yes __X_ No___ NA____

VIII. DUPLICATES
A. Matrix (pre-digestion) duplicate samples were analyzed at the required frequency
Yes __X__ No____
The laboratory runs MS/MSD samples.

B. And the Matrix duplicate relative percent differences (RPD) were within the required control limits (Water 20%, Soil 35%) or the RL limits were met if the duplicate values are < 5 x RL. If the either one of the duplicate results are < 5 X RL, the RPD is not used. The QC limit used is the difference between the original and the duplicate results ((the RL) for water and ((2X the RL) for soils.
Yes __X__ No ____ NA_____

IX. LABORATORY CONTROL SAMPLE
A. Laboratory control samples (LCS) were analyzed at the required frequency.
Yes _X___ No____

B. And LCS recoveries were within the required control limits of 80 to 120%.

Yes __X___ No____

X. MSA RESULTS AND GRAPHITE FURNACE ANALYSIS (GFAA)
Duplicate injections were performed for all analyses and the RSDs were less than 20% for all reported results. (Method of Standard Additions (MSA) requires only a single injection).
Yes____No____ NA__X___
Graphite furnace was not done.

XI. ICP SERIAL DILUTION
A. ICP Serial Dilutions have been analyzed at the required frequency if the analyte concentrations are greater than 50 x IDL (x 100 for ICPMS).
Yes__X_ No____ NA_____

B. And the percent difference criteria of + 10 % have been met.
Yes__X__ No ____ NA____

C. The serial dilution analyses were on client samples
Yes __X___ No_____

XII. INSTRUMENT DETECTION LIMITS
A. The Instrument Detection Limits have met the Quarterly reporting requirements.
Yes ___X_ No____ NA___
This was determined to be acceptable during the contractual process.

B. And all sample results have met the required detection limits (CRDL).
Yes__X__ No____ NA____
No dilutions were performed

XIII. PREPARATION AND ANALYSIS LOGS
A. All samples were prepared or analyzed within the required holding times referencing the SOW (time of sample receipt to preparation/distillation).
Yes__X__ No____

B. All samples were analyzed within the 40 CFR 136 (Clean Water Act) or method recommended holding times (time of sample collection to date of analysis).
Yes_____ No__X__

The following SDGs had samples that were analyzed after the allowed holding time had expired.

SDG	Sample	Analysis	Sample Date	Prep Date	Qualifier

L0712497	PMW101-08A-EBT-5	Nitrate/Nitrite	12/17/07 8:49 AM	12/19/07 12:47 PM	JH4
	PMW101-08B-EBT-5	Nitrate/Nitrite	12/17/07 11:39 AM	12/19/07 1:05 PM	JH1.5

JH#, where # is the number of hours exceeding the 48-hour holding time. The times are small and the impact is considered to be minimal.

C. Chains of Custody (COC)
1. Chains of Custody (COC) were reviewed and all fields were complete, signatures were present and cross outs were clean and initialed.
Yes__X___ No____

2. Samples were received at the required temperature and preservation.
Yes____ No__X__
The following samples were received not being preserved as required. Data could be biased low due to degradation of the requested compounds. Metals data are not expected to be significantly impacted.

SDG	Sample	Analysis	pH	Qualifier
L0712562	IW92-08-EBT-5	ICP	6.0	JP
	IW92-08-EBT-5	TOC	6.0	JP
	IW92-05-EBT-5	TOC	6.0	JP
L0712280	IW101-02B-EBT-5	ICP	6.0	Not Analyzed
	IW101-02B-EBT-5	Sulfide	7.0	Not Analyzed
L0712314	MW-101T-EBT-5	TOC	6.0	JP

XIV. FIELD QC
A. Field QC samples (duplicates, SRMs) were identified.
Yes __X__ No____
The flowing samples were identified as Sample Duplicates.

SDG	Sample ID	Duplicate ID
L0712280	IW101-01A -EBT-5	DUP3
L0712280	IW101-02B -EBT-5	DUP4
L0712280	IW101-05C -EBT-5	DUP5
L0712280	MW-85-EBT-5	DUP8
L0712431	IW101-08A -EBT-5	DUP9-2
L0712431	PMW101-03B -EBT-5	DUP7
L0712444	PMW101-02A -EBT-5	DUP6
L0712497	IW21-01A -EBT-5	DUP1
L0712500	PMW101-08A -EBT-5	DUP9
L0712562	PMW21-03-EBT-5	DUP2

B. Field duplicates were within a guidance limit of < 35% RPD limit for water or <50% RPD limit for soil. If values are < 5 x RL, the water limit is + 2 x RL and the soil limit is

+4 x RL. Final determination will be made by the project manager.
Yes ____ No__X__ NA___
All field duplicate results were within the above-specified limits with the exception below.

SDG	Sample/Duplicate	Analysis	%RPD
L0712497	IW21-01A-EBT-5/Dup 1	Chloride	62.0

XV. GENERAL COMMENTS
The laboratory has complied with the requested methods and the quality of the data is acceptable and usable with consideration of the following qualifications. Note that the following qualifiers are used:

JC#, where # is the percent RSD of the Calibration.
JH#, where # is the number of hours exceeding the 48-hour holding time.
JP is for samples not being preserved as required.
JS# is for matrix spike/matrix spike duplicate recoveries, where # is the analyte recovery. The bias to the data is considered to be high or low proportional to the analyte recovery. (JS125 would indicate the value could be 125% of the true value)
UFB#, where # is the value of the associated field blank.
UPB#, where # is the value of the prep blank corrected to the units of the sample.

Qualification or Comments in Detail
Deliverables
Per the contract, all packages were reviewed for holding time, summary QC and calibration (Level III). No raw data were required for review except where needed to review calibrations. L0712562 was also reviewed for ICB/CCBs.
There are 3 ICP analytes, Arsenic, Manganese, and Selenium plus wet chemistry parameters.

Calibrations
The following analytes exceed the calibration QC limits:

SDG	Analysis	%RSD	Qualifier
L0712375	Nitrate	11.9	JC12

Blanks
Data qualified for blank contamination are fully usable as undetected values as follows. Analytes were found in the preparation blank at levels requiring qualification for the following parameters.

SDG	QC Batch	Analysis	Result	Qualifier
L0712444	WG258853	Sulfide	0.636	UPB.636
L0712375	WG258853	Sulfide	0.636	None, ND
L0712431	WG258853	Sulfide	0.636	None, ND

Below is a table of analytes that were found in the rinse blanks.

SDG	Sample	Analysis	Result	Qualifier
L0712601	RB-2-EBT-5	Chloride	0.1	None, 5X
	RB-2-EBT-5	Alkalinity	41.0	UFB41

Matrix Spikes/Matrix Spike Duplicates

The following matrix spike recoveries resulted in sample qualification.

SDG	Sample	Analysis	Recovery	Qualifier
L0712497	IW21-02A-EBT-5	Chloride	72/73	JS72
	IW21-02A-EBT-5	Alkalinity	35/32	JS32
L0712444	PMW101-06B-EBT-5	Chloride	70/70	JS70
	PMW101-06B-EBT-5	Alkalinity	40/35	JS35
L0712431	IW101-09A-EBT-5	Chloride	33/32	JS32
	PMW101-01A-EBT-5	Chloride	37/37	
	PMW101-01A-EBT	Nitrite	66/66	JS66
	IW101-09A-EBT-5	Alkalinity	74.9/76	JS75
	PMW101-01A-EBT	TOC	155/335	None, 5X

Detected results were qualified JS#, where the # is the percent recovery of that particular analyte. A low matrix spike recovery indicates a possible low bias to the reported result. When the spike is less than four times (4X) the concentration of the analyte in the parent sample, no qualification is required as the recovery is statistically invalid. The lab limits are 80 – 120%. Per the QAPP, the CLP limits are used for validation.

Holding Time

The following SDGs had samples that were analyzed after the allowed holding time had expired.

SDG	Sample	Analysis	Sample Date	Prep Date	Qualifier
L0712497	PMW101-08A-EBT-5	Nitrate/Nitrite	12/17/07 8:49 AM	12/19/07 12:47 PM	JH4
	PMW101-08B-EBT-5	Nitrate/Nitrite	12/17/07 11:39 AM	12/19/07 1:05 PM	JH1.5

The holding time exceedances are small and the impact to the data is expected to be minimal.

Preservation

The following samples were received not being preserved as required. Data could be biased low due to degradation of the requested compounds. Metals data are not expected to be significantly impacted.

SDG	Sample	Analysis	pH	Qualifier
L0712562	IW92-08-EBT-5	ICP	6.0	JP
	IW92-08-EBT-5	TOC	6.0	JP
	IW92-05-EBT-5	TOC	6.0	JP
L0712280	IW101-02B-EBT-5	ICP	6.0	Not Analyzed

	IW101-02B-EBT-5	Sulfide	7.0	Not Analyzed
L0712314	MW-101T-EBT-5	TOC	6.0	JP

Field Duplicates

All field duplicate results were within the above-specified limits with the exception below.

SDG	Sample/Duplicate	Analysis	%RPD
L0712497	IW21-01A-EBT-5/Dup 1	Chloride	62.0

ORGANIC DATA QUALITY REVIEW REPORT
VOLATILE ORGANICS SW-846 METHOD 8260B/5030B

8260B/5030B
SDG: L080: 30420, 30240, 30298, 30185, 30387, 30269, 30220, 30333

PROJECT: Memphis Defense Depot, EBT-6 for e2m, Texas

LABORATORY: Kemron Environmental Services, Marietta, OH

SAMPLE MATRIX: Water

SAMPLING DATE (Month/Year): March 2008

NO. OF SAMPLES: 8260B/5030B (Waters) – 107 samples including (8 Trip Blanks and 2 Rinse Blanks)

ANALYSES REQUESTED: SW-846 8260B

SAMPLE NO.: See attached result forms

DATA REVIEWER: Sammy Huntington and John Huntington (Gateway Enterprises)

QA REVIEWER: Diane Short and Associates Inc. INITIALS/DATE: _____

Telephone Logs included Yes____ No _X__

Contractual Violations Yes____ No _X___

The EPA Contract Laboratory Program National Functional Guidelines for Organic Review, 2001, and the SW-846 Method 8260B has been referenced by the reviewer to perform this data validation review. The EPA qualifiers have been expanded to include a descriptor code and value to define QC violations and their values, per the approval of the Project Manager. Per the Scope of Work, the review of these samples includes Level III validation of all chains of custody, calibrations and QC forms referencing the QC limits in the above documents.

I. DELIVERABLES

A. All deliverables were present as specified in the Statement of Work (SOW), SW-846, or in the project contract.

Yes __X_ No _____

This report has been requested to include the following review: Holding times and sample integrity (chains of custody, sample log in), Calibrations, Summary QC.

B. Chain of Custody Documentation was complete and accurate.

Yes ___X___ No ___

No qualifiers have been added for chain of custody issues and the project manager will update chains per the following notes to complete the project record. The chain of custody on use has been discussed in detail in previous reports, and those general comments apply. All chain of custody documents in this set were properly signed and dated.

In addition to these, the sample receiving checklist for SDG L08030220 notes that four samples were not on the chain of custody received. These include DUP-7, PMW101-03B, PMW101-04B, and PMW101-04A. A note appended after this comment states that the COC was received on 3/13/2008, the day after the samples were received.

To provide fully adequate documentation, the COC should accompany the samples. In this case it was provided subsequent to their arrival at the laboratory. In addition, the copy of this COC available to us has no signatures, either by the sample or by the laboratory.

C. Samples were received at the required temperature, preservation and intact with no bubbles.

Yes ___X___ No ____

New EPA regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be less than 6° C. The sample receipt conditions are fully compliant with applicable regulations.

Volatiles samples cannot be checked for pH outliers on sample receipt. The laboratory checks the samples at runtime. A number of samples were not at pH <2, as follows:

SDG L08030387, two samples. These were DUP-6 and IW92-07, both of which had a pH of 4. Both of these samples were analyzed on the 11th day of hold.
SDG L08030420, two samples. These were IW92-06 and IW92-08, both at pH 6. These were analyzed on the 12th day of hold.
SDG L08030240, 4 samples. These were PMW101-05A, IW101-04A, DUP3, and IW101-09B, at pH 7, 5, 5, and 5. These samples were analyzed on the 7th and 8th day of hold.
SDG L08030185, two samples. These were PMW101-01A and IW101-02B, pH 3 and 7, respectively. These samples were all analyzed in less than 7 days.
SDG L08030298, one sample. This is IW101-08C, at pH7. This sample was analyzed on the 12th day of hold.

For those samples that are pH 6-7, the sample should be regarded as being essentially unpreserved. In this case, samples that fall into this category were analyzed in 7 days or less, with the exception of IW101-08C in SDG L08030298. This sample was analyzed on the 12th day of hold. 40CFR indicates that for chlorinated compounds this is still acceptable, but that aromatics (BTEX) may be subject to some degradation under these conditions.

The other samples are all sufficiently acidic that biodegradation should be inhibited despite the fact that a pH <2 was not achieved. Using professional judgment, no qualifiers are added.

Since it has been documented that the buffering capacity of the waters from this site is typically responsible for elevated pH after preservation, no qualifiers are added.

II. ANALYTICAL REPORT FORMS

A. The Analytical Report or Data Sheets are present and complete for all requested analyses.
Yes _X_ No ____

B. Holding Times
1. The contract holding times were met for all analyses (Time of sample receipt to time of analysis (VOA) or extraction and from extraction to analysis).
Yes __X___ No_____

2. The Clean Water Act (40 CFR 136) or method holding times were met for all analyses (14 days from time of sample collection to analysis or extraction).
Yes _X__ No____
The laboratory has flagged two samples in SDG L08030269 that were analyzed on the 14th day of hold. Normal validation practice is to accept such results as falling within hold as long as they are within 14 days to the nearest day. This is the case, and no qualifiers are added.

III. INSTRUMENT CALIBRATION – GC/MS

A. Initial Calibration
1. The Response (RF) and Relative Response Factors (RRF) and average RRF for all compounds for all analyses met the contract criteria of >0.01.
Yes __X__ No ____ NA____
Per the project manager, the 2001 EPA CLP validation guidance has been applied to the common "poor responders". Acetone, 2-butanone, and 4-methyl-2-pentanone are the compounds for which any calibration response factors below 0.05 have been observed. The validation guidance used for this project allows for a response of 0.01 for these compounds if spectral integrity can be verified at low concentrations. These spectra are not commonly provided and are not part of the deliverable for these data sets. The laboratory has been tasked with providing to the client verification that the 0.01 RF is valid. Given the spectral verification is available, the data are not qualified for response >0.01 < 0.05. No data have been qualified.

The low-responding compounds are highly water-soluble and capable of hydrogen bonding with water. This decreases their purge efficiency and results in the relatively low response. The implication of this low purge efficiency is that a relatively low absolute recovery of such compounds is achieved in the purge step of the analysis. If this recovery is consistent, reasonable accuracy and precision can be achieved in a given matrix, which is indicated for the lab matrix by acceptable recoveries in LCS and calibration checks. However, this causes these targets to be more sensitive to matrix variations that impact purge efficiency (such as ionic strength or the presence of varying levels of soluble non-target organic material) than are the more hydrophobic compounds typically analyzed by this method, and as a result they are more likely to exhibit matrix bias. The likelihood of matrix bias for these compounds in this site matrix is assessed in the MS/MSD section of this report.

2a.The relative standard deviation (RSD) for the five point calibration was within the 30% limit for the CCCs.
Yes _X__ No____ NA____
This is a method requirement and indicates that the analytical system is in control.

2b.The relative standard deviation (RSD) for the five point calibration was within the 30% limit for all other compounds or a linear curve was used.
Yes __X___ No ____ NA____

3. The 12 hour system Performance Check was performed as required in SW-846.

Yes __X__ No_____ NA____

B. Continuing Calibrations
1. The midpoint standard was analyzed for each analysis at the required frequency and the QC criteria of > 0.05 (.01 for CLP 2001) were met.
Yes __X___ No ____ NA____
The CCVs were analyzed at the proper frequency. The same compounds showed low responses in the continuing calibration as were observed in the initial calibrations. Qualifiers are not added for these outliers since none were below the lower limit of 0.01. No data have been qualified from the response factors and RRFs are not noted since they are essentially the same as the ICAL. This consistency of response for the poor-responding compounds is an indication that there is no significant bias for the laboratory water matrix.

2. The percent difference (%D) limits of ± 25% were met.
Yes _____ No __X__ NA___
See the table below. When there are no detections, unless the %D is biased low and so large as to indicate a significant probability of false negatives, no qualifiers are added for %D outliers when targets are not detected.

SDG	CCV Date	Analyte	%D outliers	Bias	Qualifiers Added
L08030269	3/20/08 10:50	vinyl acetate	34	Low	None, ND in samples
	3/24/08 11:18	vinyl acetate	34	Low	None, ND in samples
L08030220	3/16/08 13:00	4-methyl-2-pentanone	28	Low	None, ND in samples
L08030387	All OK				None
L08030333	All OK				None
L08030240	3/20/08 10:50	vinyl acetate	34	Low	None, ND in samples
L08030420	3/25/08 18:50	vinyl acetate	43	Low	None, ND in samples
L08030185	All OK				
L08030298	3/24/08 11:18	vinyl acetate	34	Low	None, ND in samples
	3/24/08 8:07	vinyl acetate	28	Low	None, ND in samples

IV. GC/MS INSTRUMENT PERFORMANCE CHECK
The BFB (VOA) or DFTPP (SVOA) performance check was injected once at the beginning of each 12-hour period and relative abundance criteria for the ions were met.
Yes __X___ No ____ NA____

V. INTERNAL STANDARDS
The Internal Standards met the 100% upper and -50% lower limits criteria and the Retention times were within the required windows.
Yes __X___ No ____ NA____

VI. SURROGATE
Surrogate spikes were analyzed with every sample.
Yes __X__ No ____

And met the recovery limits defined in the current contract, which are the current laboratory limits.
Yes __X___ No ____

VII. MATRIX SPIKE/MATRIX SPIKE DUPLICATE
A. Matrix spike (MS) and matrix spike duplicates (MSD) were analyzed for every analysis performed and for every 20 samples or for every matrix whichever is more frequent.
Yes ___X__ No _____
There are 4 MS/MSDs which meets the 1:20 ratio.

Method	SDG	Client Sample ID	Lab Sample ID
8260B\5030B	L08030240	IW101-04B-EBT-6	L08030240-09
	L08030269	PMW101-08B-EBT-6	L08030269-14
	L08030298	IW101-08C-EBT-6	L08030298-10
	L08030387	IW21-05B-EBT-6	L08030387-11

B. The MS and MSD percent recoveries were within the limits defined in the contract, which are the current laboratory control chart limits.
Yes _____ No __X ___NA___
The full target list has been spiked. Most MS/MSD recoveries and RPDs are in control. Instances where spike recoveries are out of limits are shown in the table below. In several instances, the sample amount is 4x the spike level or greater. In such cases, the recovery cannot realistically be calculated, because the anticipated normal analytical variability is on the order of the spike level. Thus no qualifiers are added. If recoveries are elevated and the parent sample has no detection of the target, no qualifiers are added.
If there were outliers, data would be qualified JS#, where # is the spike recovery. Data could be biased high or low proportional to the spike recovery.

In this set of data, no qualifiers have been applied for matrix spike outliers. In one instance, tetrachloroethane is slightly out low in the MS, but the MSD is in control. The sample contains a significant level of this target, and although it is not 4x the spike amount, it is likely to impact the ability to accurately recover the spike. Professional judgment is that no qualification is warranted.

SDG	Client Sample ID	Lab Sample ID	Analyte	MS/MSD/RPD	Qualifier
L08030298	IW101-08C-EBT-6	L08030298-09	2-Chlorotoluene	OK/OK/21	None
			Bromomethane	OK/OK/31	None
			cis-1,2-dichloroethene	-100/-66/OK	None, sample > 4x spike
L08030269	PMW101-08B-EBT-6	L08030269-13	Bromomethane	OK/OK/28	None
			Chloromethane	55/OK/60	None, see text
			Tetrachloroethene	60/61/OK	None, marginal outlier
			Trichloroethene	-28/-2.5/OK	None, sample > 4x spike
L08030240	IW101-04B-EBT-6	L08030240-08	Bromodichloromethane	OK/123/OK	None, parent ND

C. The MSD relative percent differences (RPD) were within the defined contract limits.
Yes ____ No __X__NA____
A few RPDs were above the laboratory upper limit. However, qualifiers are not added for this unless the MS or MSD recovery is also out of limits.

D. The MS/MSD were client samples.
Yes __X_ No ____NA____

VIII. LABORATORY CONTROL SAMPLE

A. Laboratory Control Samples (LCS) was analyzed for every analysis performed and for every 20 samples.
Yes _X___ No ____

B. The LCS percent recoveries were within the limits defined in the contract (the MS limits are used as a reference or laboratory-specific limits for this matrix are defined).
Yes _____ No __X ____
The full target list has been spiked. There are a few elevated recoveries observed as shown in the table below. When a high recovery is associated with a non-detect in samples, no qualifier is added since the

indicated bias is high. When the target is detected, the result is qualified as JL#, where # is the elevated recovery. No targets have required qualification for LCS outliers.

SDG	Batch	Targets Detected	LCS/LCSD/RPD	Qualifiers
L08030240	WG266193	1,1,2,2-tetrachloroethane	131/OK/OK	None, not detected in samples
		1,2,3-trichloropropane	129/OK/OK	None, not detected in samples
	WG266015	bromodichloromethane	121/OK/OK	None, not detected in samples
L08030269	WG266015	bromodichloromethane	124/OK/OK	None, not detected in samples
L08030420	WG266926	bromodichloromethane	124/OK/OK	None, not detected in samples

IX. BLANKS

A. Method Blanks were analyzed at the required frequency and for each matrix and analysis.
Yes _X___ No____

B. No blank contamination was found in the Method Blank.
Yes____ No _X__
Contamination was observed in some method blanks indicated in the table, below the reporting limit. Whenever methylene chloride or acetone is detected in associated samples at a level less than 10x the method blank (corrected for dilution), the result is qualified as UB#, where # is the corrected method blank level. Such results are usable as nondetects. Qualifiers added are summarized in the table below. For other targets, the factor used is 5x.

SDG	Batch	Targets Detected	Results	Qualifiers
L08030420	WG266926	methylene chloride	0.48 F	UB detects < 10x MB
L08030298	WG266252	1,3,5-trimethylbenzene	0.54 F	None, ND
		p-isopropyltoluene	0.58 F	None, ND
		sec-butylbenzene	0.52 F	None, ND
	WG266347	1,3,5-trimethylbenzene	0.54 F	None, ND
	WG266481	1,3,5-trimethylbenzene	0.53 F	None, ND
	WG266606	1,3,5-trimethylbenzene	0.53 F	None, ND
L08030269	WG266606	1,3,5-trimethylbenzene	0.53 F	None, ND
	WG266252	1,3,5-trimethylbenzene	0.54 F	None, ND
		p-isopropyltoluene	0.58 F	None, ND
		sec-butylbenzene	0.52 F	None, ND
L08030240	WG265869	1,2,3-trichlorobenzene	0.15 F	None, ND
		1,3,5-trimethylbenzene	0.54 F	None, ND
		sec-butylbenzene	0.54 F	None, ND
L08030220	WG265869	1,2,3-trichlorobenzene	0.15 F	None, ND
		1,3,5-trimethylbenzene	0.54 F	None, ND
		sec-butylbenzene	0.54 F	None, ND
	WG265614	1,2,4-trichlorobenzene	0.23 F	None, ND
L08030333	WG266606	1,3,5-trimethylbenzene	0.53 F	None, ND
	WG266719	1,3,5-trimethylbenzene	0.54 F	None, ND

C. If Field Blanks were identified, no blank contamination was found.
Yes____ No __X__
There are 8 trip blanks and 2 rinse blanks. There are detections observed below the reporting limit as shown in the table. Some of these are qualified UB (see table above) due to detections in the associated method blank, thus are not used for qualifying associated samples. When analytes are present in both the field blank and the associated samples, the results in the samples are qualified in the same manner as for method blanks. For clarity, the qualifiers used in this case are UTB# for trip blanks and UFB# for rinse blanks.

SDG	Sample ID	Sample Date	Analyte	Result	Qualifier
L08030185	TB-031008-EBT-6	3/10/2008		All OK	None
L08030220	TB-031108-EBT-6	3/11/2008		All OK	None
L08030240	TB-031208-EBT-6	3/12/2008		All OK	None
L08030269	TB-031308-EBT-6	3/13/2008		All OK	None
L08030298	TB-031408-EBT-6	3/14/2008		All OK	None
L08030333	RB1-EBT-6	3/17/2008	1,4-Dichlorobenzene	0.62	UFB.68 detections
L08030333	RB1-EBT-6	3/17/2008	Toluene	1.53	None, ND in samples
L08030333	RB2-EBT-6	3/17/2008	1,4-Dichlorobenzene	0.678	UFB.68 detections
L08030333	RB2-EBT-6	3/17/2008	Benzene	0.132F	None, ND in samples
L08030333	RB2-EBT-6	3/17/2008	Toluene	1.51	None, ND in samples
L08030333	TB-031708-EBT-6	3/17/2008		All OK	None
L08030387	TB-031808-EBT-6	3/18/2008	Methylene chloride	0.64F	UFB.64 detections
L08030420	TB-031908-EBT-6	3/19/2008	Methylene chloride	0.566F	None, UB from MB

X. FIELD QC

If Field duplicates were identified, they met guidance RPD of < 35% for water or < 50% for soils. For values reported at < 5 x the reporting limit (RL), a difference of 2 x RL is used as guidance (4 x RL for soils). Data are not qualified for field duplicates as these are evaluated for the total project by the client.

Yes __X____ No ___ NA____

There are 9 identified field duplicates. Observations are summarized in the table. All are in control.

SDG	Parent Sample ID	Field Duplicate	Observations
L08030387	IW21-04A -EBT-6	DUP1	In control
L08030298	PMW21-05-EBT-6	DUP2	In control
L08030240	IW101-04A -EBT-6	DUP3	In control
L08030220	IW101-07A -EBT-6	DUP4	In control; MEK detected below PQL in parent, not in dup
L08030240	IW101-09C -EBT-6	DUP5	In control
L08030387	IW92-07-EBT-6	DUP6	In control
L08030220	PMW101-03A -EBT-6	DUP7	In control
L08030269	PMW101-07A -EBT-6	DUP8	In control
L08030185	DR2-1-EBT-6	DUP9	In control

XI. SYSTEM PERFORMANCE

A. The RICs, chromatograms, tunes and general system performance were acceptable for all instruments and analytical systems.

Yes ____ No____ NA__X__

Not part of this review level

B. The suggested EQLs for the sample matrices in this set were met.

Yes __X__ No____ NA____

XII. TCL COMPOUNDS

A. The identification is accurate and all retention times, library spectra and reconstructed ion chromatograms (RIC) were evaluated for all detected compounds.

Yes ____ No____ NA __X__

Not part of this review level

B. Quantitation was checked to determine the accuracy of calculations for representative compounds in each internal standards quantitation set.

Yes ____ No____ NA__X__

Not part of this review level

XIII. TENTATIVELY IDENTIFIED COMPOUNDS
TICs were properly identified and met the library identification criteria.
Yes____ No____ NA__X___
Not part of this review level

XIV. OVERALL ASSESSMENT OF THE CASE
The laboratory has complied with the requested method. Data are fully usable after consideration of qualifiers.
The following is noted:

Chain of Custody:
No qualifiers have been added for chain of custody issues and the project manager will update chains per the following notes to complete the project record. The chain of custody on use has been discussed in detail in previous reports, and those general comments apply. All chain of custody documents in this set were properly signed and dated.

In addition to these, the sample receiving checklist for SDG L08030220 notes that four samples were not on the chain of custody received. These include DUP-7, PMW101-03B, PMW101-04B, and PMW101-04A. A note appended after this comment states that the COC was received on 3/13/2008, the day after the samples were received.

To provide fully adequate documentation, the COC should accompany the samples. In this case it was provided subsequent to their arrival at the laboratory. In addition, the copy of this COC available to us has no signatures, either by the sample or by the laboratory.

Sample Condition:
New EPA regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be less than 6° C. The sample receipt conditions are fully compliant with applicable regulations.

Volatiles samples cannot be checked for pH outliers on sample receipt. The laboratory checks the samples at runtime. A number of samples were not at pH <2, as follows:

SDG L08030387, two samples. These were DUP-6 and IW92-07, both of which had a pH of 4. Both of these samples were analyzed on the 11th day of hold.
SDG L08030420, two samples. These were IW92-06 and IW92-08, both at pH 6. These were analyzed on the 12th day of hold.
SDG L08030240, 4 samples. These were PMW101-05A, IW101-04A, DUP3, and IW101-09B, at pH 7, 5, 5, and 5. These samples were analyzed on the 7th and 8th day of hold.
SDG L08030185, two samples. These were PMW101-01A and IW101-02B, pH 3 and 7, respectively. These samples were all analyzed in less than 7 days.
SDG L08030298, one sample. This is IW101-08C, at pH7. This sample was analyzed on the 12th day of hold.

For those samples that are pH 6-7, the sample should be regarded as being essentially unpreserved. In this case, samples that fall into this category were analyzed in 7 days or less, with the exception of IW101-08C in SDG L08030298. This sample was analyzed on the 12th day of hold. 40CFR indicates that for chlorinated compounds this is still acceptable, but that aromatics (BTEX) may be subject to some degradation under these conditions.

The other samples are all sufficiently acidic that biodegradation should be inhibited despite the fact that a pH <2 was not achieved. Using professional judgment, no qualifiers are added.

Continuing Calibrations:

No qualifiers have been added for CCV outliers. Vinyl acetate had a %D greater than the 25% validation limit in a number of cases. 4-Methyl-2-pentanone was above this limit in one case. When there are no detections, unless the %D is biased low and so large as to indicate a significant probability of false negatives, no qualifiers are added for %D outliers when targets are not detected.

LCS Recoveries:
The full target list has been spiked. There are a few elevated recoveries observed as shown in the table in the LCS section of this report. When a high recovery is associated with a non-detect in samples, no qualifier is added since the indicated bias is high. When the target is detected, the result is qualified as JL#, where # is the elevated recovery. No targets have required qualification for LCS outliers.

Matrix Spikes:
There are 4 MS/MSDs which meets the 1:20 ratio.

The full target list has been spiked. Most MS/MSD recoveries and RPDs are in control. Instances where spike recoveries are out of limits are shown in the table within the report body. For reasons discussed in the matrix spike section of this report, outliers have not required qualifiers.

Method Blanks:
A number of low-level (below the reporting limit) detections of long retention time targets are observed in the method blanks. These are not observed in the samples and therefore no qualifiers are required. One method blank contained a level of methylene chloride below the reporting limit and did result in qualifiers for associated samples. Whenever methylene chloride or acetone is detected in associated samples at a level less than 10x the method blank (corrected for dilution), the result is qualified as UB#, where # is the corrected method blank level. Such results are usable as nondetects.

Field Blanks:
There are 8 trip blanks and 2 rinse blanks. There are detections observed below the reporting limit as shown in the table within the report body. Some of these are already qualified UB due to detections in the associated method blank, thus are not used for qualifying associated samples. When analytes are present in both the field blank and the associated samples, the results in the samples are qualified in the same manner as for method blanks. For clarity, the qualifiers used in this case are UTB# for trip blanks and UFB# for rinse blanks. Qualifiers from field blanks are issued in this case for 1,4-dichlorobenzene and for methylene chloride.

Field QC:
There are 9 identified field duplicates. Observations are summarized in the table. All are in control.

ORGANIC DATA QUALITY REVIEW REPORT
GC REPORT FOR Metabolic Acids by HPLC; Ethane, Methane, Ethene, Carbon dioxide by EPA SOP RSK-175; and Hydrogen by AM20GAX (GC/RGD).

RSK-175:
SDG: L080: 30185,30220, 30420, 30298, 30269, 30387, 30333, 30240

Metabolic acids:
SDG: L080: 30185,30220, 30420, 30298, 30269, 30387, 30333, 30240

AM20GAX (Hydrogen):
SDG: P080: 3181, 3182, 3183, 3184, 3269, 3244

PROJECT: Memphis Defense Depot, EBT-6 for e2m, Texas

LABORATORY: Kemron Environmental Services, Marietta, OH; Hydrogen subcontracted to Microseeps, Inc, Pittsburg, PA

SAMPLE MATRIX: Water and Vapor

SAMPLING DATE (Month/Year): March 2008

NO. OF SAMPLES: Metabolic acids –97 waters including 2 rinse blanks; RSK-175 – 99 waters including 2 rinse blanks, AM20GAX – 83 vapor samples

ANALYSES REQUESTED: Metabolic Acids by HPLC; EPA SOP RSK-175, Microseeps AM20GAX

SAMPLE NO.: Attached

DATA REVIEWER: Sammy Huntington and John Huntington (Gateway Enterprises)

QA REVIEWER: Diane Short & Associates, Inc., INITIALS/DATE:

Telephone Logs included Yes____ No __X_

Contractual Violations Yes____ No __X_

The project QAPP, EPA Contract Laboratory Program National Functional Guidelines for Organic Review, 2001 (SOP), the EPA SW 846 Methods for Evaluating Solid Waste, Physical/ Chemical Methods Third Edition, (SW-846), current updates, and the project-specific methods have been referenced by the reviewer to perform this data validation review. The EPA qualifiers have been expanded to include a descriptor code and value to define QC violations and their values, per the approval of the Project Manager. The review has been tasked as Level III for review of all calibrations, holding times, and QC for all samples.

I. DELIVERABLES

All deliverables were present as specified in the Statement of Work (SOW), SW-846, or in the project contract.
Yes __X__ No ____
This report is tasked for review of holding times, sample integrity, calibrations and summary QC.

II. ANALYTICAL REPORT FORMS

The Analytical Report or Data Sheets are present and complete for all requested analyses.
Yes __ X___ No ____

III. HOLDING TIMES

A. The contract holding times were met for all analyses (Time of sample receipt to time of extraction and from extraction to analysis.)
Yes __X___ No ____
See Section B. below. Per EPA guidance, for validation purposes we calculate the holding time to the nearest day in cases where the regulation or method specifies holding time units of days.

B. The Clean Water Act (40 CFR 136) or method holding times were met for all analyses (Time of sample collection to time of extraction and from extraction to analysis.)
Yes __X___ No ____
Metabolic Acids: The reviewer has not been able to find documented holding times for the metabolic acids. The normal holding time for an analogous HPLC method 8310 is 14 days for preserved water samples. Metabolic acid holding times were all within 14 days.

RSK-175: For RSK-175, pH should not be adjusted when CO_2 is determined, which is the case in this project. The laboratory run logs document that the pH of the samples for this method had not been adjusted. When pH is adjusted, the holding time is 14 days per the method, and we have used this as the acceptable holding time.

AM20GAX (Hydrogen): This method is a procedure developed by Microseeps, Inc. Recommended holding times in the procedure are 14 days. All samples were analyzed within 14 days and no qualifiers are issued.

C. All chains of custody are complete with signatures and dates.
Yes __X__ No ____
No qualifiers have been added for chain of custody issues and the project manager will update chains per the following notes to complete the project record. The chain of custody on use has been discussed in detail in previous reports, and those general comments apply. All chain of custody documents in this set were properly signed and dated.

In addition to these, the sample receiving checklist for SDG L08030220 notes that four samples were not on the chain of custody received. These include DUP-7, PMW101-03B, PMW101-04B, and PMW101-04A. A note appended after this comment states that the COC was received on 3/13/2008, the day after the samples were received.

To provide fully adequate documentation, the COC should accompany the samples. In this case it was provided subsequent to their arrival at the laboratory. In addition, the copy of this COC available to us has no signatures, either by the sample or by the laboratory.

All chain of custody documents for hydrogen analysis were properly signed and dated. The following discrepancies were noted by the laboratory:

SDG P0803269: Lab received MW101B but it was not on the chain of custody. The discrepancy sheet states that the resolution was to add the sample to the chain of custody per client. The sample was not explicitly added to the chain of custody form, but the discrepancy document is present in the data package and the sample was analyzed in this SDG.

SDG P0803244: Lab received IW-92-07 and DUP-6, not on the chain of custody. The discrepancy sheet states that the resolution was to add the samples to the chain of custody per client. The data package includes email documentation of the resolution discussion with the client. COC documents were created and issued for the impacted samples and are present in the data package.
In addition, sample IW-21-01A was on the chain of custody twice, as noted by the laboratory.

D. Samples were received at the proper temperature and preservation.
Yes _X__ No _____
The most current regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be less than 6° C. The documented sample receipt conditions are fully compliant with applicable regulations.

We could not locate a record of the cooler temperature on receipt for the hydrogen samples. We are aware of no regulatory requirement for receipt temperature for this method, so no qualifiers have been applied. However, good laboratory practice should include a receipt temperature record.

SDG L08030240: Sample receipt form states that sample IW101-09B for metabolic acids was received at pH 6. The form does not indicate if the pH was adjusted.

SDG L08030333: Sample receipt form states that IW-92-05 for metabolic acids was received at pH 6, laboratory adjusted the pH.

SDG L08030387: Sample receipt for states that IW-92-04 was received at pH 6, and although the laboratory adjusted it the pH could not be reduced below 3.5.

SDG L08030420: Sample receipt form states that IW-92-08 was received at pH 6, laboratory adjusted the pH.

This is a common occurrence for samples at this site. The proper sample bottles have been issued and used. There is a buffering capacity to these matrices that results in slightly elevated pH. The pH is adjusted as soon as the samples reach the laboratory and the impact on the sample data is considered to be minimal. No qualifiers have been added.

IV. INSTRUMENT CALIBRATION (IC) AND CONTINUING CALIBRATION (CC) VERIFICATION

A. The GC standards were analyzed at the required frequency.
Yes ___X___ No_____

B. The chromatographic resolution and separation criteria were met.
Yes __X__ No_____

C. The suggested columns were used and the EQLs were met.
Yes __X___ No_____

D. Calibration factors for IC met the 20% RSD limit or the regression curves were prepared with a correlation coefficient 'r' greater than 0.99, per SW-846, Method 8000B.
Yes __X___ No _____

MBA: The initial calibration reports for the metabolic acids are inaccurate. The calibration report provides only a %RSD for each analyte, with a note at the bottom that the linear calibration model is used. However, the observed r or r^2 values are not reported, although the criteria used are shown. In the Case Narrative, the laboratory has indicated that all initial calibrations have used linear regression, and that all acceptance criteria are met.

In a previous level IV data review for this project, we were able to confirm from the raw data that regression curves were in fact used and that they met criteria. We cannot confirm this for the present Level III review, but have assumed that the laboratory Case Narrative is correct and have not qualified the results for the %RSDs in the initial calibration reports that are out of limits.

RSK-175: All initial calibrations are in control.

AM20GAX (Hydrogen): All initial calibrations are conducted using a linear regression curve and all are in control.

E. Percent Difference (%D's) for Continuing Calibration Factors and retention times (RT) were within the 25% Limits.
Yes ____ No ___X__

RSK-175: The laboratory conducts opening and closing calibrations (bracketing the samples during the analytical run). For RSK-175 there is not a specific requirement in the procedure for closing calibrations, and only calibration verification each 12 hours is specified. SW-846 guidance (method 8000B), however specifically requires such closing calibrations for external standard methods. For detected analytes, SW-846 specifies that the closing calibration must meet the same criteria as the opening calibration. This has been achieved for all analytes but for carbon dioxide, for which a number of opening and closing calibrations do not meet the 30% D method criterion specified for RSK-175. In such cases, detected levels of carbon dioxide are qualified as JC#, where # is the applicable opening or closing CCV outlier. Such results may be biased due to calibration drift.

It should be noted in this regard that the laboratory appears to use a different criterion for carbon dioxide, since a few CCV results were flagged as being outside of limits, but it is not clear to this reviewer where the laboratory limit is set. This method has not been published as a promulgated method by EPA. It rather exists as an open literature publication and an internal EPA SOP), and it may not have been fully developed for carbon dioxide. Thus the laboratory limits may be realistic for this analyte. Nonetheless, the results appear to indicate a probable bias which should be considered in using the data.

MBA: All calibrations are in control.

AM20GAX: All calibrations are in control. The laboratory is employing the external standard method.

V. BLANKS

A. Laboratory blanks
1. Laboratory blanks were analyzed for every sample set and for each matrix type or once in every ten samples, whichever is more frequent.
Yes __X__ No_____

2. No blank contamination was found in the method blank.
Yes __X___ No ____

3. Instrument blank analysis was performed following all samples that contained analytes at high concentrations.
Yes _____ No____ NA__X___

B. Field Blanks
If field blanks were identified, no blank contamination was found.
Yes _____ No__X ___ NA_____
The table below shows the field blank outliers and the qualifiers added.
AM20GAX (Hydrogen): No rinse blanks are present. For hydrogen such blanks are unnecessary.
For metabolic acids and RSK-175, the table below summarizes the results.

Method	SDG	Sample ID	Sample Date	Analyte	Result	Qualifier
830-MBA	L08030333	RB1-EBT-6	3/17/2008		All OK	None
			3/17/2008		All OK	None
RSK175\5021	L08030333	RB1-EBT-6	3/17/2008	Carbon Dioxide	310F	None, samples > 5x FB
			3/17/2008	Methane	0.29F	None, samples > 5x FB
			3/17/2008	Carbon Dioxide	370F	None, samples > 5x FB
			3/17/2008	Methane	0.47F	UFB# one detection < 5x FB

VI. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

A. Matrix spike (MS) and matrix duplicate or matrix spike duplicate (MSD) were analyzed for every analyses performed for every 20 samples or for every matrix whichever is more frequent.
Yes __X___ No ____

RSK-175: There were four (4) MS/MSDs which do not meet the 20 to 1 ratio.
Metabolic Acids: There were four (4) MS/MSDs which do not meet the 20 to 1 ratio.
AM20GAX: There are no MS/MSDs for this method. They are not required or possible for hydrogen analysis.

The MS/MSDs conducted are summarized in the table below.

Method	SDG	Client Sample ID	Lab Sample ID
830-MBA	L08030240	IW101-04B-EBT-6	L08030240-09
	L08030269	PMW101-08B-EBT-6	L08030269-14
	L08030298	IW101-08C-EBT-6	L08030298-10
	L08030387	IW21-05B-EBT-6	L08030387-11
RSK175\5021	L08030240	IW101-04B-EBT-6	L08030240-09
	L08030269	PMW101-08B-EBT-6	L08030269-14
	L08030298	IW101-08C-EBT-6	L08030298-10
	L08030387	IW21-05B-EBT-6	L08030387-11

B. The MS and MSD percent recoveries (%R) were within the limits defined by the laboratory or in the contract.
Yes _____ No __X__
RSK-175: No qualifiers are added for MS outliers. All outliers are associated with samples having levels that are greater than 4x the spike. In such circumstances, the analytical variability is on the order of the spike level, and so recovery calculations are not meaningful. No qualifiers are added.

Metabolic Acids: One sample is qualified for lactic acid as JS50, where the sample level is not greater than 4x the spike amount. In other cases the sample level is greater than 4x the spike level, and no qualifiers are added. Data could be biased low proportional to the spike recovery

MS/MSD Outliers

Method	SDG	Client Sample ID	Lab Sample ID	Analyte	MS/MSD/RPD	Qualifiers
RSK-175	L08030269	PMW101-08B-EBT-6	L08030269-13	Methane	OK/OK/26	None, RPD only
	L08030240	IW101-04B-EBT-6	L08030240-08	Methane	-47/241/39	None, sample> 4x spike
	L08030298	IW101-08C-EBT-6	L08030298-09	Methane	194/135/OK	None, sample > 4x spike
	L08030240	IW101-04B-EBT-6	L08030240-08	Carbon Dioxide	OK/OK/45	None, RPD only
MBA	L08030240	IW101-04B-EBT-6	L08030240-08	lactic acid	50/50/OK	JS50 detection
	L08030298	IW101-08C-EBT-6	L08030298-09	acetic acid	69/OK/OK	None, sample > 4x spike
	L08030298	IW101-08C-EBT-6	L08030298-09	propionic acid	55/54/OK	None, sample > 4x spike

C. The MSD relative percent differences (RPD) were within the defined contract or laboratory limits.
Yes __X___ No _____
See the section above. The parent sample is qualified as JD#, where # is the RPD outlier, when both RPD and spike recoveries are out of limits. Otherwise samples are not qualified for RPD outliers. In this set of data no qualifiers are added for RPD.

D. The MS/MSD were client samples.
Yes __X__ No _____

VII. LABORATORY CONTROL SAMPLE AND DUPLICATE (LCS/LCSD)
A. Laboratory Control Sample (LCS) and LCS duplicate were analyzed for every analyses performed and for every 20 samples or for every matrix whichever is more frequent.
Yes __X___ No_____

B. The LCS percent recovery (%R) are within the limits defined by the laboratory or in the contract.
Yes __X__ No __ __

VIII. SURROGATE RECOVERY
A. The Surrogate spike was analyzed with every sample.
Yes _____ No ____ NA_X___
RSK-175: Surrogates are not required for this analysis.

Metabolic Acids: Surrogates are not required for this analysis.

AM20GAX (Hydrogen): Surrogates are not applicable to this method.

B. And met the recovery limits defined in the current contract. If recovery limits were exceeded, the sample was re-extracted and re-analyzed.
Yes _____ No_____ NA __X___

IX. INTERNAL STANDARDS
The Internal Standards met the 100% upper and -50% lower limits criteria and the Retention times were within the required windows. Note: Internal standards are not required for GC analysis, but if they are used, SW-846 stipulates that they meet the same recovery requirements as those specified for GCMS methods.
Yes ____ No _____ NA__X__
RSK-175, Metabolic Acids, AM20GAX: The laboratory uses the external standard procedure, so no internal standards are present or required.

X. FIELD QC
If Field duplicates were identified, they met guidance RPD of < 35% for water or < 50% for soils and gases. For values reported at < 5 x the reporting limit (RL), a difference of 2 x RL is used as guidance (4 x RL for soils). Data are not qualified for field duplicates as these are evaluated for the total project by the client.
Yes _____ No __X__ NA_____

There are 9 identified field duplicates, 5 for hydrogen. All are in control except as indicated in the table below.

SDG	Parent Sample ID	Field Duplicate	Observations
L08030387	IW21-04A -EBT-6	DUP1	OK all methods
L08030298	PMW21-05-EBT-6	DUP2	OK all methods
L08030240	IW101-04A -EBT-6	DUP3	Hydrogen sample 4.2, dup 1 – OK all others
L08030220	IW101-07A -EBT-6	DUP4	OK in MBA and RSK, none in hydrogen data set
L08030240	IW101-09C -EBT-6	DUP5	OK all methods
L08030387	IW92-07-EBT-6	DUP6	Lactic acid 8.3 in sample, 3.4 in dup. OK all others
L08030220	PMW101-03A -EBT-6	DUP7	OK all methods
L08030269	PMW101-07A -EBT-6	DUP8	OK all methods
L08030185	DR2-1-EBT-6	DUP9	OK all methods

XI. COMPOUND IDENTIFICATION
A. All raw data chromatograms and data system printouts were evaluated for all detected compounds and the identification is accurate.
Yes ____ No _____ NA __X___
This evaluation is not performed at this level of review.

B. Retention time limits or peak pattern identifications are met.
Yes _____ No _____ NA__X___
This evaluation is not performed at this level of review.

C. If two column or two detector confirmation was performed, the value of the confirmation was within 25%D of the quantitation value for results > 5 x RL. If the laboratory has flagged data 'COL' for %D > 40%, a JP qualifier has been added for low level results. For values below (5 x RL), the difference is not considered to impact the precision of the data.

Yes ____ No ____ NA __X__
Not part of this level of review. Dual columns are not required for these methods.

XII. COMPOUND QUANTITATION AND REPORTED CRQLS
A. Raw data examination verified that all sample results were correctly calculated.
Yes _____ No_____ NA__X___
This evaluation is not performed at this level of review.

B. The chromatograms and general system performance were acceptable for all instruments and analytical systems.
Yes _____ No _____ NA__X___
This evaluation is not performed at this level of review.

XIII. OVERALL ASSESSMENT OF THE CASE
The method criteria have been met and the quality of the data, after consideration of qualifiers, is considered acceptable and usable as far as can be determined at this level of review.
The following is noted:

Chain of Custody:
No qualifiers have been added for chain of custody issues and the project manager will update chains per the following notes to complete the project record. The chain of custody on use has been discussed in detail in previous reports, and those general comments apply. All chain of custody documents in this set were properly signed and dated.

In addition to these, the sample receiving checklist for SDG L08030220 notes that four samples were not on the chain of custody received. These include DUP-7, PMW101-03B, PMW101-04B, and PMW101-04A. A note appended after this comment states that the COC was received on 3/13/2008, the day after the samples were received.

To provide fully adequate documentation, the COC should accompany the samples. In this case it was provided subsequent to their arrival at the laboratory. In addition, the copy of this COC available to us has no signatures, either by the sample or by the laboratory.

All chain of custody documents for hydrogen analysis were properly signed and dated. The following discrepancies were noted by the laboratory:
SDG P0803269: Lab received MW101B but it was not on the chain of custody. The discrepancy sheet states that the resolution was to add the sample to the chain of custody per client. The sample was not explicitly added to the chain of custody form, but the discrepancy document is present in the data package and the sample was analyzed in this SDG.
SDG P0803244: Lab received IW-92-07 and DUP-6, not on the chain of custody. The discrepancy sheet states that the resolution was to add the samples to the chain of custody per client. The data package includes email documentation of the resolution discussion with the client. COC documents were created and issued for the impacted samples and are present in the data package.
In addition, sample IW-21-01A was on the chain of custody twice, as noted by the laboratory.

Sample Condition:

The most current regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be less than 6° C. The documented sample receipt conditions are fully compliant with applicable regulations.

We could not locate a record of the cooler temperature on receipt for the hydrogen samples.
We are aware of no regulatory requirement for receipt temperature for this method, so no qualifiers have been applied. However, good laboratory practice should include a receipt temperature record.

SDG L08030240: Sample receipt form states that sample IW101-09B for metabolic acids was received at pH 6. The form does not indicate if the pH was adjusted.
SDG L08030333: Sample receipt form states that IW-92-05 for metabolic acids was received at pH 6, laboratory adjusted the pH.
SDG L08030387: Sample receipt for states that IW-92-04 was received at pH 6, and although the laboratory adjusted it the pH could not be reduced below 3.5.
SDG L08030420: Sample receipt form states that IW-92-08 was received at pH 6, laboratory adjusted the pH.

This is a common occurrence for samples at this site. The proper sample bottles have been issued and used. There is a buffering capacity to these matrices that results in slightly elevated pH. The pH is adjusted as soon as the samples reach the laboratory and the impact on the sample data is considered to be minimal.

Continuing Calibrations:
RSK-175: The laboratory conducts opening and closing calibrations (bracketing the samples during the analytical run). For RSK-175 there is not a specific requirement in the procedure for closing calibrations, and only calibration verification each 12 hours is specified. SW-846 guidance (method 8000B), however specifically requires such closing calibrations for external standard methods. For detected analytes, SW-846 specifies that the closing calibration must meet the same criteria as the opening calibration. This has been achieved for all analytes but for carbon dioxide, for which a number of opening and closing calibrations do not meet the 30% D method criterion specified for RSK-175. In such cases, detected levels of carbon dioxide are qualified as JC#, where # is the applicable opening or closing CCV outlier. Such results may be biased due to calibration drift.

It should be noted in this regard that the laboratory appears to use a different criterion for carbon dioxide, since a few CCV results were flagged as being outside of limits, but it is not clear to this reviewer where the laboratory limit is set. This method has not been published as a promulgated method by EPA (it rather exists as an open literature publication and an internal EPA SOP), and it may not have been fully developed for carbon dioxide. Thus the laboratory limits may be realistic for this analyte. Nonetheless, the results appear to indicate a probable bias which should be considered in using the data.)

MBA: All calibrations are in control.

AM20GAX: All calibrations are in control. The laboratory is employing the external standard method.

MS/MSD Recoveries:
RSK-175: There were four (4) MS/MSDs which meet the 20 to 1 ratio.
No qualifiers are added for MS outliers. All outliers are associated with samples having levels that are greater than 4x the spike. In such circumstances, the analytical variability is on the order of the spike level, and so recovery calculations are not meaningful. No qualifiers are added.

Metabolic Acids: There were four (4) MS/MSDs which meet the 20 to 1 ratio.
One sample is qualified for lactic acid as JS50, where the sample level is not greater than 4x the spike amount. In other cases the sample level is greater than 4x the spike level, and no qualifiers are added. Data could be biased low proportional to the spike recovery

Field Duplicates:
There are 9 identified field duplicates, 5 for hydrogen. All are in control except as indicated in the table within the report. Some outliers were present for hydrogen and for metabolic acids.

Field Blanks:
The table within the report shows the field blank outliers and the qualifiers added. For this data set, some RSK-175 outliers were present and a few qualifiers were added. See the table for details.

INORGANIC DATA QUALITY REVIEW REPORT

METALS BY ICP, Sulfide 376.1, Anions 300.0, Alkalinity 310.2, and Total Organic Carbon 415.1

SDG: L08030185, L08030220, L08030240, L08030269, L08030298, L08030333, L08030387, L08030420

PROJECT: Memphis Defense Depot, EBT-6; for e2m, Texas

LABORATORY: Microbac Laboratories (formerly Kemron) Marietta, OH

SAMPLE MATRIX: Water SAMPLING DATE (Month/Year): 3/2008

ANALYSES REQUESTED: SW-846 Method 6010 (ICP); MCAWW: 376.1, 300.0, 310.2, and 415.1

NO. OF SAMPLES: 108 Total Water

SAMPLE NO: See Attached

DATA REVIEWER: Joseph J Egry IV

QA REVIEWER: Diane Short and Associates Inc. INITIALS/DATE: _____

Telephone Logs included Yes____ No _X___

Contractual Violations Yes____ No _X___

The project Sampling and Analysis Plan (SAP), the EPA Contract Laboratory Program National Functional Guidelines for Inorganic Review, 2002 and the SW-846 Methods and the MCAWW methods have been referenced by the reviewer to perform this data validation review. The EPA qualifiers have been expanded to include a descriptor code and value to define QC violations and their values, per the approval of the Project Manager. Per the Scope of Work, the review includes validation of all calibrations, chains of custody (for sample holding time and preservation only), and QC forms referencing the above documents.

I. DELIVERABLES

All deliverables were present as specified in the Statement of Work or project contract.
Yes__X__ No____
The following is noted for clarification:
Per the contract, all packages were reviewed for holding time, summary QC and calibration (Level III). No raw data were required for review except where needed to review calibrations. L08030185 was also reviewed for ICB/CCBs. There are 3 ICP analytes, Arsenic, Manganese, and Selenium plus wet chemistry parameters.

II. CALIBRATIONS

A. All initial instrument calibrations were performed as defined in the contract or Statement of Work (SOW). All correlation coefficients of the 3 point curve were > 0.995.
Yes__X__ No___ NA____

B. The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were analyzed at the required frequency.
Yes__X__ No____
Sequencing was not required, but sufficient calibrations were present to verify that the frequencies were met for client samples.

C. And the ICV and CCV standard percent recovery results were within the required control limits of ± 10% D or 90 – 110 %R.
Yes___ No_X___
The following analytes exceed the QC limits:

SDG	Analysis	%R	%D	Qualifier
L08030387	Total Organic Carbon	85		JC85
L08030420	Nitrate		13	JC13
L08030420	Sulfate		11	JC11
L08030420	Total Organic Carbon	85		JC85
L08030333	Total Organic Carbon	81		JC81

Data are qualified JC#, where # is the percent RSD or percent D (for Nitrate and Sulfate) of the Calibration. The %R and %D indicates the deviation from the relative response factor per the relative standard deviation (RSD). As the value increases, the range of the quantification could possibly increase, therefore increasing the estimation of the reported value.

III. CRDL STANDARDS

The 2 x CRDL standards were analyzed as required in the SOW.
Yes ____ No____ NA__X_
Not required.

IV. BLANKS

Note: the highest blank associated with any particular analyte is used for the qualification process and is the value entered after the "B" blank descriptor.

A. The initial calibration blanks (ICB) and continuing calibration blanks (CCB) were analyzed at the required frequency.
Yes__X_ No____ NA____
Sequencing was not required, but sufficient calibration blanks were present to verify that the frequencies were met for client samples.

B. And the ICB and CCB results were within the required control limits.
Yes__X_ No____ NA_____

C. And all analytes in the Leach Blank were less than the CRDL, or less than 2x the instrument detection limit (IDL), whichever is lower.
Yes____ No____ NA__X__
No TCLP analysis was performed.

V. PREPARATION BLANKS
A. Preparation blanks were prepared and analyzed at the required frequency.
Yes__X__ No____

B. And all analytes in the preparation blank were less than the CRDL, or less than the instrument detection limit (IDL), whichever is lower.
Yes__X__No____

C. Field, trip, decon rinse or other field blanks are contained and identified in the package.
Yes __X__ No____ NA____

D. And the reported results are less than the CRDL or less than the IDL, whichever is lower.
Yes ____ No __X_ NA____
Below is a table of analytes that were found in the rinse blanks.

SDG	Analysis	Result	Qualifier
L08030333	Chloride	0.117	UFB.117

Data have been qualified UFB#, where # is the value of the associated blank. Data are qualified only when sample results are <5 x blank. When data are >5 x the blank and require no qualification, it is indicated as such in the table.

VIA. ICP INTERFERENCE CHECK SAMPLE
A. The Interference Check Sample (ICS) was analyzed as required in the SOW or contract.
Yes__X_ No____ NA____

B. And the ICS percent recovery results were reported for all required ICS analytes and were within required control limits of 80% to 120%.
Yes__X__ No____ NA____

C. ICP analysis results for analytes not required to be present in a given ICS standard were within acceptable limits.
Yes____No____ NA__X__
Not requested by client and data not provided by laboratory for limited list analyses.

VIB. INTERELEMENT CORRECTION FACTORS
The Interelement Correction Factors are included and complete for all possible interferent analytes.
Yes____No____ NA__X__
Review of possible other contaminants was not requested by the client.

VII. SPIKE SAMPLE RECOVERY
A. A matrix (pre-digestion) spike sample was analyzed for each digestion group and/or matrix or as required in the SOW.
Yes __X___ No____
The following samples were identified as client-specific MS/MSD samples.

SDG	Sample ID
L08030240	IW101-04B -EBT-6
L08030269	PMW101-08B -EBT-6
L08030298	IW101-08C -EBT-6
L08030387	IW21-05B -EBT-6

B. And the Matrix spike percent recoveries were within the required control limits of 75 – 125%.
Yes ____ No__X_ NA____
The following matrix spike recoveries resulted in data qualification.

SDG	Sample ID	Analysis	Recovery	Qualifier
L08030185	Non-Client Sample	Chloride	19.1/11.6	None, 4X
L08030387	IW21-05B -EBT-6	Alkalinity, Total	31/31.9	JS31
L08030387	IW21-05B -EBT-6	Total Organic Carbon	195/52	None, 4X
L08030220	Non-Client Sample	Chloride	62/68	JS62
L08030333	Non-Client Sample	Bromide	74.8/75.3	JS74.8
L08030333	Non-Client Sample	Chloride	68/68.5	JS68
L08030298	IW101-08C -EBT-6	Chloride	138/137	JS138
L08030298	IW101-08C-EBT-6	Alkalinity, Total	218/157	JS218
L08030298	IW101-08C-EBT-6	Total Organic Carbon	189/0	None, 4X
L08030240	IW101-04B -EBT-6	Total Organic Carbon	134/128	JS134
L08030240	IW101-04B -EBT-6	Alkalinity, Total	0/0	JS0

Results were qualified JS#, where the # is the percent recovery of that particular analyte. For high recoveries, only detected results are qualified. Data could be biased high proportional to the recovery. A low matrix spike recovery indicates a possible low bias to the reported result proportional to the spike recovery. When the spike is less than four times (4x) the concentration of the analyte in the parent sample, no qualification is required as the recovery is statistically invalid. The lab limits are 80 – 120%. Per the QAPP, the CLP limits are used for validation.

B. A Post-digest spike was analyzed if required.
Yes__X__No____ NA____

C. The MS/MSD samples included client samples
Yes __X_ No___ NA____

VIII. DUPLICATES
A. Matrix (pre-digestion) duplicate samples were analyzed at the required frequency
Yes __X__ No____
The laboratory runs MS/MSD samples.

B. And the Matrix duplicate relative percent differences (RPD) were within the required control limits (Water 20%, Soil 35%) or the RL limits were met if the duplicate values are < 5 x RL. If the either one of the duplicate results are < 5 X RL, the RPD is not used. The QC limit used is the difference between the original and the duplicate results (the RL) for water and (2X the RL) for soils.
Yes ____ No __X__ NA_____
The following matrix spike RPD resulted in data qualification.

SDG	Sample ID	Analysis	%D	Qualifier
L08030240	IW101-04B -EBT-6	Alkalinity, Total	49	JD49

Data are qualified JD#, where the # is the RPD between the matrix spike and matrix spike duplicate of that particular analyte. It is possible that matrix interference or sample inhomogeneity are affecting the consistency of the reported results. It is possible the variability of the reported results increases as the RPD of difference between the values increases.

IX. LABORATORY CONTROL SAMPLE
A. Laboratory control samples (LCS) were analyzed at the required frequency.
Yes _X___ No____

B. And LCS recoveries were within the required control limits of 80 to 120%.
Yes _____ No__X__
The following Laboratory Control Sample (LCS) recoveries resulted in data qualification.

SDG	Work Group	Analysis	Recovery	Qualifier

SDG	Work Group	Analysis	Recovery	Qualifier
L08030387	WG266831	Total Organic Carbon	107/122	JL122
L08030420	WG266831	Total Organic Carbon	107/122	JL122
L08030333	WG266831	Total Organic Carbon	107/122	JL122
L08030298	WG266831	Total Organic Carbon	107/122	JL122

The samples were qualified JL#, where # is the value of the percent recovery of the LCS from the true value. The QC limit is 80% - 120% for inorganic waters. Data whose percent recovery is greater than 120% could possibly be biased high with respect to the extent of the recovery. Undetected data are not qualified for high LCS recoveries.

X. MSA RESULTS AND GRAPHITE FURNACE ANALYSIS (GFAA)
Duplicate injections were performed for all analyses and the RSDs were less than 20% for all reported results. (Method of Standard Additions (MSA) requires only a single injection).
Yes____No____ NA__X___
Graphite furnace was not done.

XI. ICP SERIAL DILUTION
A. ICP Serial Dilutions have been analyzed at the required frequency if the analyte concentrations are greater than 50 x IDL.
Yes__X_ No____ NA_____
Per the 10% check.

B. And the percent difference criteria of + 10 % have been met.
Yes__X__ No ____ NA____

C. The serial dilution analyses were on client samples
Yes __X___ No_____

XII. INSTRUMENT DETECTION LIMITS
A. The Instrument Detection Limits have met the Quarterly reporting requirements.
Yes ___X_ No____ NA___
This was determined to be acceptable during the contractual process.

B. And all sample results have met the required detection limits (CRDL).
Yes__X__ No____ NA____
No dilutions were performed

XIII. PREPARATION AND ANALYSIS LOGS
A. All samples were prepared or analyzed within the required holding times referencing the SOW (time of sample receipt to preparation/distillation).
Yes__X__ No____

B. All samples were analyzed within the 40 CFR 136 (Clean Water Act) or method recommended holding times (time of sample collection to date of analysis).
Yes_____ No__X__

The following SDGs had samples that were analyzed after the allowed holding time had expired.

SDG	Sample ID	Collect date	Collect time	Analysis	Analysis Date/Time	Qualifier
L08030387	IW92-04-EBT-6	3/18/2008	6:30	Nitrate/Nitrite	3/20/08 9:20	JH2.75
L08030387	IW21-04A-EBT-6	3/18/2008	7:49	Nitrate/Nitrite	3/20/08 9:55	JH2.75
L08030387	IW21-04B-EBT-6	3/18/2008	7:55	Nitrate/Nitrite	3/20/08 12:30	JH4.5
L08030387	DUP1-EBT-6	3/18/2008	7:48	Nitrate/Nitrite	3/20/08 9:38	JH1.75
L08030333	PMW21-02-EBT-6	3/17/2008	8:17	Nitrate/Nitrite	3/19/08 11:07	JH2.75
L08030333	PMW21-03-EBT-6	3/17/2008	10:11	Nitrate/Nitrite	3/19/08 12:17	JH2
L08030333	IW21-01A-EBT-6	3/17/2008	9:10	Nitrate/Nitrite	3/19/08 11:42	JH2.5
L08030333	IW21-01B-EBT-6	3/17/2008	9:16	Nitrate/Nitrite	3/19/08 11:59	JH2.75
L08030333	IW21-02A-EBT-6	3/17/2008	11:23	Nitrate/Nitrite	3/19/08 13:44	JH2.25
L08030333	IW21-02B-EBT-6	3/17/2008	11:51	Nitrate/Nitrite	3/19/08 14:01	JH2
L08030333	IW21-03A-EBT-6	3/17/2008	13:41	Nitrate/Nitrite	3/19/08 14:19	JH.75
L08030333	RB1-EBT-6	3/17/2008	7:57	Nitrate/Nitrite	3/19/08 10:50	JH3
L08030333	IW92-05-EBT-6	3/17/2008	12:57	Nitrate/Nitrite	3/19/08 15:11	JH2.25
L08030298	IW92-02-EBT-6	3/14/2008	8:43	Nitrate	3/18/08 14:24	JH96
L08030298	IW92-03-EBT-6	3/14/2008	12:27	Nitrate	3/18/08 14:41	JH96
L08030298	IW101-06A-EBT-6	3/14/2008	8:04	Nitrate	3/18/08 14:59	JH96
L08030298	IW101-06B-EBT-6	3/14/2008	7:50	Nitrate	3/18/08 15:16	JH96
L08030298	IW101-06C-EBT-6	3/14/2008	9:31	Nitrate	3/18/08 15:33	JH96
L08030298	IW101-08A-EBT-6	3/14/2008	11:57	Nitrate	3/15/08 17:04	JH96
L08030298	IW101-08B-EBT-6	3/14/2008	14:18	Nitrate	3/15/08 17:22	JH96
L08030298	IW101-08C-EBT-6	3/14/2008	13:58	Nitrate	3/15/08 20:33	JH96
L08030298	MW-101T-EBT-6	3/14/2008	10:42	Nitrate	3/15/08 17:39	JH96
L08030298	MW-101B-EBT-6	3/14/2008	12:14	Nitrate	3/15/08 17:56	JH96
L08030298	PMW21-01-EBT-6	3/14/2008	13:00	Nitrate	3/15/08 18:14	JH96
L08030298	PMW21-05-EBT-6	3/14/2008	10:23	Nitrate	3/15/08 18:31	JH96
L08030298	MW-21-EBT-6	3/14/2008	14:34	Nitrate	3/15/08 18:49	JH96
L08030298	DR1-3-EBT-6	3/14/2008	8:17	Nitrate	3/15/08 19:06	JH96
L08030298	DUP2-EBT-6	3/14/2008	10:25	Nitrate	3/15/08 19:23	JH96
L08030269	IW101-04C-EBT-6	3/13/2008	8:38	Nitrate	3/18/08 15:51	JH120
L08030269	IW101-05A-EBT-6	3/13/2008	10:35	Nitrate	3/18/08 16:08	JH120
L08030269	IW101-05B-EBT-6	3/13/2008	11:40	Nitrate	3/18/08 17:01	JH120
L08030269	IW101-05C-EBT-6	3/13/2008	13:17	Nitrate	3/18/08 17:18	JH120
L08030269	IW92-01-EBT-6	3/13/2008	13:23	Nitrate	3/18/08 17:35	JH120
L08030269	PMW85-01-EBT-6	3/13/2008	8:05	Nitrate	3/18/08 17:53	JH120
L08030269	IW-01-EBT-6	3/13/2008	10:23	Nitrate	3/18/08 18:10	JH120
L08030269	DUP8-EBT-6	3/13/2008	7:26	Nitrate	3/18/08 18:28	JH120

SDG	Sample ID	Collect date	Collect time	Analysis	Analysis Date/Time	Qualifier
L08030269	PMW101-07A-EBT-6	3/13/2008	7:21	Nitrate	3/18/08 18:45	JH120
L08030269	PMW101-07B-EBT-6	3/13/2008	10:05	Nitrate	3/18/08 19:03	JH120
L08030269	PMW101-08A-EBT-6	3/13/2008	11:56	Nitrate	3/19/08 6:54	JH144
L08030269	PMW101-08B-EBT-6	3/13/2008	13:36	Nitrate	3/19/08 7:12	JH144
L08030240	DUP5-EBT-6	3/12/2008	10:58	Nitrate	3/14/08 12:47	JH1.75

Data are qualified JH#, where # is the number of hours exceeding the 48-hour holding time. The driver behind the nitrate/ nitrite analysis is the nitrite oxidation. If only total nitrate is needed, the qualifier would not be applicable as nitrate alone has a holding time of 28 days.

C. Chains of Custody (COC)

1. Chains of Custody (COC) were reviewed and all fields were complete, signatures were present and cross outs were clean and initialed.

Yes__X___ No____

The full assessment of the chains is in the organic report. The project manager is updating the project record per those comments. For SDG L08030220, four samples were received without a Chain of Custody. The laboratory received unsigned COCs the following day.

2. Samples were received at the required temperature and preservation.

Yes____ No__X__

The following samples were received not being preserved as required. Data could be biased low due to degradation of the requested compounds. Metals data are not expected to be significantly impacted. As noted in the organic report and in previous reports, these samples are subject to buffering effects. The laboratory has verified that proper sample bottles were sent with the required preservatives. Samples are made to the proper pH as soon as they arrive at the laboratory and the impact of the short time period is not expected to significantly impact the data usability.

SDG	Sample	Analysis	pH	Qualifier
L08030333	IW92-05-EBT-6	TOC	6	JP
L08030387	IW92-04-EBT-6	TOC	6	JP
L08030420	IW92-06-EBT-6	TOC	6	JP
L08030420	IW92-08-EBT-6	TOC	6	JP

XIV. FIELD QC

A. Field QC samples (duplicates, SRMs) were identified.

Yes __X__ No____

The flowing samples were identified as Sample Duplicates.

SDG	Sample ID	Duplicate ID

L08030185	DR2-1-EBT-6	DUP9
L08030220	IW101-07A -EBT-6	DUP4
L08030220	PMW101-03A -EBT-6	DUP7
L08030240	IW101-04A -EBT-6	DUP3
L08030240	IW101-09C -EBT-6	DUP5
L08030269	PMW101-07A -EBT-6	DUP8
L08030298	PMW21-05-EBT-6	DUP2
L08030387	IW21-04A -EBT-6	DUP1
L08030387	IW92-07-EBT-6	DUP6

B. Field duplicates were within a guidance limit of < 35% RPD limit for water or <50% RPD limit for soil. If values are < 5 x RL, the water limit is + 2 x RL and the soil limit is +4 x RL. Final determination will be made by the project manager.
Yes ____ No__X__ NA___
All field duplicate results were within the above-specified limits with the exception below. Qualifiers are not applied, but the results are noted.

SDG	Analysis	Sample ID	Duplicate ID	Sample Result	Duplicate Result
L08030240	Alkalinity, Total	IW101-04A -EBT-6	DUP3	1070	2010
L08030240	Total Organic Carbon	IW101-09C -EBT-6	DUP5	512	58.5
L08030269	Total Organic Carbon	PMW101-07A -EBT-6	DUP8	3.61	7.01
L08030387	Sulfate	IW92-07-EBT-6	DUP6	4.55	7.25
L08030388	Alkalinity, Total	IW92-07-EBT-7	DUP7	1320	464
L08030389	Total Organic Carbon	IW92-07-EBT-8	DUP8	747	571

XV. GENERAL COMMENTS
The laboratory has complied with the requested methods and the quality of the data is acceptable and usable with consideration of the following qualifications. Note that the following qualifiers are used:

JC#, where # is the percent RSD or percent D of the Calibration.
JD#, where the # is the RPD between the matrix spike and matrix spike duplicate of that particular analyte.
JH#, where # is the number of hours exceeding the 48-hour holding time.
JL#, where # is the value of the percent recovery of the LCS from the true value.
JP is for samples not being preserved as required.
JS# is for matrix spike/matrix spike duplicate recoveries, where # is the analyte recovery. The bias to the data is considered to be high or low proportional to the analyte recovery. (JS125 would indicate the value could be 125% of the true value)
UFB#, where # is the value of the associated field blank.

Qualification or Comments in Detail
Deliverables

Per the contract, all packages were reviewed for holding time, summary QC and calibration (Level III). No raw data were required for review except where needed to review calibrations. L0712562 was also reviewed for ICB/CCBs. There are 3 ICP analytes, Arsenic, Manganese, and Selenium plus wet chemistry parameters.

Calibrations

The following analytes exceed the calibration QC limits of 90 – 110%R or ± 10%D:

SDG	Analysis	%R	%D	Qualifier
L08030387	Total Organic Carbon	85		JC85
L08030420	Nitrate		13	JC13
L08030420	Sulfate		11	JC11
L08030420	Total Organic Carbon	85		JC85
L08030333	Total Organic Carbon	81		JC81

Data are qualified JC#, where # is the percent RSD or percent D (for Nitrate and Sulfate) of the Calibration. The %R and %D indicates the deviation from the relative response factor per the relative standard deviation (RSD). As the value increases, the range of the quantification could possibly increase, therefore increasing the estimation of the reported value.

Blanks

Data qualified for blank contamination are fully usable as undetected values as follows. Below is a Below is a table of analytes that were found in the rinse blanks. Data are fully usable as undetected values.

SDG	Analysis	Result	Qualifier
L08030333	Chloride	0.117	UFB.117

Data have been qualified UFB#, where # is the value of the associated blank. Data are qualified only when sample results are <5 x blank. When data are >5 x the blank and require no qualification, it is indicated as such in the table.

Matrix Spikes/Matrix Spike Duplicates

The following matrix spike recoveries resulted in data qualification.

SDG	Sample ID	Analysis	Recovery	Qualifier
L08030185	Non-Client Sample	Chloride	19.1/11.6	None, 4X
L08030387	IW21-05B -EBT-6	Alkalinity, Total	31/31.9	JS31
L08030387	IW21-05B -EBT-6	Total Organic Carbon	195/52	None, 4X
L08030220	Non-Client Sample	Chloride	62/68	JS62
L08030333	Non-Client Sample	Bromide	74.8/75.3	JS74.8
L08030333	Non-Client Sample	Chloride	68/68.5	JS68
L08030298	IW101-08C -EBT-6	Chloride	138/137	JS138
L08030298	IW101-08C-EBT-6	Alkalinity, Total	218/157	JS218

L08030298	IW101-08C-EBT-6	Total Organic Carbon	189/0	None, 4X
L08030240	IW101-04B -EBT-6	Total Organic Carbon	134/128	JS134
L08030240	IW101-04B -EBT-6	Alkalinity, Total	0/0	JS0

Results were qualified JS#, where the # is the percent recovery of that particular analyte. For high recoveries, only detected results are qualified. Data could be biased high proportional to the recovery. A low matrix spike recovery indicates a possible low bias to the reported result proportional to the spike recovery. When the spike is less than four times (4x) the concentration of the analyte in the parent sample, no qualification is required as the recovery is statistically invalid. The lab limits are 80 – 120%. Per the QAPP, the CLP limits are used for validation.

Duplicates

The following matrix spike RPD resulted in data qualification.

SDG	Sample ID	Analysis	%D	Qualifier
L08030240	IW101-04B -EBT-6	Alkalinity, Total	49	JD49

Data are qualified JD#, where the # is the RPD between the matrix spike and matrix spike duplicate of that particular analyte. It is possible that matrix interference or sample inhomogeneity are affecting the consistency of the reported results. It is possible the variability of the reported results increases as the RPD of difference between the values increases.

Laboratory Control Spikes

The following Laboratory Control Sample (LCS) recoveries resulted in data qualification.

SDG	Work Group	Analysis	Recovery	Qualifier
L08030387	WG266831	Total Organic Carbon	107/122	JL122
L08030420	WG266831	Total Organic Carbon	107/122	JL122
L08030333	WG266831	Total Organic Carbon	107/122	JL122
L08030298	WG266831	Total Organic Carbon	107/122	JL122

The samples were qualified JL#, where # is the value of the percent recovery of the LCS from the true value. The QC limit is 80% - 120% for inorganic waters. Data whose percent recovery is greater than 120% could possibly be biased high with respect to the extent of the recovery. Undetected data are not qualified for high LCS recoveries.

Holding Time

The following SDGs had samples that were analyzed after the allowed holding time had expired.

SDG	Sample ID	Collect date	Collect time	Analysis	Analysis Date/Time	Qualifier
L08030387	IW92-04-EBT-6	3/18/2008	6:30	Nitrate/Nitrite	3/20/08 9:20	JH2.75
L08030387	IW21-04A-EBT-6	3/18/2008	7:49	Nitrate/Nitrite	3/20/08 9:55	JH2.75
L08030387	IW21-04B-EBT-6	3/18/2008	7:55	Nitrate/Nitrite	3/20/08 12:30	JH4.5

SDG	Sample ID	Collect date	Collect time	Analysis	Analysis Date/Time	Qualifier
L08030387	DUP1-EBT-6	3/18/2008	7:48	Nitrate/Nitrite	3/20/08 9:38	JH1.75
L08030333	PMW21-02-EBT-6	3/17/2008	8:17	Nitrate/Nitrite	3/19/08 11:07	JH2.75
L08030333	PMW21-03-EBT-6	3/17/2008	10:11	Nitrate/Nitrite	3/19/08 12:17	JH2
L08030333	IW21-01A-EBT-6	3/17/2008	9:10	Nitrate/Nitrite	3/19/08 11:42	JH2.5
L08030333	IW21-01B-EBT-6	3/17/2008	9:16	Nitrate/Nitrite	3/19/08 11:59	JH2.75
L08030333	IW21-02A-EBT-6	3/17/2008	11:23	Nitrate/Nitrite	3/19/08 13:44	JH2.25
L08030333	IW21-02B-EBT-6	3/17/2008	11:51	Nitrate/Nitrite	3/19/08 14:01	JH2
L08030333	IW21-03A-EBT-6	3/17/2008	13:41	Nitrate/Nitrite	3/19/08 14:19	JH.75
L08030333	RB1-EBT-6	3/17/2008	7:57	Nitrate/Nitrite	3/19/08 10:50	JH3
L08030333	IW92-05-EBT-6	3/17/2008	12:57	Nitrate/Nitrite	3/19/08 15:11	JH2.25
L08030298	IW92-02-EBT-6	3/14/2008	8:43	Nitrate	3/18/08 14:24	JH96
L08030298	IW92-03-EBT-6	3/14/2008	12:27	Nitrate	3/18/08 14:41	JH96
L08030298	IW101-06A-EBT-6	3/14/2008	8:04	Nitrate	3/18/08 14:59	JH96
L08030298	IW101-06B-EBT-6	3/14/2008	7:50	Nitrate	3/18/08 15:16	JH96
L08030298	IW101-06C-EBT-6	3/14/2008	9:31	Nitrate	3/18/08 15:33	JH96
L08030298	IW101-08A-EBT-6	3/14/2008	11:57	Nitrate	3/15/08 17:04	JH96
L08030298	IW101-08B-EBT-6	3/14/2008	14:18	Nitrate	3/15/08 17:22	JH96
L08030298	IW101-08C-EBT-6	3/14/2008	13:58	Nitrate	3/15/08 20:33	JH96
L08030298	MW-101T-EBT-6	3/14/2008	10:42	Nitrate	3/15/08 17:39	JH96
L08030298	MW-101B-EBT-6	3/14/2008	12:14	Nitrate	3/15/08 17:56	JH96
L08030298	PMW21-01-EBT-6	3/14/2008	13:00	Nitrate	3/15/08 18:14	JH96
L08030298	PMW21-05-EBT-6	3/14/2008	10:23	Nitrate	3/15/08 18:31	JH96
L08030298	MW-21-EBT-6	3/14/2008	14:34	Nitrate	3/15/08 18:49	JH96
L08030298	DR1-3-EBT-6	3/14/2008	8:17	Nitrate	3/15/08 19:06	JH96
L08030298	DUP2-EBT-6	3/14/2008	10:25	Nitrate	3/15/08 19:23	JH96
L08030269	IW101-04C-EBT-6	3/13/2008	8:38	Nitrate	3/18/08 15:51	JH120
L08030269	IW101-05A-EBT-6	3/13/2008	10:35	Nitrate	3/18/08 16:08	JH120
L08030269	IW101-05B-EBT-6	3/13/2008	11:40	Nitrate	3/18/08 17:01	JH120
L08030269	IW101-05C-EBT-6	3/13/2008	13:17	Nitrate	3/18/08 17:18	JH120
L08030269	IW92-01-EBT-6	3/13/2008	13:23	Nitrate	3/18/08 17:35	JH120
L08030269	PMW85-01-EBT-6	3/13/2008	8:05	Nitrate	3/18/08 17:53	JH120
L08030269	IW-01-EBT-6	3/13/2008	10:23	Nitrate	3/18/08 18:10	JH120
L08030269	DUP8-EBT-6	3/13/2008	7:26	Nitrate	3/18/08 18:28	JH120
L08030269	PMW101-07A-EBT-6	3/13/2008	7:21	Nitrate	3/18/08 18:45	JH120
L08030269	PMW101-07B-EBT-6	3/13/2008	10:05	Nitrate	3/18/08 19:03	JH120
L08030269	PMW101-08A-EBT-6	3/13/2008	11:56	Nitrate	3/19/08 6:54	JH144
L08030269	PMW101-08B-EBT-6	3/13/2008	13:36	Nitrate	3/19/08 7:12	JH144
L08030240	DUP5-EBT-6	3/12/2008	10:58	Nitrate	3/14/08 12:47	JH1.75

Data are qualified JH#, where # is the number of hours exceeding the 48-hour holding time. The driver behind the nitrate/ nitrite analysis is the nitrite oxidation. If only total nitrate is needed, the qualifier would not be applicable.

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Preservation

The following samples were received not being preserved as required. Data could be biased low due to degradation of the requested compounds. Metals data are not expected to be significantly impacted. As noted in the organic report and in previous reports, these samples are subject to buffering effects. The laboratory has verified that proper sample bottles were sent with the required preservatives. Samples are made to the proper pH as soon as they arrive at the laboratory and the impact of the short time period is not expected to significantly impact the data usability.

SDG	Sample	Analysis	pH	Qualifier
L08030333	IW92-05-EBT-6	TOC	6	JP
L08030387	IW92-04-EBT-6	TOC	6	JP
L08030420	IW92-06-EBT-6	TOC	6	JP
L08030420	IW92-08-EBT-6	TOC	6	JP

Field Duplicates

All field duplicate results were within the above-specified limits with the exception below.

SDG	Analysis	Sample ID	Duplicate ID	Sample Result	Duplicate Result
L08030240	Alkalinity, Total	IW101-04A -EBT-6	DUP3	1070	2010
L08030240	Total Organic Carbon	IW101-09C -EBT-6	DUP5	512	58.5
L08030269	Total Organic Carbon	PMW101-07A -EBT-6	DUP8	3.61	7.01
L08030387	Sulfate	IW92-07-EBT-6	DUP6	4.55	7.25
L08030388	Alkalinity, Total	IW92-07-EBT-7	DUP7	1320	464
L08030389	Total Organic Carbon	IW92-07-EBT-8	DUP8	747	571

ORGANIC DATA QUALITY REVIEW REPORT
VOLATILE ORGANICS SW-846 METHOD 8260B/5030B

8260B/5030B
SDG: L08060250, L08060283, L08060348, L08060383, L08060413, L08060454, L08060495, L08060543

PROJECT: Memphis Defense Depot, EBT-7 for e2m, Texas

LABORATORY: Microbac Laboratories, Inc., Marietta, OH

SAMPLE MATRIX: Water

SAMPLING DATE (Month/Year): June 2008

NO. OF SAMPLES: 8260B/5030B (Waters) 106 samples including 8 Trip Blanks and 2 Rinse Blanks

ANALYSES REQUESTED: SW-846 8260B

SAMPLE NO.: See attached result forms

DATA REVIEWER: Sammy Huntington and John Huntington

QA REVIEWER: Diane Short and Associates Inc. INITIALS/DATE: _____

Telephone Logs included Yes____ No _X__

Contractual Violations Yes____ No _X___

The project QAPP (11/05), the EPA Contract Laboratory Program National Functional Guidelines for Organic Review, 1999 and 2001, and the SW-846 Method 8260B has been referenced by the reviewer to perform this data validation review. The EPA qualifiers have been expanded to include a descriptor code and value to define QC violations and their values, per the approval of the Project Manager. Per the Scope of Work, the review of these samples includes Level III validation of all chains of custody, calibrations and QC forms referencing the QC limits in the above documents.

I. DELIVERABLES

A. All deliverables were present as specified in the Statement of Work (SOW), SW-846, or in the project contract.
Yes __X_ No _____
This report has been requested to include the following review: Holding times and sample integrity (chains of custody, sample log in), Calibrations, Summary QC.

B. Chain of Custody Documentation was complete and accurate.
Yes ___X___ No ___
No qualifiers have been added for chain of custody issues and the project manager will update chains per the following notes to complete the project record. The chain of custody on use has been discussed in detail in previous reports, and those general comments apply. All chain of custody documents in this set were properly signed and dated.

C. Samples were received at the required temperature, preservation and intact with no bubbles.
Yes ___X___ No ____
New EPA regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be equal to or less than 6° C. The sample receipt conditions are fully compliant with applicable regulations.

Volatiles samples cannot be checked for pH outliers on sample receipt. The laboratory checks the samples at runtime. A number of samples were not at pH <2, as follows:

SDG L08060543, samples PMW85-04 and IW85-01 were at pH 4.
SDG L08060495, samples IW92-08 at pH 5, IW85-02, IW85-06, IW21-05A at pH 4.
SDG L08060454, sample PMW92-06 at pH 5.
SDG L0806413, samples IW92-06 at pH 7, IW101-04A at pH 5, IW101-05A, IW92-07 at pH 4.
SDG L0806383, samples DUP9 at pH 7, IW101-09C at pH7.
SDG L08060348, samples IW92-04 ph 5, IW92-05, PMW101-04A, PMW92-03 pH 7.
SDG L08060283 samples IW101-02C, PMW92-02 at pH 7, IW92-03 at pH 5
SDG L08060250, sample PMW92-01 at pH 5

For those samples that are pH 6-7, the sample should be regarded as being essentially unpreserved. 40CFR indicates that for chlorinated compounds this is still acceptable, but that aromatics (BTEX) may be subject to some degradation under these conditions.

The other samples are all sufficiently acidic that biodegradation should be inhibited despite the fact that a pH <2 was not achieved. Using professional judgment, no qualifiers are added.

Since it has been documented that the buffering capacity of the waters from this site is typically responsible for elevated pH after preservation, no qualifiers are added.

II. ANALYTICAL REPORT FORMS

A. The Analytical Report or Data Sheets are present and complete for all requested analyses.
Yes _X_ No ___

B. Holding Times
1. The contract holding times were met for all analyses (Time of sample receipt to time of analysis (VOA) or extraction and from extraction to analysis).
Yes __X___ No_____

2. The Clean Water Act (40 CFR 136) or method holding times were met for all analyses (14 days from time of sample collection to analysis or extraction).
Yes ___ No __X__
IW92-07-EBT-7 in SDG L08060413 had two surrogates recovered high in the initial analysis, which is within hold. The reanalysis conducted had surrogates in control but was 16 days from the sample date. Results for the reanalysis are qualified as JH2, indicating that the sample was run 2 days after the holding time had expired. Since these samples are acid-preserved and were at pH<2, little degradation would be expected. The comparability of the two results is supportive of that.

III. INSTRUMENT CALIBRATION – GC/MS
A. Initial Calibration
1. The Response (RF) and Relative Response Factors (RRF) and average RRF for all compounds for all analyses met the contract criteria of >0.01.
Yes __X__ No ____ NA____
Per the project manager, the 2001 EPA CLP validation guidance has been applied to the common "poor responders". Acetone, 2-butanone, and 4-methyl-2-pentanone are the compounds for which any calibration response factors below 0.05 have been observed. The validation guidance used for this project allows for a response of 0.01 for these compounds if spectral integrity can be verified at low concentrations. These spectra are not commonly provided and are not part of the deliverable for these data sets. The laboratory has been tasked with providing to the client verification that the 0.01 RF is valid. Given the spectral verification is available, the data are not qualified for response >0.01 < 0.05. No data have been qualified.

The low-responding compounds are highly water-soluble and capable of hydrogen bonding with water. This decreases their purge efficiency and results in the relatively low response. The implication of this low purge efficiency is that a relatively low absolute recovery of such compounds is achieved in the purge step of the analysis. If this recovery is consistent, reasonable accuracy and precision can be achieved in a given matrix, which is indicated for the lab matrix by acceptable recoveries in LCS and calibration checks. However, this causes these targets to be more sensitive to matrix variations that impact purge efficiency (such as ionic strength or the presence of varying levels of soluble non-target organic material) than are the more hydrophobic compounds typically analyzed by this method, and as a result they are more likely to exhibit matrix bias. The likelihood of matrix bias for these compounds in this site matrix is assessed in the MS/MSD section of this report.

2a.The relative standard deviation (RSD) for the five point calibration was within the 30% limit for the CCCs.
Yes _X__ No____ NA____
This is a method requirement and indicates that the analytical system is in control.

2b.The relative standard deviation (RSD) for the five point calibration was within the 30% limit for all other compounds or a linear curve was used.
Yes __X___ No ____ NA____

3. The 12 hour system Performance Check was performed as required in SW-846.
Yes __X__ No_____ NA____

B. Continuing Calibrations
1. The midpoint standard was analyzed for each analysis at the required frequency and the QC criteria of > 0.05 (.01 for CLP 2001) were met.
Yes __X___ No ____ NA____
The CCVs were analyzed at the proper frequency. The same compounds showed low responses in the continuing calibration as were observed in the initial calibrations. Qualifiers are not added for these outliers since none were below the lower limit of 0.01. No data have been qualified from the response factors and RRFs

are not noted since they are essentially the same as the ICAL. This consistency of response for the poor-responding compounds is an indication that there is no significant bias for the laboratory water matrix.

2. The percent difference (%D) limits of ± 25% were met. The 2001 NFG also allow for 40% D for the poor responders. For other compounds the QAPP notes rejection of detected compounds with %D > 40%.
Yes _____ No __X__ NA___
See the table below. When there are no detections, unless the %D is biased low and so large as to indicate a significant probability of false negatives, no qualifiers are added for %D outliers when targets are not detected or for a high recovery for undetected compounds. Data are qualified JC#, where # is the %D. There could be a variability to the data as there is a variability to the response.

SDG	CCV Date	Analyte	%D outliers	Bias	Qualifiers Added
L08060250	6/16/2008 19:33	vinyl acetate	28	low	None, ND
L08060283	6/16/2008 19:33	vinyl acetate	28	low	None, ND
	6/18/2008 9:05	vinyl acetate	44	low	None, ND
	6/19/2008 9:36	vinyl acetate	42	low	None, ND
L08060348	6/19/2008 9:36	vinyl acetate	42	low	None, ND
	6/20/2008 9:00	vinyl acetate	44	low	None, ND
	6/21/2008 9:45	vinyl acetate	51	low	None, ND
L08060383	6/20/2008 9:39	1,1,1-trichloroethane	114	high	None, ND
		vinyl acetate	26	low	None, ND
	6/21/2008 9:45	vinyl acetate	51	low	None, ND
	6/23/2008 11:08	vinyl acetate	50	low	None, ND
L08060413	All OK				None
L08060454	6/25/2008 11:51	2-hexanone	27	low	None, ND
	6/26/2008 16:38	carbon disulfide	35	low	None, ND
L08060495	6/27/2008 17:33	carbon disulfide	35	low	JC35 detects
	6/28/2008 18:27	carbon tetrachloride	25.1	high	None, ND
	6/29/2008 11:35	vinyl acetate	31	high	None, ND
L08060543	6/30/2008 23:14	vinyl acetate	25.3	low	None, ND

IV. GC/MS INSTRUMENT PERFORMANCE CHECK
The BFB (VOA) performance check was injected once at the beginning of each 12-hour period and relative abundance criteria for the ions were met.
Yes __X___ No ____ NA____

V. INTERNAL STANDARDS
The Internal Standards met the 100% upper and -50% lower limits criteria and the Retention times were within the required windows.
Yes _____ No __X__ NA____
SDG L08060383: Sample 08 (IW-101-09A) gave a 49.6% recovery of internal standard 1,4-dichlorobenzene-d4. The sample was reanalyzed with the recovery in control. Both results have been reported. Compounds normally associated with this internal standard are qualified as JI49.6, indicating the possibility of some small bias due to the internal standard repression in the run so qualified. Other targets should be regarded as normally quantified.

VI. SURROGATE
Surrogate spikes were analyzed with every sample.
Yes __X__ No ____

And met the recovery limits defined in the QAPP of 70 – 130%.
Yes _____ No __X__

IW92-07-EBT-7 in SDG L08060413 had two surrogates recovered high. Detected targets are qualified as JS#, where # is the recovery. Such targets may be biased high approximately proportional to the surrogate recovery. The sample was reanalyzed but the reanalysis is out of hold (see the holding time section). As the hold time is slight and the samples were kept preserved and cold, the reviewer recommends the use of the re-analysis. It would be least impacted by qualification.

VII. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

A. Matrix spike (MS) and matrix spike duplicates (MSD) were analyzed for every analysis performed and for every 20 samples or for every matrix whichever is more frequent.

Yes ___X__ No _____

There are 5 MS/MSDs which meets the 1:20 ratio specification.

SDG	Method	Client Sample ID	Lab Sample ID
L08060250	8260B\5030B	PMW101-01A-EBT-7	L08060250-02
L08060348		IW101-03B-EBT-7	L08060348-05
		PMW101-06B-EBT-7	L08060348-13
L08060383		IW101-09A-EBT-7	L08060383-09
L08060495		IW21-02A-EBT-7	L08060495-08

B. The MS and MSD percent recoveries were within the limits defined in the QAPP of 70 – 130% with 5 compounds allowed to be within 60 – 140%.

Yes _____ No __X ___NA___

The full target list has been spiked.

Most MS/MSD recoveries and RPDs are in control. Cases where qualifiers have been added due to matrix spike outliers are shown in the table below. Qualifiers are only added to the parent sample. More than 5 compounds exceeded limits for sample PMW101-06B-EBT-7 and data have been qualified as required. Data for IW101-03B-EBT-7 have only 2 compounds out of the allowed limit, but one compound is greater than the allowed limit, so qualification has been applied. There are other outliers for both RPD and recovery, but in a number of cases they do not result in qualifiers.

SDG	Sample	Analyte	Qualifier
L08060348	PMW101-06B-EBT-7	1,1-Dichloroethene	JMS57D28
L08060348	PMW101-06B-EBT-7	1,1-Dichloropropene	JMS62
L08060348	PMW101-06B-EBT-7	1-Chlorohexane	JMS62
L08060348	IW101-03B-EBT-7	1-Chlorohexane	JMS67
L08060348	PMW101-06B-EBT-7	2,2-Dichloropropane	JMS67
L08060348	PMW101-06B-EBT-7	cis-1,2-Dichloroethene	JMS72
L08060348	PMW101-06B-EBT-7	Isopropylbenzene	JMS67
L08060348	IW101-03B-EBT-7	MEK (2-Butanone)	JMS149
L08060348	PMW101-06B-EBT-7	n-Propylbenzene	JMS71
L08060348	PMW101-06B-EBT-7	p-Isopropyltoluene	JMS72
L08060348	PMW101-06B-EBT-7	sec-Butylbenzene	JMS69
L08060348	PMW101-06B-EBT-7	tert-Butylbenzene	JMS69
L08060348	PMW101-06B-EBT-7	Tetrachloroethene	JMS61
L08060348	IW101-03B-EBT-7	Tetrachloroethene	JMS60
L08060348	PMW101-06B-EBT-7	Trichloroethene	JMS68
L08060348	PMW101-06B-EBT-7	Trichlorofluoromethane	JMS49D41

In several instances, the sample amount is 4x the spike level or greater. In such cases, the recovery cannot realistically be calculated, because the anticipated normal analytical variability is on the order of the spike

level. Thus no qualifiers are added. If recoveries are elevated and the parent sample has no detection of the target, no qualifiers are added.

In some cases, the recovery is elevated in either the matrix spike or the matrix spike duplicate but the target is not detected in the sample. Since this indicates the potential for a high bias, no qualifier is needed when there is no detection in the parent sample. Detected targets are qualified for both high and low recoveries, nondetected results are only qualified for low recoveries.

Where qualifiers are added for recoveries, they are added as JMS#, # being the recovery observed. The parent sample may be biased roughly proportional to the recovery.

C. The MSD relative percent differences (RPD) were within the defined contract limits of 30% water, 40 soil, with 5 compounds allowed to be < 40%.RPD
Yes ____ No __X__NA____
A few RPDs were above the laboratory upper limit. Qualifiers are added, as noted in the table in the spike section, only when the MS or MSD recovery is also out of limits. Data are qualified JD#, where # is the RPD. As the RPD increases, the matrix precision decreases. The qualifier for 1,1DCE can be removed per the 40% RPD allowance.

SDG	Sample	Analyte	Qualifier
L08060348	PMW101-06B-EBT-7	1,1-Dichloroethene	JMS57D28
L08060348	PMW101-06B-EBT-7	Trichlorofluoromethane	JMS49D41

D. The MS/MSD were client samples.
Yes __X_ No ____NA____

VIII. LABORATORY CONTROL SAMPLE
A. Laboratory Control Samples (LCS) was analyzed for every analysis performed and for every 20 samples.
Yes _X___ No ____

B. The LCS percent recoveries were within the limits defined in the QAPP of 80-120% for water and 75 – 125% for soil. Five compounds are allowed to be 60 – 140%. If an LCS and LCSD are analyzed, both samples must have the same compounds out for data to be qualified.
Yes _____ No __ X ____
The full target list has been spiked. There are a few elevated recoveries observed. Qualifiers added are shown in the table below. When a high recovery is associated with a non-detect in samples, no qualifier is added since the indicated bias is high. When the target is detected, the result is qualified as JL#, where # is the elevated recovery. Data could be biased high proportional to the LCS %R. Qualifiers for chloroform at 132% and MTBE at 127 % could be removed per the 5 outlier allowance.

SDG	Sample	Analyte	Qualifier
L08060495	IW21-02A-EBT-7	Chloroform	JL142
L08060495	IW85-06-EBT-7	Chloroform	JL142
L08060413	MW-115-EBT-7	Methyl t-butyl ether (MTBE)	JL144
L08060454	MW-85-EBT-7	MEK (2-Butanone)	JL140
L08060454	IW-01-EBT-7	MEK (2-Butanone)	JL140
L08060495	IW92-08-EBT-7	Chloroform	JL132
L08060413	IW101-04C-EBT-7	MEK (2-Butanone)	JL140
L08060413	PMW21-03-EBT-7	Methyl t-butyl ether (MTBE)	JL144
L08060413	IW101-04B-EBT-7	MEK (2-Butanone)	JL140
L08060454	PMW21-01-EBT-7	Methyl t-butyl ether (MTBE)	JL214
L08060495	IW85-05-EBT-7	Chloroform	JL142

L08060495	IW85-02-EBT-7	Chloroform	JL142
L08060454	MW-21-EBT-7	Methyl t-butyl ether (MTBE)	JL127
L08060413	IW92-06-EBT-7	MEK (2-Butanone)	JL140
L08060413	IW101-04A-EBT-7	MEK (2-Butanone)	JL140
L08060454	PMW92-06-EBT-7	MEK (2-Butanone)	JL140
L08060413	PMW21-04-EBT-7	Methyl t-butyl ether (MTBE)	JL144

IX. BLANKS

A. Method Blanks were analyzed at the required frequency and for each matrix and analysis.
Yes _X___ No____

B. No blank contamination was found in the Method Blank.
Yes____ No _X___
Contamination was observed in some method blanks and resulted in qualifiers as shown in the table below. Whenever methylene chloride or acetone is detected in associated samples at a level less than 10x the method blank (corrected for dilution), the result is qualified as UB#, where # is the corrected method blank level. Such results are usable as nondetects. Qualifiers added are summarized in the table below. For other targets, the factor used is 5x.

SDG	Batch	Targets Detected	Results	Qualifiers
L08060348	WG274657	n-butylbenzene	0.53 F	UB.53 detection

C. If Field Blanks were identified, no blank contamination was found.
Yes____ No __X__
There are 8 trip blanks and 2 rinse blanks. There are detections observed below the reporting limit in the field and trip blanks. When analytes are present in both the field blank and the associated samples, the results in the samples are qualified in the same manner as for method blanks. For clarity, the qualifiers used in this case are UTB# for trip blanks and UFB# for rinse blanks, where # is the associated blank value. Qualifiers added are shown in the table below. Results so qualified are usable as non-detects.

The table below reflects qualifiers added to samples due to field and trip blank outliers. It does not show the field and trip blank results.

SDG	Sample	Analyte	Qualifier
L08060283	IW101-03A-EBT-7	1,4-Dichlorobenzene	UFB.99
	IW92-02-EBT-7	Acetone	UFB19
		MEK (2-Butanone)	UFB3.6
	IW92-03-EBT-7	1,4-Dichlorobenzene	UFB.99
		Acetone	UFB19
	PMW101-03A-EBT	MEK (2-Butanone)	UFB3.6
	PMW101-03B-EBT	MEK (2-Butanone)	UFB3.6
	PMW92-02-EBT-7	1,4-Dichlorobenzene	UFB.99
		MEK (2-Butanone)	UFB3.6
		Acetone	UFB19
L08060348	DUP5-EBT-7	Methylene chloride	UTB.37
	IW101-03B-EBT-7	Methylene chloride	UTB.37
	IW101-03C-EBT-7	Methylene chloride	UTB.37
	IW101-07B-EBT-7	Methylene chloride	UTB.37
	IW92-04-EBT-7	Methylene chloride	UTB.37
	IW92-05-EBT-7	Methylene chloride	UTB.37
L08060413	IW101-04A-EBT-7	Acetone	UTB4.1
	IW101-04B-EBT-7	Acetone	UTB4.1
	IW101-04C-EBT-7	Methylene chloride	UTB2.1
	IW101-05A-EBT-7	Methylene chloride	UTB2.1
		Acetone	UTB4.1

SDG	Sample	Analyte	Qualifier
	IW92-06-EBT-7	Acetone	UTB4.1
		Methylene chloride	UTB2.1
	IW92-07-EBT-7	Methylene chloride	UTB2.1JH2
		Methylene chloride	UTB2.1
	IW92-07-EBT-7	Acetone	UTB4.1
		Acetone	UTB4.1JH2
L08060495	DUP-1	Acetone	UFB3
		1,4-Dichlorobenzene	UTB.6
	IW101-08C-EBT-7	Benzene	UFB.17
		Methylene chloride	UTB.72
	IW21-01A-EBT-7	Acetone	UFB3
		1,4-Dichlorobenzene	UTB.6
	IW21-01B-EBT-7	Acetone	UFB3
	IW85-02-EBT-7	Acetone	UFB3
		1,4-Dichlorobenzene	UTB.6
		Methylene chloride	UTB.72
	IW85-05-EBT-7	Acetone	UFB3
		1,4-Dichlorobenzene	UTB.6
	IW85-06-EBT-7	1,4-Dichlorobenzene	UTB.6
		Benzene	UFB.17
		Acetone	UFB3
	IW92-08-EBT-7	1,4-Dichlorobenzene	UTB.6
L08060495	RB2-EBT-7	1,4-Dichlorobenzene	UTB.6
L08060543	IW85-01-EBT-7	Methylene chloride	UTB.25
L08060543		1,4-Dichlorobenzene	UTB.13

X. FIELD QC

If Field duplicates were identified, they met guidance RPD of < 35% for water or < 50% for soils. For values reported at < 5 x the reporting limit (RL), a difference of 2 x RL is used as guidance (4 x RL for soils). Data are not qualified for field duplicates as these are evaluated for the total project by the client.

Yes __X____ No ___ NA____

There are 9 identified field duplicates, all in control.

SDG	Field Duplicate	Parent Sample	Observations
L08060495	DUP-1	IW21-01A -EBT-7	OK
L08060495	DUP-2	IW21-05B -EBT-7	OK
L08060454	DUP-3	PMW21-05-EBT-7	OK
L08060250	DUP-4	IW101-01A -EBT-7	OK
L08060348	DUP-5	IW101-03C -EBT-7	OK
L08060495	DUP-6	IW101-08B -EBT-7	OK
L08060283	DUP-7	PMW101-02A -EBT-7	OK
L08060348	DUP-8	PMW101-05B -EBT-7	OK
L08060383	DUP-9	PMW101-08A -EBT-7	OK

XI. SYSTEM PERFORMANCE

A. The RICs, chromatograms, tunes and general system performance were acceptable for all instruments and analytical systems.

Yes ____ No____ NA__X__

Not part of this review level

B. The suggested EQLs for the sample matrices in this set were met.

Yes __X__ No____ NA____

XII. TCL COMPOUNDS

A. The identification is accurate and all retention times, library spectra and reconstructed ion chromatograms (RIC) were evaluated for all detected compounds.
Yes____ No____ NA__X__
Not part of this review level

B. Quantitation was checked to determine the accuracy of calculations for representative compounds in each internal standards quantitation set.
Yes____ No____ NA__X__
Not part of this review level

XIII. TENTATIVELY IDENTIFIED COMPOUNDS
TICs were properly identified and met the library identification criteria.
Yes____ No____ NA__X___
Not part of this review level

XIV. OVERALL ASSESSMENT OF THE CASE
The laboratory has complied with the requested method. Data are fully usable after consideration of qualifiers.
The following is noted:

Sample Condition:
New EPA regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be equal to or less than 6° C. The sample receipt conditions are fully compliant with applicable regulations.

Volatiles samples cannot be checked for pH outliers on sample receipt. The laboratory checks the samples at runtime. A number of samples were not at pH <2, as follows:

SDG L08060543, samples PMW85-04 and IW85-01 were at pH 4.
SDG L08060495, samples IW92-08 at pH 5, IW85-02, IW85-06, IW21-05A at pH 4.
SDG L08060454, sample PMW92-06 at pH 5.
SDG L0806413, samples IW92-06 at pH 7, IW101-04A at pH 5, IW101-05A, IW92-07 at pH 4.
SDG L0806383, samples DUP9 at pH 7, IW101-09C at pH7.
SDG L08060348, samples IW92-04 ph 5, IW92-05, PMW101-04A, PMW92-03 pH 7.
SDG L08060283 samples IW101-02C, PMW92-02 at pH 7, IW92-03 at pH 5
SDG L08060250, sample PMW92-01 at pH 5

For those samples that are pH 6-7, the sample should be regarded as being essentially unpreserved. 40CFR indicates that for chlorinated compounds this is still acceptable, but that aromatics (BTEX) may be subject to some degradation under these conditions.

The other samples are all sufficiently acidic that biodegradation should be inhibited despite the fact that a pH <2 was not achieved. Using professional judgment, no qualifiers are added.

Since it has been documented that the buffering capacity of the waters from this site is typically responsible for elevated pH after preservation, no qualifiers are added.

Continuing Calibrations:
Some CCVs had %D values greater than 25%. When there are no detections, unless the %D is biased low and so large as to indicate a significant probability of false negatives, no qualifiers are added for %D outliers when targets are not detected. Most of these fall into this category. Detected results associated with one CCV are

qualified for a %D outlier and there could be variability to the reported data as there is variability to the response factor.

LCS Recoveries:
The full target list has been spiked. There are a few elevated recoveries observed. Qualifiers added are shown in the table within the body of this report. When a high recovery is associated with a non-detect in samples, no qualifier is added since the indicated bias is high. When the target is detected, the result is qualified as JL#, where # is the elevated recovery. Data could be biased high proportional to the LCS %R. Qualifiers for chloroform at 132% and MTBE at 127 % could be removed per the 5 outlier allowance.

Matrix Spikes:
The full target list has been spiked.
Most MS/MSD recoveries and RPDs are in control. Cases where qualifiers have been added due to matrix spike outliers are shown in the table below. Qualifiers are only added to the parent sample. More than 5 compounds exceeded limits for sample PMW101-06B-EBT-7 and data have been qualified as required. Data for IW101-03B-EBT-7 have only 2 compounds out of the allowed limit, but one compound is greater than the allowed limit, so qualification has been applied. There are other outliers for both RPD and recovery, but in a number of cases they do not result in qualifiers.

In several instances, the sample amount is 4x the spike level or greater. In such cases, the recovery cannot realistically be calculated, because the anticipated normal analytical variability is on the order of the spike level. Thus no qualifiers are added. If recoveries are elevated and the parent sample has no detection of the target, no qualifiers are added.

In some cases, the recovery is elevated in either the matrix spike or the matrix spike duplicate but the target is not detected in the sample. Since this indicates the potential for a high bias, no qualifier is needed when there is no detection in the parent sample. Detected targets are qualified for both high and low recoveries, nondetected results are only qualified for low recoveries.

Where qualifiers are added for recoveries, they are added as JMS#, # being the recovery observed. The parent sample may be biased roughly proportional to the recovery.
A few RPDs were above the laboratory upper limit. Qualifiers are added, as noted in the table in the spike section, only when the MS or MSD recovery is also out of limits. Data are qualified JD#, where # is the RPD. As the RPD increases, the matrix precision decreases. The qualifier for 1,1DCE can be removed per the 40% RPD allowance.

Internal Standards:
SDG L08060383: Sample 08 (IW-101-09A) gave a 49.6% recovery of internal standard 1,4-dichlorobenzene-d4. The sample was reanalyzed with the recovery in control. Both results have been reported. Compounds normally associated with this internal standard are qualified as JI49.6, indicating the possibility of some small bias due to the internal standard repression in the run so qualified. Other targets should be regarded as normally quantified.

Surrogates:
IW92-07-EBT-7 in SDG L08060413 had two surrogates recovered high. Detected targets are qualified as JS#, where # is the recovery. Such targets may be biased high approximately proportional to the surrogate recovery. The sample was reanalyzed but the reanalysis is out of hold (see the holding time section). As the hold time is slight and the samples were kept preserved and cold, the reviewer recommends the use of the re-analysis. It would be least impacted by qualification.

Method Blanks:
Contamination was observed in some method blanks and resulted in qualifiers as shown in the table below. Whenever methylene chloride or acetone is detected in associated samples at a level less than 10x the method blank (corrected for dilution), the result is qualified as UB#, where # is the corrected method blank level. Such results are usable as nondetects. Qualifiers added are summarized in the table below. For other targets, the factor used is 5x. One result for n-butyl benzene was qualified in this manner.

Field Blanks:
There are 8 trip blanks and 2 rinse blanks. There are detections observed below the reporting limit in the field and trip blanks. When analytes are present in both the field blank and the associated samples, the results in the samples are qualified in the same manner as for method blanks. For clarity, the qualifiers used in this case are UTB# for trip blanks and UFB# for rinse blanks, where # is the associated blank value. Qualifiers added are shown in the table within the body of this report. Results so qualified are usable as non-detects.

Field QC:
There are 9 identified field duplicates, all in control.

ORGANIC DATA QUALITY REVIEW REPORT
GC REPORT FOR Metabolic Acids by HPLC; Ethane, Methane, Ethene, Carbon dioxide by EPA SOP RSK-175; and Hydrogen by AM20GAX (GC/RGD).

RSK-175 and Metabolic Acids:
L08060250, L08060283, L08060348, L08060383, L08060413, L08060454, L08060495, L08060543

AM20GAX (Hydrogen):
SDG; P0806153, P0806162, P0806196, P0806218, P0806225, P0806255, P0806283, P0806311

PROJECT: Memphis Defense Depot, EBT-7 for e2m, Texas

LABORATORY: Microbac Laboratories, Inc., Marietta, OH; Hydrogen subcontracted to Microseeps, Inc, Pittsburg, PA

SAMPLE MATRIX: Water and Vapor

SAMPLING DATE (Month/Year): June 2008

NO. OF SAMPLES: Metabolic acids – 99 waters including 2 rinse blanks; RSK-175 – 99 waters including 2 rinse blanks, AM20GAX – 74 vapor samples

ANALYSES REQUESTED: Metabolic Acids by HPLC; EPA SOP RSK-175, Microseeps AM20GAX

SAMPLE NO.: Attached

DATA REVIEWER: Sammy Huntington and John Huntington

QA REVIEWER: Diane Short & Associates, Inc., INITIALS/DATE:

Telephone Logs included Yes___ No _X_

Contractual Violations Yes____ No _X_

The project QAPP (11/05), EPA Contract Laboratory Program National Functional Guidelines for Organic Review, 2001 (SOP), the EPA SW 846 Methods for Evaluating Solid Waste, Physical/ Chemical Methods Third Edition, (SW-846), current updates, and the project-specific methods have been referenced by the reviewer to perform this data validation review. The EPA qualifiers have been expanded to include a descriptor code and value to define QC violations and their values, per the approval of the Project Manager. The review has been tasked as Level III for review of all calibrations, holding times, and QC for all samples.

I. DELIVERABLES

All deliverables were present as specified in the Statement of Work (SOW), SW-846, or in the project contract.

Yes __X__ No ____

This report has been requested to include the following review: Holding times and sample integrity (chains of custody, sample log in), Calibrations, Summary QC.

The laboratory has used a J flag to indicate that they regard certain results to be estimates. We are not able to determine the reason for all of these flags, so have used a "JQ" validation qualifier to identify these results, where they have not been otherwise qualified in the validation process.

II. ANALYTICAL REPORT FORMS

The Analytical Report or Data Sheets are present and complete for all requested analyses.

Yes __X__ No ____

III. HOLDING TIMES

A. The contract holding times were met for all analyses (Time of sample receipt to time of extraction and from extraction to analysis.)

Yes __X__ No ____

See Section B. below. Per EPA guidance, for validation purposes we calculate the holding time to the nearest day in cases where the regulation or method specifies holding time units of days.

B. The Clean Water Act (40 CFR 136) or method holding times were met for all analyses (Time of sample collection to time of extraction and from extraction to analysis.)

Yes _____ No __X__

AM20GAX: There is no regulatory hold time for this method. The laboratory uses 14 days and this has been met. The QAPP limit is 28 days. Some samples were analyzed on the 14th day of hold, and noted by the laboratory as being mathematically past hold time. However, this is considered acceptable (see section A).

Metabolic Acids: The reviewer has not been able to find documented holding times for the metabolic acids. The normal holding time for an analogous HPLC method 8310 is 14 days for preserved water samples. Metabolic acid holding times were all within 14 days.

RSK-175: For RSK-175, pH should not be adjusted when CO_2 is determined, which is the case in this project. The laboratory run logs document that the pH of the samples for this method had not been adjusted. When pH is adjusted, the holding time is 14 days per the method, and we have used this as the acceptable holding time. The laboratory has used 14 days for all RSK analytes. The QAPP holding time for CO2 is 7 days. Almost all data have been qualified JHT# for exceedence of holding times. Carbon dioxide data are also highly qualified for calibration variability. The CO2 data are not considered to be reliable.

A number of reanalyses were outside of the 14-day holding time for this analysis (project HT for CO2 is 7 days). These were documented in the Case Narratives and in the laboratory holding time reports. The samples and analytes qualified are shown in the table below. The qualifier added is JHT#, where # is the number of days past holding time the analysis was conducted. Such results could be considered to be biased low due to loss of analyte by a number of mechanisms.

SDG	Sample #	Client ID	compound	DVAL
L08060250	L08060250-03	PMW101-01A-EBT-7	Carbon Dioxide	**JC87HT5**
L08060250	L08060250-07	IW101-01A-EBT-7	Carbon Dioxide	**JC87HT5**
L08060250	L08060250-08	DUP4-EBT-7	Carbon Dioxide	**JC87HT5**
L08060250	L08060250-09	IW101-01B-EBT-7	Carbon Dioxide	**JC87HT5**
L08060250	L08060250-12	PMW92-01-EBT-7	Carbon Dioxide	**JC90HT3**
L08060250	L08060250-13	IW101-02A-EBT-7	Carbon Dioxide	**JC84HT4**
L08060250	L08060250-14	IW101-01C-EBT-7	Carbon Dioxide	**JC84HT4**
L08060283	L08060283-02	PMW101-03B-EBT	Carbon Dioxide	**JC84HT3**
L08060283	L08060283-03	PMW101-04B-EBT	Carbon Dioxide	**JC84HT3**
L08060283	L08060283-13	IW101-02B-EBT-7	Carbon Dioxide	**UFB15500HT4**
L08060283	L08060283-14	IW92-02-EBT-7	Carbon Dioxide	**JHT4**
L08060454	L08060454-07	PMW21-05-EBT-7	Carbon Dioxide	**JHT3**
L08060454	L08060454-08	MW-21-EBT-7	Carbon Dioxide	**JHT3**
L08060250	L08060250-01	PMW101-01A-EBT-7	Carbon Dioxide	**JC87HT5**
L08060250	L08060250-02	PMW101-01A-EBT-7	Carbon Dioxide	**JC87HT5**
L08060250	L08060250-04	PMW101-01B-EBT-7	Carbon Dioxide	**JC87HT5**
L08060250	L08060250-05	PMW101-02B-EBT-7	Carbon Dioxide	**JC87HT5**
L08060250	L08060250-10	DR2-1-EBT-7	Carbon Dioxide	**JC87HT5**
L08060250	L08060250-11	IW92-01-EBT-7	Carbon Dioxide	**JC91HT4**
L08060283	L08060283-01	PMW101-03A-EBT	Carbon Dioxide	**JC90HT1**
L08060283	L08060283-05	RB1-EBT-7	Carbon Dioxide	**JC84HT3**
L08060283	L08060283-06	IW101-02C-EBT-7	Carbon Dioxide	**JC84HT3**
L08060283	L08060283-07	IW101-03A-EBT-7	Carbon Dioxide	**JC84HT3**
L08060283	L08060283-08	MW-101T-EBT-7	Carbon Dioxide	**JC84HT3**
L08060283	L08060283-09	MW-101B-EBT-7	Carbon Dioxide	**JC84HT3**
L08060283	L08060283-10	IW92-03-EBT-7	Carbon Dioxide	**JC84HT3**
L08060283	L08060283-11	PMW92-02-EBT-7	Carbon Dioxide	**UFB31000RC91HT3**
L08060283	L08060283-12	PMW101-02A-EBT-7	Carbon Dioxide	**JHT4**
L08060283	L08060283-15	DUP-7	Carbon Dioxide	**UFB31000RC91HT3**
L08060348	L08060348-01	DUP5-EBT-7	Carbon Dioxide	**JC54HT6**
L08060348	L08060348-02	DUP8-EBT-7	Carbon Dioxide	**JC54HT6**
L08060348	L08060348-04	IW101-03B-EBT-7	Carbon Dioxide	**JC54HT6**
L08060348	L08060348-05	IW101-03B-EBT-7-MS	Carbon Dioxide	**JC88HT2**
L08060348	L08060348-06	IW101-03B-EBT-7-MSD	Carbon Dioxide	**JC88HT2**
L08060348	L08060348-07	IW101-03C-EBT-7	Carbon Dioxide	**JC54HT6**
L08060348	L08060348-08	IW101-07A-EBT-7	Carbon Dioxide	**JC54HT6**
L08060348	L08060348-09	IW101-07B-EBT-7	Carbon Dioxide	**JC54HT6**
L08060348	L08060348-10	PMW101-05A-EBT-7	Carbon Dioxide	**JC54HT6**
L08060348	L08060348-11	PMW101-05B-EBT-7	Carbon Dioxide	**JC54HT6**
L08060348	L08060348-12	PMW101-06B-EBT-7	Carbon Dioxide	**JC29HT5**
L08060348	L08060348-13	PMW101-06B-EBT-7	Carbon Dioxide	**JC88HT2**
L08060348	L08060348-14	PMW101-06B-EBT-7	Carbon Dioxide	**JC88HT2**
L08060348	L08060348-15	IW92-04-EBT-7	Carbon Dioxide	**JC29HT5**
L08060348	L08060348-16	IW92-05-EBT-7	Carbon Dioxide	**JC29HT5**
L08060348	L08060348-17	PMW101-04A-EBT-7	Carbon Dioxide	**UB6400C29HT5**
L08060348	L08060348-18	PMW92-03-EBT-7	Carbon Dioxide	**JC32HT5**
L08060383	L08060383-01	DUP9-EBT-7	Carbon Dioxide	**JC32HT4**
L08060383	L08060383-02	PMW101-06A-EBT	Carbon Dioxide	**JC32HT4**
L08060383	L08060383-03	PMW101-07A-EBT	Carbon Dioxide	**JC32HT4**

L08060383	L08060383-04	PMW101-07B-EBT	Carbon Dioxide	**JC32HT4**
L08060383	L08060383-05	PMW101-08A-EBT	Carbon Dioxide	**JC32HT4**
L08060383	L08060383-07	IW101-07C-EBT-7	Carbon Dioxide	**JC32HT4**
L08060383	L08060383-08	IW101-09A-EBT-7	Carbon Dioxide	**JC32HT4**
L08060383	L08060383-11	IW101-09B-EBT-7	Carbon Dioxide	**JHT13C81**
L08060383	L08060383-12	IW101-09C-EBT-7	Carbon Dioxide	**JHT5**
L08060383	L08060383-13	PMW92-04-EBT-7	Carbon Dioxide	**JC83HT2**
L08060383	L08060383-14	PMW92-05-EBT-7	Carbon Dioxide	**JC54HT5**
L08060413	L08060413-01	IW101-04A-EBT-7	Carbon Dioxide	**JH87C79**
L08060413	L08060413-02	IW101-04B-EBT-7	Carbon Dioxide	**JH87C79**
L08060413	L08060413-03	IW101-04C-EBT-7	Carbon Dioxide	**JH87C79**
L08060413	L08060413-04	IW101-05A-EBT-7	Carbon Dioxide	**JH87C79**
L08060413	L08060413-05	PMW21-03-EBT-7	Carbon Dioxide	**JH87C79**
L08060413	L08060413-06	PMW21-04-EBT-7	Carbon Dioxide	**JH87C79**
L08060413	L08060413-07	MW-115-EBT-7	Carbon Dioxide	**JH87C79**
L08060413	L08060413-08	PMW101-08B-EBT-7	Carbon Dioxide	**UB13000JC81HT7**
L08060413	L08060413-09	DR1-3-EBT-7	Carbon Dioxide	**JH87C79**
L08060413	L08060413-11	IW92-06-EBT-7	Carbon Dioxide	**JH87C79**
L08060413	L08060413-12	IW92-07-EBT-7	Carbon Dioxide	**JH87C79**
L08060454	L08060454-02	PMW92-06-EBT-7	Carbon Dioxide	**JC81HT4**
L08060454	L08060454-03	MW-85-EBT-7	Carbon Dioxide	**JHT8C79**
L08060454	L08060454-04	IW-01-EBT-7	Carbon Dioxide	**JHT8C79**
L08060454	L08060454-05	PMW21-01-EBT-7	Carbon Dioxide	**JHT8**
L08060454	L08060454-06	PMW21-02-EBT-7	Carbon Dioxide	**JHT8C79**
L08060454	L08060454-09	IW101-05B-EBT-7	Carbon Dioxide	**JHT3**
L08060454	L08060454-10	IW101-05C-EBT-7	Carbon Dioxide	**JHT3**
L08060454	L08060454-11	IW101-06A-EBT-7	Carbon Dioxide	**JHT3**
L08060454	L08060454-12	IW101-06B-EBT-7	Carbon Dioxide	**JHT3**
L08060454	L08060454-13	IW101-06C-EBT-7	Carbon Dioxide	**JHT3**
L08060454	L08060454-14	IW101-08A-EBT-7	Carbon Dioxide	**JHT8C79**
L08060454	L08060454-15	DUP-3	Carbon Dioxide	**JHT8C79**
L08060495	L08060495-01	IW92-08-EBT-7	Carbon Dioxide	**JC79HT6**
L08060495	L08060495-02	IW85-02-EBT-7	Carbon Dioxide	**JC79HT7**
L08060495	L08060495-03	IW85-05-EBT-7	Carbon Dioxide	**JC79HT7**
L08060495	L08060495-04	IW85-06-EBT-7	Carbon Dioxide	**JC79HT7**
L08060495	L08060495-05	IW21-01A-EBT-7	Carbon Dioxide	**JC79HT7**
L08060495	L08060495-06	IW21-01B-EBT-7	Carbon Dioxide	**UFB19500JC86HT7**
L08060495	L08060495-07	IW21-02A-EBT-7	Carbon Dioxide	**UB17000JHT14**
L08060495	L08060495-08	IW21-02A-EBT-7-MS	Carbon Dioxide	**UB17000JHT14**
L08060495	L08060495-09	IW21-02A-EBT-7-MSD	Carbon Dioxide	**UB17000JHT14**
L08060495	L08060495-10	DUP6-EBT-7	Carbon Dioxide	**UFB19500JC86HT7**
L08060495	L08060495-11	IW21-05A-EBT-7	Carbon Dioxide	**JC86HT7**
L08060495	L08060495-13	RB2-EBT-7	Carbon Dioxide	**JC86HT7**
L08060495	L08060495-14	IW101-08B-EBT-7	Carbon Dioxide	**UFB39000JC86HT7**
L08060495	L08060495-15	IW101-08C-EBT-7	Carbon Dioxide	**UFB39000JC86HT7**
L08060495	L08060495-17	IW21-05B-EBT-7	Carbon Dioxide	**UFB39000JC86HT7**
L08060495	L08060495-18	DUP-2	Carbon Dioxide	**UFB39000JC86HT7**
L08060495	L08060495-19	DUP-1	Carbon Dioxide	**UFB39000JC86HT7**
L08060543	L08060543-01	IW21-02B-EBT-7	Carbon Dioxide	**JHT8C91**
L08060543	L08060543-02	PMW85-04-EBT-7	Carbon Dioxide	**JHT8C90**

L08060543	L08060543-03	PMW85-05-EBT-7	Carbon Dioxide	**JHT8C90**
L08060543	L08060543-04	IW85-01-EBT-7	Carbon Dioxide	**JHT8C91**
L08060543	L08060543-05	PMW85-01-EBT-7	Carbon Dioxide	**JHT7**
L08060543	L08060543-06	DR2-5-EBT-7	Carbon Dioxide	**JHT7**
L08060543	L08060543-07	IW21-03A-EBT-7	Carbon Dioxide	**JHT8C91**
L08060543	L08060543-08	IW21-03B-EBT-7	Carbon Dioxide	**JHT8C91**
L08060543	L08060543-09	IW21-04A-EBT-7	Carbon Dioxide	**JHT8C91**
L08060543	L08060543-10	IW21-04B-EBT-7	Carbon Dioxide	**JHT8C91**
L08060383	L08060383-11	IW101-09B-EBT-7	Methane	JH6
L08060413	L08060413-09	DR1-3-EBT-7	Methane	JH3
L08060413	L08060413-01	IW101-04A-EBT-7	Methane	JH3
L08060413	L08060413-02	IW101-04B-EBT-7	Methane	JH3
L08060413	L08060413-03	IW101-04C-EBT-7	Methane	JH3
L08060413	L08060413-04	IW101-05A-EBT-7	Methane	JH3
L08060413	L08060413-12	IW92-07-EBT-7	Methane	JH3
L08060454	L08060454-04	IW-01-EBT-7	Methane	JH1
L08060454	L08060454-14	IW101-08A-EBT-7	Methane	JH1
L08060454	L08060454-03	MW-85-EBT-7	Methane	JH1
L08060543	L08060543-08	IW21-03B-EBT-7	Methane	JH1
L08060543	L08060543-09	IW21-04A-EBT-7	Methane	JH1
L08060543	L08060543-04	IW85-01-EBT-7	Methane	JH1
L08060543	L08060543-02	PMW85-04-EBT-7	Methane	JH1

C. All chains of custody are complete with signatures and dates.
Yes _X_ No ____
The chain of custody on use has been discussed in detail in previous reports, and those general comments apply. All chain of custody documents in this set were properly signed and dated.

D. Samples were received at the proper temperature and preservation.
Yes _X_ No _____
The most current regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be equal to or less than 6° C. The documented sample receipt conditions are fully compliant with applicable regulations.

We could not locate a record of the cooler temperature on receipt for the hydrogen samples. We are aware of no regulatory requirement for receipt temperature for this method, so no qualifiers have been applied. However, good laboratory practice should include a receipt temperature record.

SDG L08060250: The sample receipt form refers to a list of samples that had pH adjusted for metabolic acids. The list is not included in the data package.

SDG L08060283: The sample receipt form indicates that the pH was adjusted for metabolic acid sample IW92-03. The form also indicates that PMW101-02A and IW101-02B were received broken. These samples were retaken and submitted under SDG L08060348.

SDG L08060348: The sample receipt form indicates that metabolic acid samples IW92-04 and IW92-05 required pH adjustment. The notes are unclear but state "did not pH right" for these samples. It is not apparent what the final pH was achieved.

SDG L08060413: The sample receipt form indicates that pH adjustment was required for metabolic acid samples IW92-07, IW92-06, IW101-05A, and IW101-04A.

SDG L08060495: The sample receipt form indicates that pH adjustment was required for metabolic acid samples IW92-08, IW85-06, and IW21-05A.

The need for pH adjustment is a common occurrence for samples at this site. The proper sample bottles have been issued and used. There is a buffering capacity to these matrices that results in slightly elevated pH. The pH is adjusted as soon as the samples reach the laboratory and the impact on the sample data is considered to be minimal. No qualifiers have been added.

IV. INSTRUMENT CALIBRATION (IC) AND CONTINUING CALIBRATION (CC) VERIFICATION

A. The GC standards were analyzed at the required frequency.
Yes ___X___ No_____

B. The chromatographic resolution and separation criteria were met.
Yes __X__ No_____

C. The suggested columns were used and the EQLs were met.
Yes __X___ No_____

D. Calibration factors for IC met the 20% RSD (25% for VFA and RSK) limit or the regression curves were prepared with a correlation coefficient 'r' greater than 0.99, per SW-846, Method 8000B.
Yes __X___ No _____
MBA: The initial calibration reports for the metabolic acids are inaccurate. The calibration report provides only a %RSD for each analyte, with a note at the bottom that the linear calibration model is used. However, the observed r or r^2 values are not reported, although the criteria used are shown. In the Case Narrative, the laboratory has indicated that all initial calibrations have used linear regression, and that all acceptance criteria are met.

In a previous level IV data review for this project, we were able to confirm from the raw data that regression curves were in fact used and that they met criteria. We cannot confirm this for the present Level III review, but have assumed that the laboratory Case Narrative is correct and have not qualified the results for the %RSDs in the initial calibration reports that are out of limits.

RSK-175: All initial calibrations are in control.

AM20GAX (Hydrogen): All initial calibrations are conducted using a linear regression curve and all are in control.

E. Percent Difference (%D's) for Continuing Calibration Factors and retention times (RT) were within the 25% Limits.
Yes ____ No ___X__

RSK-175: The laboratory conducts opening and closing calibrations (bracketing the samples during the analytical run). For RSK-175 there is not a specific requirement in the procedure for closing calibrations, and only calibration verification each 12 hours is specified. SW-846 guidance (method 8000B), however specifically requires such closing calibrations for external standard methods. For detected analytes, SW-846 specifies that the closing calibration must meet the same criteria as the opening calibration. This has been achieved for all analytes except for carbon dioxide, for which a number of opening and closing calibrations do not meet the 30% D method criterion specified for RSK-175. In such cases, detected levels of carbon dioxide are qualified as JC#, where # is the applicable opening or closing CCV outlier. Such results may be biased due to calibration drift. Please see the EDD for details.

It should be noted in this regard that the laboratory appears to use a different criterion for carbon dioxide, since a few CCV results were flagged as being outside of limits, but it is not clear to this reviewer where the laboratory limit is set. This method has not been published as a promulgated method by EPA. It rather exists as an open literature publication and an internal EPA SOP, and it may not have been fully developed for carbon dioxide. Thus the laboratory limits may be realistic for this analyte. Nonetheless, the results appear to indicate a probable bias which should be considered in using the data.

The calibration behavior of carbon dioxide appears to be less reliable in this set of data than in previous sets. A number of %D results were extremely high, some greater than 90% with a low bias. This suggests that a very significant bias may be present for some of the results. With such a significant low bias, the undetected data are qualified as RC and the false undetected data could be reported. This problem appears to be reflected in poor reproducibility of several field duplicates for this parameter.

Qualifiers added for calibration outliers are summarized below:

SDG	Client Sample ID	Lab Sample ID	Batch	Analyte	Qualifier
L08060250	IW92-01-EBT-7	L08060250-11	WG274466	Carbon Dioxide	JC91
L08060250	IW101-01B-EBT-7	L08060250-09	WG274602	Carbon Dioxide	JC84
L08060250	PMW101-02B-EBT-7	L08060250-05	WG274603	Carbon Dioxide	JC87
L08060250	IW101-01C-EBT-7	L08060250-14	WG274602	Carbon Dioxide	JC84
L08060250	DR2-1-EBT-7	L08060250-10	WG274603	Carbon Dioxide	JC87
L08060250	IW101-02A-EBT-7	L08060250-13	WG274602	Carbon Dioxide	JC84
L08060250	PMW101-01B-EBT-7	L08060250-04	WG274602	Carbon Dioxide	JC84
L08060250	PMW101-01A-EBT-7	L08060250-02	WG274603	Carbon Dioxide	JC87
L08060250	IW101-01A-EBT-7	L08060250-07	WG274603	Carbon Dioxide	JC87
L08060250	DUP4-EBT-7	L08060250-08	WG274603	Carbon Dioxide	JC87
L08060250	PMW101-01A-EBT-7	L08060250-01	WG274603	Carbon Dioxide	JC87
L08060250	PMW92-01-EBT-7	L08060250-12	WG274465	Carbon Dioxide	JC90
L08060250	PMW101-01A-EBT-7	L08060250-03	WG274603	Carbon Dioxide	JC87
L08060283	RB1-EBT-7	L08060283-05	WG274602	Carbon Dioxide	JC84
L08060283	DUP-7	L08060283-15	WG274466	Carbon Dioxide	UFB31000RC91
L08060283	PMW92-02-EBT-7	L08060283-11	WG274466	Carbon Dioxide	UFB31000RC91
L08060283	PMW101-03A-EBT	L08060283-01	WG274265	Carbon Dioxide	JC90
L08060283	MW-101B-EBT-7	L08060283-09	WG274602	Carbon Dioxide	JC84
L08060283	PMW101-03B-EBT	L08060283-02	WG274602	Carbon Dioxide	JC84
L08060283	PMW101-04B-EBT	L08060283-03	WG274602	Carbon Dioxide	JC84
L08060283	MW-101T-EBT-7	L08060283-08	WG274602	Carbon Dioxide	JC84
L08060283	IW101-03A-EBT-7	L08060283-07	WG274602	Carbon Dioxide	JC84
L08060283	IW92-03-EBT-7	L08060283-10	WG274466	Carbon Dioxide	JC91
L08060283	IW101-02C-EBT-7	L08060283-06	WG274602	Carbon Dioxide	JC84
L08060348	IW92-05-EBT-7	L08060348-16	WG274820	Methane	JC29
L08060348	PMW101-04A-EBT-7	L08060348-17	WG274820	Carbon Dioxide	UB6400JC29
L08060348	DUP8-EBT-7	L08060348-02	WG274821	Carbon Dioxide	JC54
L08060348	IW101-07B-EBT-7	L08060348-09	WG274821	Carbon Dioxide	JC54

SDG	Client Sample ID	Lab Sample ID	Batch	Analyte	Qualifier
L08060348	IW101-07A-EBT-7	L08060348-08	WG274821	Carbon Dioxide	JC54
L08060348	DUP5-EBT-7	L08060348-01	WG274821	Carbon Dioxide	JC54
L08060348	PMW101-06B-EBT-7	L08060348-13	WG274463	Carbon Dioxide	JC88
L08060348	PMW101-06B-EBT-7	L08060348-14	WG274463	Carbon Dioxide	JC88
L08060348	IW101-03C-EBT-7	L08060348-07	WG274821	Carbon Dioxide	JC54
L08060348	PMW101-05B-EBT-7	L08060348-11	WG274821	Carbon Dioxide	JC54
L08060348	IW101-03B-EBT-7-MSD	L08060348-06	WG274463	Carbon Dioxide	JC88
L08060348	PMW101-06B-EBT-7	L08060348-12	WG274820	Carbon Dioxide	JC29
L08060348	IW101-03B-EBT-7-MS	L08060348-05	WG274463	Carbon Dioxide	JC88
L08060348	IW101-03B-EBT-7	L08060348-04	WG274821	Carbon Dioxide	JC54
L08060348	PMW101-05A-EBT-7	L08060348-10	WG274821	Carbon Dioxide	JC54
L08060348	IW92-04-EBT-7	L08060348-15	WG274820	Carbon Dioxide	JC29
L08060348	PMW92-03-EBT-7	L08060348-18	WG274820	Carbon Dioxide	JC32
L08060348	IW92-05-EBT-7	L08060348-16	WG274820	Carbon Dioxide	JC29
L08060383	PMW92-04-EBT-7	L08060383-13	WG274601	Carbon Dioxide	JC83
L08060383	PMW101-07B-EBT	L08060383-04	WG274820	Carbon Dioxide	JC32
L08060383	IW101-07C-EBT-7	L08060383-07	WG274820	Carbon Dioxide	JC32
L08060383	PMW92-05-EBT-7	L08060383-14	WG274940	Carbon Dioxide	JC54
L08060383	PMW101-07A-EBT	L08060383-03	WG274820	Carbon Dioxide	JC32
L08060383	DUP9-EBT-7	L08060383-01	WG274820	Carbon Dioxide	JC32
L08060383	PMW101-06A-EBT	L08060383-02	WG274820	Carbon Dioxide	JC32
L08060383	IW101-09B-EBT-7	L08060383-11	WG275763	Carbon Dioxide	JC81
L08060383	PMW101-08A-EBT	L08060383-05	WG274820	Carbon Dioxide	JC32
L08060383	IW101-09A-EBT-7	L08060383-08	WG274820	Carbon Dioxide	JC32
L08060413	PMW101-08B-EBT-7	L08060413-08	WG275096	Carbon Dioxide	UB13000JC81
L08060413	IW101-04C-EBT-7	L08060413-03	WG275615	Carbon Dioxide	JC79
L08060413	IW101-04B-EBT-7	L08060413-02	WG275615	Carbon Dioxide	JC79
L08060413	DR1-3-EBT-7	L08060413-09	WG275615	Carbon Dioxide	JC79
L08060413	PMW21-03-EBT-7	L08060413-05	WG275615	Carbon Dioxide	JC79
L08060413	MW-115-EBT-7	L08060413-07	WG275615	Carbon Dioxide	JC79
L08060413	PMW21-04-EBT-7	L08060413-06	WG275615	Carbon Dioxide	JC79
L08060413	IW101-04A-EBT-7	L08060413-01	WG275615	Carbon Dioxide	JC79
L08060413	IW92-07-EBT-7	L08060413-12	WG275615	Carbon Dioxide	JC79
L08060413	IW101-05A-EBT-7	L08060413-04	WG275615	Carbon Dioxide	JC79
L08060413	IW92-06-EBT-7	L08060413-11	WG275615	Carbon Dioxide	JC79
L08060454	DUP-3	L08060454-15	WG275618	Carbon Dioxide	JC79
L08060454	MW-85-EBT-7	L08060454-03	WG275615	Carbon Dioxide	JC79
L08060454	PMW21-02-EBT-7	L08060454-06	WG275618	Carbon Dioxide	JC79
L08060454	IW101-08A-EBT-7	L08060454-14	WG275618	Carbon Dioxide	JC79
L08060454	PMW92-06-EBT-7	L08060454-02	WG275096	Carbon Dioxide	JC81
L08060495	RB2-EBT-7	L08060495-13	WG275617	Carbon Dioxide	JC86
L08060495	IW21-01B-EBT-7	L08060495-06	WG275617	Carbon Dioxide	UFB19500JC86
L08060495	IW101-08B-EBT-7	L08060495-14	WG275617	Carbon Dioxide	UFB39000JC86
L08060495	DUP6-EBT-7	L08060495-10	WG275617	Carbon Dioxide	UFB39000JC86
L08060495	IW101-08C-EBT-7	L08060495-15	WG275617	Carbon Dioxide	UFB39000JC86
L08060495	DUP-2	L08060495-18	WG275617	Carbon Dioxide	UFB39000JC81
L08060495	DUP-1	L08060495-19	WG275617	Carbon Dioxide	UFB39000JC81
L08060495	IW21-05B-EBT-7	L08060495-17	WG275617	Carbon Dioxide	UFB39000JC81
L08060495	IW21-01A-EBT-7	L08060495-05	WG275618	Carbon Dioxide	JC79
L08060495	IW85-05-EBT-7	L08060495-03	WG275618	Carbon Dioxide	JC79
L08060495	IW92-08-EBT-7	L08060495-01	WG275618	Carbon Dioxide	JC79
L08060495	IW85-02-EBT-7	L08060495-02	WG275618	Carbon Dioxide	JC79
L08060495	IW85-06-EBT-7	L08060495-04	WG275618	Carbon Dioxide	JC79
L08060495	IW21-05A-EBT-7	L08060495-11	WG275617	Carbon Dioxide	JC86
L08060543	PMW85-05-EBT-7	L08060543-03	WG275886	Carbon Dioxide	RC90
L08060543	IW21-04B-EBT-7	L08060543-10	WG276058	Carbon Dioxide	RC91

SDG	Client Sample ID	Lab Sample ID	Batch	Analyte	Qualifier
L08060543	IW21-02B-EBT-7	L08060543-01	WG276058	Carbon Dioxide	RC91
L08060543	IW21-03A-EBT-7	L08060543-07	WG276058	Carbon Dioxide	RC91
L08060543	PMW85-04-EBT-7	L08060543-02	WG275886	Carbon Dioxide	RC90
L08060543	IW21-04A-EBT-7	L08060543-09	WG276058	Carbon Dioxide	RC91
L08060543	IW21-03B-EBT-7	L08060543-08	WG276058	Carbon Dioxide	RC91
L08060543	IW85-01-EBT-7	L08060543-04	WG276058	Carbon Dioxide	RC91

MBA: All calibrations are in control.
AM20GAX: All calibrations are in control. The laboratory is employing the external standard method.

V. BLANKS

A. Laboratory blanks

1. Laboratory blanks were analyzed for every sample set and for each matrix type or once in every ten samples, whichever is more frequent.
Yes __X__ No_____

2. No blank contamination was found in the method blank.
Yes ____ No __X__
MBA: All method blanks are in control.
AM20GAX (Hydrogen): All method blanks are in control.
RSK-175: A number of method blanks have methane detected above the MDL, and in some cases above the PQL. A few method blanks have carbon dioxide detected. No detections of ethene or ethane were observed in method blanks. Associated sample results are qualified UB#, where # is the method blank result corrected for the sample dilution. This qualifier is applied if the sample result is < 5x the corrected method blank value, and such results are usable as non-detects. Most of the observed method blank outliers have no impact because the sample results are > 5x the method blank. Qualified results are shown in the table below.

SDG	Client Sample	Lab Sample	Batch	Analyte	MB Qualifier
L08060348	PMW101-04A-EBT-7	L08060348-17	WG274820	Carbon Dioxide	UB6400
L08060383	PMW92-05-EBT-7	L08060383-14	WG274821	Methane	UB3.7
L08060413	PMW101-08B-EBT-7	L08060413-08	WG275096	Carbon Dioxide	UB13000
L08060454	MW-21-EBT-7	L08060454-08	WG274941	Methane	UB3.7
L08060454	PMW21-02-EBT-7	L08060454-06	WG274941	Methane	UB3.7
L08060495	RB2-EBT-7	L08060495-13	WG275617	Methane	UB.49
L08060495	IW21-02A-EBT-7	L08060495-07	WG276169	Carbon Dioxide	UB17000

3. Instrument blank analysis was performed following all samples that contained analytes at high concentrations.
Yes _____ No____ NA__X___

B. Field Blanks
If field blanks were identified, no blank contamination was found.
Yes _____ No__X ___ NA_____
There are 2 field blanks. The table below shows the field blank outliers observed.
AM20GAX (Hydrogen): No rinse blanks are present. For hydrogen such blanks are unnecessary.
For metabolic acids and RSK-175, the table below summarizes the results.

SDG	Method	Rinse Blank	Lab Sample ID	Analyte	Result
L08060283	830-MBA	RB1-EBT-7	L08060283-05	Lactic Acid	1
L08060495		RB2-EBT-7	L08060495-13	Lactic Acid	0.578
L08060283	RSK175\5021	RB1-EBT-7	L08060283-05	Carbon Dioxide	310
L08060283			L08060283-05	Methane	2.5
L08060495		RB2-EBT-7	L08060495-13	Carbon Dioxide	390
L08060495			L08060495-13	Methane	0.8 (UB from MB)

The same criteria are used for qualification of associated samples as is used for method blanks. In this instance, the only qualifiers resulting from this analysis are for carbon dioxide, as shown in the table below.

Method	SDG	Client Sample ID	Lab Sample ID	Batch	Analyte	Qualifier
RSK175\5021	L08060283	IW101-02B-EBT-7	L08060283-13	WG274603	Carbon Dioxide	UFB15500
RSK175\5021	L08060283	DUP-7	L08060283-15	WG274466	Carbon Dioxide	UFB31000
RSK175\5021	L08060283	PMW92-02-EBT-7	L08060283-11	WG274466	Carbon Dioxide	UFB31000
RSK175\5021	L08060495	IW21-01B-EBT-7	L08060495-06	WG275617	Carbon Dioxide	UFB19500
RSK175\5021	L08060495	IW101-08B-EBT-7	L08060495-14	WG275617	Carbon Dioxide	UFB39000
RSK175\5021	L08060495	DUP6-EBT-7	L08060495-10	WG275617	Carbon Dioxide	UFB39000
RSK175\5021	L08060495	IW101-08C-EBT-7	L08060495-15	WG275617	Carbon Dioxide	UFB39000
RSK175\5021	L08060495	DUP-2	L08060495-18	WG275617	Carbon Dioxide	UFB39000
RSK175\5021	L08060495	DUP-1	L08060495-19	WG275617	Carbon Dioxide	UFB39000
RSK175\5021	L08060495	IW21-05B-EBT-7	L08060495-17	WG275617	Carbon Dioxide	UFB39000

VI. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

A. Matrix spike (MS) and matrix duplicate or matrix spike duplicate (MSD) were analyzed for every analyses performed for every 20 samples or for every matrix whichever is more frequent.

Yes __X___ No ____

RSK-175: There were five (5) MS/MSDs which meets the 20 to 1 ratio.

Metabolic Acids: There were five (5) MS/MSDs which meets the 20 to 1 ratio.

AM20GAX: There are no MS/MSDs for this method. They are not required or possible for hydrogen analysis.

The MS/MSDs conducted are summarized in the table below.

Method	SDG	Client Sample ID	Lab Sample ID
830-MBA	L08060250	PMW101-01A-EBT-7	L08060250-01
	L08060348	IW101-03B-EBT-7	L08060348-04
		PMW101-06B-EBT-7	L08060348-12
	L08060383	IW101-09A-EBT-7	L08060383-08
	L08060495	IW21-02A-EBT-7	L08060495-07
RSK175\5021	L08060250	PMW101-01A-EBT-7	L08060250-01
	L08060348	IW101-03B-EBT-7	L08060348-04
		PMW101-06B-EBT-7	L08060348-12
	L08060383	IW101-09A-EBT-7	L08060383-08
	L08060495	IW21-02A-EBT-7	L08060495-07

B. The MS and MSD percent recoveries (%R) were within the limits defined in the QAPP, which are the laboratory limits. Both the MS and the MSD %R are required to be out of limits for data to be qualified.
Yes _____ No __X__

RSK-175:
PMW101-01A-EBT-7, SDG L08060250: No qualifiers are added for MS outliers. All outliers are associated with samples having levels that are greater than 4x the spike. In such circumstances, the analytical variability is on the order of the spike level, and so recovery calculations are not meaningful. No qualifiers are added.
IW101-03B-EBT-7, SDG L08060348: No qualifiers are added for MS outliers. All outliers are associated with samples having levels that are greater than 4x the spike.
PMW101-06B-EBT-7, SDG L08060348: Ethene and ethane were not recovered in the matrix spike, but were in control in the matrix spike duplicate. The laboratory has offered no explanation of this, but it seems probable that this was due to a spiking error. Since the LCS behavior is normal for these analytes and the MSD recovery is normal, no qualifiers have been added. Methane was out of limits but this was due to a level in the sample greater than 4x the spike, so no qualifiers have been added for this.
IW101-09A-EBT-7, SDG L08060383: No qualifiers are added for MS outliers. All outliers are associated with samples having levels that are greater than 4x the spike.
IW21-02A-EBT-7, SDG L08060495: In control, no qualifiers added.

Metabolic Acids:
PMW101-01A-EBT-7, SDG L08060250: In control, no qualifiers added.
IW101-03B-EBT-7, SDG L08060348: No qualifiers are added for MS outliers, all due to the parent sample level being more than 4x the spike amount.
PMW101-06B-EBT-7, SDG L08060348: Acetic acid is recovered at 141% in both the MS and MSD. Since it is not detected in the parent sample, no qualifiers are added for the potential high bias.
IW101-09A-EBT-7, SDG L08060383: Acetic acid is recovered just below the LCL of 70% in both the MS (68.8%) and the MSD (69.7%). The parent sample result is qualified as JMS69, and may be biased low proportional to the recovery observed.
IW21-02A-EBT-7, SDG L08060495: In control, no qualifiers added.

C. The MSD relative percent differences (RPD) were within the defined QAPP limits of < 20% RPD.
Yes _____ No __X___
RSK-175:
A few outliers are present, but these are not associated with recoveries that are also out of limits, except in one case.
PMW101-06B-EBT-7, SDG L08060348: Ethene and ethane were not recovered in the matrix spike, but were in control in the matrix spike duplicate. This produces an RPD of 200%, but professional judgment is that this is due to an error in the spike addition to the MS, so no qualifiers are added.

When qualifiers are added, the parent sample is qualified as JD#, where # is the RPD outlier, when both RPD and spike recoveries are out of limits. Otherwise samples are not qualified for RPD outliers. In this set of data no qualifiers are added for RPD.

D. The MS/MSD were client samples.
Yes __X__ No _____

VII. LABORATORY CONTROL SAMPLE AND DUPLICATE (LCS/LCSD)

A. Laboratory Control Sample (LCS) and LCS duplicate were analyzed for every analyses performed and for every 20 samples or for every matrix whichever is more frequent.
Yes __X___ No_____

B. The LCS percent recovery (%R) are within the limits defined by the laboratory which are those defined in the QAPP. If an LCS and LCDS are analyzed, both samples have to have outliers in order for data to be qualified.
Yes ____ No __X__
RSK-175: Ethene and ethane were recovered high in some LCS runs, but since no detections are associated with the related samples, no qualifiers are added. Methane and carbon dioxide were out of limits in a few instances. Qualifiers are added as JL# to all associated samples if the recovery is low and to detected targets if the recovery is high. Results could be biased to a degree roughly proportional to the LCS recovery. The samples qualified are shown in the table below.

SDG	Client Sample ID	Lab Sample ID	Method	Analyte	Qualifier
L08060543	PMW85-04-EBT-7	L08060543-02	RSK175\5021	Methane	JL69

Metabolic Acids: All LCS recoveries are in control.
AM20GAX (Hydrogen): All LCS recoveries are in control.

VIII. SURROGATE RECOVERY
A. The Surrogate spike was analyzed with every sample.
Yes _____ No ____ NA_X___
RSK-175: Surrogates are not required for this analysis.
Metabolic Acids: Surrogates are not required for this analysis.
AM20GAX (Hydrogen): Surrogates are not applicable to this method.

B. And met the recovery limits defined in the current contract. If recovery limits were exceeded, the sample was re-extracted and re-analyzed.
Yes _____ No_____ NA __X___

IX. INTERNAL STANDARDS
The Internal Standards met the 100% upper and -50% lower limits criteria and the Retention times were within the required windows. Note: Internal standards are not required for GC analysis, but if they are used, SW-846 stipulates that they meet the same recovery requirements as those specified for GCMS methods.
Yes ____ No _____ NA__X__
RSK-175, Metabolic Acids, AM20GAX: The laboratory uses the external standard procedure, so no internal standards are present or required.

X. FIELD QC
If Field duplicates were identified, they met guidance RPD of < 35% for water or < 50% for soils and gases. For values reported at < 5 x the reporting limit (RL), a difference of 2 x RL is used as guidance (4 x RL for soils). Data are not qualified for field duplicates as these are evaluated for the total project by the client.
Yes _____ No __X__ NA_____

There are 9 identified field duplicates. All are in control except as indicated in the table below.

SDG	Field Duplicate	Parent Sample	Observations
L08060495	DUP-1	IW21-01A-EBT-7	CO2 RPD=103%; Hydrogen RPD = 159%
L08060495	DUP-2	IW21-05B-EBT-7	CO2 RPD = 51%
L08060454	DUP-3	PMW21-05-EBT-7	OK
L08060250	DUP-4	IW101-01A-EBT-7	OK
L08060348	DUP-5	IW101-03C-EBT-7	OK
L08060495	DUP-6	IW101-08B-EBT-7	OK
L08060283	DUP-7	PMW101-02A-EBT-7	CO2 RPD=120%
L08060348	DUP-8	PMW101-05B-EBT-7	CO2 RPD=102%
L08060383	DUP-9	PMW101-08A-EBT-7	OK

XI. COMPOUND IDENTIFICATION

A. All raw data chromatograms and data system printouts were evaluated for all detected compounds and the identification is accurate.
Yes ____ No _____ NA __X___
This evaluation is not performed at this level of review.

B. Retention time limits or peak pattern identifications are met.
Yes _____ No _____ NA__X___
This evaluation is not performed at this level of review.

C. If two column or two detector confirmation was performed, the value of the confirmation was within 25%D of the quantitation value for results > 5 x RL. If the laboratory has flagged data 'COL' for %D > 40%, a JP qualifier has been added for low level results. For values below (5 x RL), the difference is not considered to impact the precision of the data.
Yes ____ No ____ NA __X__
Not part of this level of review. Dual columns are not required for these methods.

XII. COMPOUND QUANTITATION AND REPORTED CRQLS

A. Raw data examination verified that all sample results were correctly calculated.
Yes _____ No_____ NA__X___
This evaluation is not performed at this level of review.

B. The chromatograms and general system performance were acceptable for all instruments and analytical systems.
Yes _____ No _____ NA__X___
This evaluation is not performed at this level of review.

XIII. OVERALL ASSESSMENT OF THE CASE

The method criteria have been met and the quality of the data, after consideration of qualifiers, is considered acceptable and usable as far as can be determined at this level of review.
The following is noted:

Deliverables:
The laboratory has used a J flag to indicate that they regard certain results to be estimates. We are not able to determine the reason for all of these flags, so have used a "JQ" validation qualifier to identify these results, where they have not been otherwise qualified in the validation process.

Holding Times:
AM20GAX: There is no regulatory hold time for this method. The laboratory uses 14 days and this has been met. Some samples were analyzed on the 14th day of hold, and noted by the laboratory as being mathematically past hold time. However, this is considered acceptable (see section A).

Metabolic Acids: The reviewer has not been able to find documented holding times for the metabolic acids. The normal holding time for an analogous HPLC method 8310 is 14 days for preserved water samples. The QAPP defines the holding time as 28 days. Metabolic acid holding times were all within 14 days.
RSK-175: For RSK-175, pH should not be adjusted when CO_2 is determined, which is the case in this project. The laboratory run logs document that the pH of the samples for this method had not been adjusted. When pH is adjusted, the holding time is 14 days per the method, and we have used this as the acceptable holding time. The laboratory has used 14 days for all RSK analytes. The QAPP holding time for CO2 is 7 days. Almost all data have been qualified JHT# for exceedence of holding times. Carbon dioxide data are also highly qualified for calibration variability. The CO2 data are not considered to be reliable.

A number of reanalyses were outside of the 14-day holding time for this analysis (project HT for CO2 is 7 days). These were documented in the Case Narratives and in the laboratory holding time reports. The samples and analytes qualified are shown in the table below. The qualifier added is JHT#, where # is the number of days past holding time the analysis was conducted. Such results could be considered to be biased low due to loss of analyte by a number of mechanisms.

Sample Condition:
The most current regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be equal to or less than 6° C. The documented sample receipt conditions are fully compliant with applicable regulations.

We could not locate a record of the cooler temperature on receipt for the hydrogen samples. We are aware of no regulatory requirement for receipt temperature for this method, so no qualifiers have been applied. However, good laboratory practice should include a receipt temperature record.

SDG L08060250: The sample receipt form refers to a list of samples that had pH adjusted for metabolic acids. The list is not included in the data package.

SDG L08060283: The sample receipt form indicates that the pH was adjusted for metabolic acid sample IW92-03. The form also indicates that PMW101-02A and IW101-02B were received broken. These samples were retaken and submitted under SDG L08060348.

SDG L08060348: The sample receipt form indicates that metabolic acid samples IW92-04 and IW92-05 required pH adjustment. The notes are unclear but state "did not pH right" for these samples. It is not apparent what the final pH was achieved.

SDG L08060413: The sample receipt form indicates that pH adjustment was required for metabolic acid samples IW92-07, IW92-06, IW101-05A, and IW101-04A.

SDG L08060495: The sample receipt form indicates that pH adjustment was required for metabolic acid samples IW92-08, IW85-06, and IW21-05A.

The need for pH adjustment is a common occurrence for samples at this site. The proper sample bottles have been issued and used. There is a buffering capacity to these matrices that results in slightly elevated pH. The pH is adjusted as soon as the samples reach the laboratory and the impact on the sample data is considered to be minimal. No qualifiers have been added.

Continuing Calibrations:
RSK-175: The laboratory conducts opening and closing calibrations (bracketing the samples during the analytical run). For RSK-175 there is not a specific requirement in the procedure for closing calibrations, and only calibration verification each 12 hours is specified. SW-846 guidance (method 8000B), however specifically requires such closing calibrations for external standard methods. For detected analytes, SW-846 specifies that the closing calibration must meet the same criteria as the opening calibration. This has been achieved for all analytes but for carbon dioxide, for which a number of opening and closing calibrations do not meet the 30% D method criterion specified for RSK-175. In such cases, detected levels of carbon dioxide are qualified as JC#, where # is the applicable opening or closing CCV outlier. Such results may be biased due to calibration drift. Please see the EDD for details.

It should be noted in this regard that the laboratory appears to use a different criterion for carbon dioxide, since a few CCV results were flagged as being outside of limits, but it is not clear to this reviewer where the laboratory limit is set. This method has not been published as a promulgated method by EPA. It rather exists as an open literature publication and an internal EPA SOP), and it may not have been fully developed for carbon dioxide. Thus the laboratory limits may be realistic for this analyte. Nonetheless, the results appear to indicate a probable bias which should be considered in using the data.

The calibration behavior of carbon dioxide appears to be less reliable in this set of data than in previous sets. A number of %D results were extremely high, some greater than 90% with a low bias. This suggests that a very significant bias may be present for some of the results. With such a significant low bias, the undetected data are qualified as RC and the false undetected data could be reported. This problem appears to be reflected in poor reproducibility of several field duplicates for this parameter.

LCS Recoveries:
RSK-175: Ethene and ethane were recovered high in some LCS runs, but since no detections are associated with the related samples, no qualifiers are added. Methane and carbon dioxide were out of limits in a few instances. Qualifiers are added as JL# to all associated samples if the recovery is low and to detected targets if the recovery is high. Results could be biased to a degree roughly proportional to the LCS recovery. Only one sample was qualified.

MS/MSD Recoveries:
RSK-175: There were five (5) MS/MSDs which meets the 20 to 1 ratio.
Metabolic Acids: There were five (5) MS/MSDs which meets the 20 to 1 ratio.
AM20GAX: There are no MS/MSDs for this method. They are not required or possible for hydrogen analysis.

RSK-175:
PMW101-01A-EBT-7, SDG L08060250: No qualifiers are added for MS outliers. All outliers are associated with samples having levels that are greater than 4x the spike. In such circumstances, the analytical variability is on the order of the spike level, and so recovery calculations are not meaningful. No qualifiers are added.
IW101-03B-EBT-7, SDG L08060348: No qualifiers are added for MS outliers. All outliers are associated with samples having levels that are greater than 4x the spike.

PMW101-06B-EBT-7, SDG L08060348: Ethene and ethane were not recovered in the matrix spike, but were in control in the matrix spike duplicate. The laboratory has offered no explanation of this, but it seems probable that this was due to a spiking error. Since the LCS behavior is normal for these analytes and the MSD recovery is normal, no qualifiers have been added. Methane was out of limits but this was due to a level in the sample greater than 4x the spike, so no qualifiers have been added for this.
IW101-09A-EBT-7, SDG L08060383: No qualifiers are added for MS outliers. All outliers are associated with samples having levels that are greater than 4x the spike.
IW21-02A-EBT-7, SDG L08060495: In control, no qualifiers added.

Metabolic Acids:
PMW101-01A-EBT-7, SDG L08060250: In control, no qualifiers added.
IW101-03B-EBT-7, SDG L08060348: No qualifiers are added for MS outliers, all due to the parent sample level being more than 4x the spike amount.
PMW101-06B-EBT-7, SDG L08060348: Acetic acid is recovered at 141% in both the MS and MSD. Since it is not detected in the parent sample, no qualifiers are added for the potential high bias.
IW101-09A-EBT-7, SDG L08060383: Acetic acid is recovered just below the LCL of 70% in both the MS (68.8%) and the MSD (69.7%). The parent sample result is qualified as JMS69, and may be biased low proportional to the recovery observed.
IW21-02A-EBT-7, SDG L08060495: In control, no qualifiers added.

Field Duplicates:
There are 9 identified field duplicates. All are in control except as indicated in the table within the body of this report.

Method Blanks:
MBA: All method blanks are in control.
AM20GAX (Hydrogen): All method blanks are in control.

RSK-175: A number of method blanks have methane detected above the MDL, and in some cases above the PQL. A few method blanks have carbon dioxide detected. No detections of ethene or ethane were observed in method blanks. Associated sample results are qualified UB#, where # is the method blank result corrected for the sample dilution. This qualifier is applied if the sample result is < 5x the corrected method blank value, and such results are usable as non-detects. Most of the observed method blank outliers have no impact because the sample results are > 5x the method blank. Qualified results are shown in the table within the body of this report.

Field Blanks:
There are 2 field blanks. The table within the body of this report shows the field blank outliers observed.
AM20GAX (Hydrogen): No rinse blanks are present. For hydrogen such blanks are unnecessary.
For metabolic acids and RSK-175, the table within the body of this report summarizes the results.

The same criteria are used for qualification of associated samples as is used for method blanks. In this instance, the only qualifiers resulting from this analysis are for carbon dioxide.

INORGANIC DATA QUALITY REVIEW REPORT
METALS BY ICP, COMMON ANIONS BY METHOD 300.0, ALKALINITY BY METHOD 310.2, SULFIDE BY METHOD 376.1 AND TOTAL ORGANIC CARBON BY METHOD 415.1

SDG	L08060250, L08060283, L08060348, L08060383, L08060413, L08060454, L08060495, L08060543
PROJECT	Memphis Defense Depot, EBT-7 for e2M, Texas
LABORATORY	Microbac Laboratories (formerly Kemron), Marietta, OH
SAMPLE MATRIX	Water — SAMPLING DATE (mo/yyyy) 06/2008
NO. OF SAMPLES	11 (W), 14 (W), 15 (W), 11 (W), 11 (W), 14 (W), 15 (W), 10 (W) = 101 aqueous sample (including 2 rinse blanks)
ANALYSES REQUESTED	SW-846 Method 6010B Methods MCAWW 300.0 (Bromide, Chloride, Nitrate, Nitrite, Sulfate) and 310.2 (Alkalinity) and 376.1 (Sulfide) and 415.1 (Total Organic Carbon)
SAMPLE NUMBERS	See attached results forms
DATA REVIEWER	B. Nichols
QA REVIEWER	Diane Short and Associates Inc. — INITIALS/DATE

Telephone Logs included Yes ____ No X

Contractual Violations Yes ____ No X

The project Sampling and Analysis Plan (SAP), the EPA Contract Laboratory Program National Functional Guidelines for Inorganic Review 2002, the SW-846 Methods, and the MCAWW Methods have been referenced by the reviewer to perform this data validation review. The EPA qualifiers have been expanded to include a descriptor code and value to define QC violations and their values, per the approval of the Project Manager. Per the Scope of Work, the review includes validation of all calibrations, chains of custody (for sample holding time and preservation only), and QC forms referencing the above documents.

I. DELIVERABLES

All deliverables were present as specified in the Statement of Work (SOW) or project contract.

Yes x No ____

The following are noted for clarification:
Data were submitted for the ICP analysis of Arsenic, Manganese and Selenium in addition to the wet chemistry analyses. Per the contract, all data packages were reviewed for holding time, summary QC and calibration (Level III). A raw data check was required for the wet chemistry as calibration summaries were not provided.

The ICV standard percent recovery results for the Alkalinity analyses were not provided by the laboratory for any of the data packages. These recovery results were calculated by the reviewer for all of the data. Summaries of the CCV injections for the Total Organic Carbon (TOC) analyses were also not included in any of the data packages. The CCV standard percent recoveries for these analyses were calculated by the reviewer for all of the data (please refer to Section II. C).
The MS/MSD summary report for the Sulfide analysis for SDG L08060495 was not provided by the laboratory. The MS/MSD recovery results and RPD were calculated by the reviewer.

II. CALIBRATIONS

A. All initial instrument calibrations were performed as defined in the SOW or project contract. All correlation coefficients of the 3 point curves were > 0.995.

Yes x No ____ N/A ____

B. The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were analyzed at the required frequency.

Yes x No ____

Sequencing was not required, but sufficient calibrations were present to verify that the frequencies were met for client samples.

C. The ICV and CCV standard percent recovery results were within the required control limits of 90.0 – 110.0%.

Yes ____ No x

The ICV standard percent recovery results for the Alkalinity analyses were not provided by the laboratory. These recovery results were calculated by the reviewer for all of the data. Usually these can be determined without calculation as the true result for the standard is contained in the calibration form and the results are routinely very close to the true value and actual calculation is not required. As there were unreported outliers for the TOC, a more thorough check was done for this data set.

A summary of CCV injections for the TOC analyses was not included in any of the data packages. These percent recoveries were calculated by the reviewer for all of the data as several of the CCVs failed. Usually this can be determined without calculation.

The following analytes did not meet the required CCV control limits.

SDG	Prep QC Lot	Analyte	Result	Qualifier

L08060250	273539	TOC	114	JC114
	273848	TOC	114	JC114
L08060348	274576	TOC	111	JC111
L08060495	274372	Bromide	114	JC114

Data are qualified "JC#," where # is the value of the percent recovery. There could be variability to the reported data due to variability in the calibration factors.

III. CRDL STANDARDS

The 2 × CRDL standards were analyzed as required in the SOW.

Yes _____ No _____ N/A __x__

Not required for Level III deliverables.

IV. BLANKS

The highest blank associated with any particular analyte is used for the qualification process and is the value entered after the "B" blank descriptor.

A. The initial calibration blanks (ICB) and continuing calibration blanks (CCB) were analyzed at the required frequency.

Yes __x__ No _____ N/A _____

Sequencing was not required, but sufficient calibration blanks were present to verify that the frequencies were met for client samples.

B. The ICB and CCB results were within the required control limits.

Yes _____ No __x__ N/A _____

A summary of CCB results for the TOC analyses was not included in any of the data packages. The CCB injections for these analyses were evaluated by the reviewer for one data package (10% of the data).

SDG	Prep QC Lot	Analyte	Result	Qualifier
L08060250	273736	Arsenic	0.0057	UCB0.0057
		Manganese	0.0045	None (results > 5 × blank)
		Selenium	0.012	None (ND in samples)
	273539	TOC	0.5861	None (results > 5 × blank)

Analytes reported as contaminants in the Calibration Blank are qualified "UCB#," where # is the value of the blank. Only detected data less than 5 × blank are qualified, but are fully usable as undetected values at the elevated reporting limit.

V. PREPARATION OR METHOD BLANKS

A. Preparation or Method blanks were prepared and analyzed at the required frequency.

Yes x No ____

B. All analytes in the Preparation or Method Blank were less than the CRDL or less than the MDL, whichever is lower.

Yes ____ No x

Analytes were found in the Method Blank but the levels were such that qualification would be required only for the following analytes.

SDG	Prep QC Lot	Analyte	Result	Qualifier
L08060283	274362	Alkalinity	-16.9	JK-16.9
L08060283 & L08060383 & L08060413 & L08060454	274433	Alkalinity	6.52	None (results > 5 × blank)
L08060348	274408	Alkalinity	-13.9	None (results > 5 × |blank|)
L08060543	275683	Alkalinity	-12.3	None (results > 5 × |blank|)

Analytes reported as negative values in the Method Blank are qualified "JK#," where # is the value of the blank. Undetected data and detected data less than 5 × the absolute value of the blank are qualified. A low bias could be present for detected results and false non-detects could be reported.

C. Field, trip, decon rinse or other Field Blanks are contained and identified in the package.

Yes x No ____ N/A ____

Field Blank RB1-EBT-7 was associated with SDG L08060283. Field Blank RB2-EBT-7 was associated with SDG L08060495.

D. The reported results for the Field Blanks are less than the CRDL or less than the MDL, whichever is lower.

Yes ____ No x N/A ____

There were 2 rinse blanks associated with the SDGs referenced in this report. Qualification is required only for the following analytes.

SDG	Sample ID	Analyte	Result	Qualifier
L08060283	RB1-EBT-7	Selenium	0.0074	UFB0.0074
		Chloride	0.111	None (results > 5 × blank)
		Alkalinity	11.0	None (results > 5 × blank)
		TOC	0.760	UFB0.76

SDG	Sample ID	Analyte	Result	Qualifier

L08060495	RB2-EBT-7	Chloride	0.319	None (results > 5 × blank or ND in samples)
		Alkalinity	162	UFB162
		TOC	0.650	None (results > 5 × blank)

Analytes reported as contaminants in Rinse Blanks (or ambient blanks) or Trip Blanks are qualified "UFB#" or "UTB#," respectively, where # is the value of the blank corrected to the units of the sample. Only detected data less than 5 × blank are qualified, but are fully usable as undetected values.

VI. A. ICP INTERFERENCE CHECK SAMPLE

A. The Interference Check Sample (ICS) was analyzed as required in the SOW or project contract.

Yes x No _____ N/A _____

B. The ICS percent recovery results were reported for all required ICS analytes and were within the required control limits of 80.0 – 120.0%.

Yes x No _____ N/A _____

C. ICP analysis results for analytes not required to be present in a given ICS standard were within acceptable limits.

Yes _____ No _____ N/A x

Not applicable to limited list metals.

VI B. INTERELEMENT CORRECTION FACTORS

The Interelement Correction Factors are included and complete for all possible interferent analytes.

Yes x No _____ N/A _____

Review of other possible contaminants was not requested by the client. The full Interference table was provided, however.

VII. SPIKE SAMPLE RECOVERY

A. A Matrix (pre-digestion) Spike sample was analyzed for each digestion group and/or matrix or as required in the SOW.

Yes x No _____

B. The Matrix Spike percent recoveries were within the required control limits of 75.0 - 125.0%.

Yes _____ No x N/A _____

The laboratory limits are given as 80 – 120% for the ICP analyses, but the QAPP limits listed above were used. The laboratory limits are given as 85 – 115% for the Anions and TOC analyses, but the QAPP limits were used.

The MS/MSD summary report for the Sulfide analysis for SDG L08060495 was not provided by the laboratory. The MS/MSD recovery results and RPD were calculated by the reviewer. The following Matrix Spike recoveries (MS/MSD) required data qualification.

SDG	Prep QC Lot	Analyte	MS/MSD Recoveries	Affected Samples	Qualifier
L08060348	274408	Alkalinity	68/69	All data	JS68
L08060383	274364	Alkalinity	73/77	All data	JS73
L08060454	275699	Selenium[a]	59/65	All data	JS59
L08060495	274372	Chloride	61/59	All data	JS59
L08060543	274569	Chloride[a]	61/59	All data	JS59
		Sulfate[a]	67/66	All data	JS66

Data which do not meet the MS/MSD required recoveries are qualified "JS#," where # is the value of the spike recovery. All data are qualified for low spike values. Only detected data are qualified for high spike values. A low Matrix Spike recovery indicates a possible low bias to the reported result. A high Matrix Spike recovery indicates a potential high bias. When four times (4 ×) the spike amount is less than the concentration of the analyte in the parent sample, no qualification is required as the recovery is statistically invalid. This latter condition was observed for the Alkalinity and TOC analyses in SDG L08060250, for the TOC analysis in SDG L08060348 and for Chloride in SDG L08060383 and SDG L08060543 (QC Prep Lot 274571).
[a] Per the validation requirements, data have been qualified even though a non-client sample is reported. The reviewer notes that the qualifier is not expected to reflect the actual matrix effects in client matrices. There were no MS/MSD outliers for Selenium or Sulfate in client samples as reported in these data sets. The MS/MSD outliers for Chloride in client samples as reported in these data sets were in the range of 59 – 61%.

C. A Post Digestion Spike was prepared and analyzed if required.

Yes X No _____ N/A _____

The Post Digestion Spike recovery for Selenium in QC Prep Lot 275699 for SDG L08060454 was outside the required control limits of 75.0 – 125.0%. Data are not further qualified for the Level III review but the outier is noted as it confirms the selenium matrix effects. As this is not a client sample, it is not considered to impact the quality of client data.

D. The MS/MSD samples were client samples.

Yes X No _____ N/A _____

Yes except as noted: The MS/MSD samples for QC Prep Lot 275427 for ICP analysis in SDG L08060413 are non-client sample L08060533-05. The MS/MSD samples for QC Prep Lot 275699 for ICP analysis in SDG L08060454 are non-client sample L08060631-02. The MS/MSD samples for QC Prep Lots 274569 and 274571 for Anions analysis in SDG L08060543 are non-client samples L08060545-08 and L08060545-26, respectively.

VIII. DUPLICATES

A. Matrix (pre-digestion) Duplicate samples were analyzed at the required frequency.

Yes X No _____

The laboratory prepared and analyzed MS/MSD samples for the ICP analyses.

B. The Matrix Duplicate or Matrix Spike Duplicate relative percent differences (RPD) were within the required control limits (20% for water samples or 35% for soil samples or as given for the wet chemistry analyses) or the Reporting Limits (RL) were met if the duplicate values are less than 5 × RL (CRDL Rule). If either of the duplicate results is less than 5 × RL, the RPD is not used. The QC limit (± RL for water samples or ± 2 × RL for soil samples) used is the difference between the original and the duplicate results.

Yes x No _____ N/A _____

IX. LABORATORY CONTROL SAMPLE

A. Laboratory Control Samples (LCS) were analyzed at the required frequency.

Yes x No _____

B. The LCS recoveries were within the required control limits of 80.0 – 120.0%.

Yes x No _____

The laboratory limits are given as 85 – 115% for the Anions and TOC analyses, but the QAPP limits listed above were used.

X. MSA RESULTS AND GRAPHITE FURNACE ANALYSIS (GFAA)

Duplicate injections were performed for all analyses and the relative standard deviations (RSD) were less than 20% for all reported results. (Method of Standard Additions (MSA) requires only a single injection).

Yes _____ No _____ N/A x

Graphite furnace analysis was not conducted.

XI. ICP SERIAL DILUTION

A. ICP Serial Dilutions have been analyzed at the required frequency if the analyte concentrations were greater than 50 × IDL.

Yes x No _____ N/A _____

B. The percent difference (% D) criteria of ± 10.0 % were met.

Yes x No _____ N/A _____

C. The Serial Dilution analyses were conducted on client samples.

Yes x No _____ N/A _____

XII. INSTRUMENT DETECTION LIMITS

A. The Instrument Detection Limits (IDL) have met the Quarterly reporting requirements.

Yes x No _____ N/A _____

This was determined to be acceptable during the contractual process.

B. All sample results have met the required detection limits (CRDL).

Yes x No _____ N/A _____

XIII. PREPARATION AND ANALYSIS LOGS

A. All samples were prepared and analyzed within the required holding times referenced in the SOW (time of sample receipt to preparation/distillation).

Yes x No _____

B. All samples were analyzed within the 40 CFR 136 (Clean Water Act) or method recommended holding times (time of sample collection to date of analysis).

Yes x No _____

C. Chains of Custody (COC)

1. Chains of Custody (COC) were reviewed and all fields were complete, signatures were present and cross outs were clean and initialed.

Yes x No _____

The Chain of Custody (COC) forms were a mixture of types as has been noted in previous reports. This has not been considered a data usability issue. One set of COC forms were reviewed for Client Sample Number accuracy. No courier identification or airbill number was present on the COC forms; however this information was given on the laboratory's Sample Receipt Form for each SDG. No preservation was given on the COC forms. The following statement was provided in several of the Report Narratives: "Several samples required pH adjustments upon arrival. This has been common at this site." Please refer to Section XIII. C for further explanation.

Note: No Sulfide analysis was performed on client sample IW101-05B-EBT-7 (L08060454-09) from SDG L08060454 due to insufficient sample amount received by the laboratory (please refer to Section XIII. C). The sample was resubmitted for this analysis with SDG L08060495 as sample L08060495-16.
For SDG L08060250, the labels on the designated matrix spike containers for metals and sulfide analyses were mixed up. The laboratory corrected the labeling per client approval.

2. Samples were received at the required temperature and preservation.

Yes _____ No x

No preservation was given on the COC forms.
The matrix for this site has an inherent buffering effect and samples are routinely brought to pH <2 as soon as samples arrive at the laboratory. No qualifiers are added as this is done in a timely manner and the intent of the acidification has been met to the extent possible per the standard aliquot of acid in laboratory-supplied bottles.
The following is noted for the validation report record. The Sample Receipt Form for some SDGs stated "pH out – see attach list." The laboratory noted on the attached list that nitric acid (HNO_3) was added to samples IW101-01A-EBT-7 (L08060250-07), DUP4-EBT-7 (L08060250-08) and IW92-01-EBT-7 (L08060250-11) to pH < 2 for metals analyses. The laboratory also noted that sulfuric acid (H_2SO_4) was added to sample IW92-01-EBT-7 (L08060250-11) to pH < 2 for TOC analysis. The original values for these samples as noted by the laboratory were pH 6. The following statement was provided in the Report Narrative: "Several samples required pH adjustments upon arrival. This has been common at this site."

For SDG L08060283, the laboratory noted on the Sample Receipt Form that an acceptable amount of acid was added to sample IW92-03-EBT-7 (L08060283-10) for metals and TOC analyses. The original values for this sample as noted by the laboratory were pH 6.
For SDG L08060348, the laboratory noted on the Sample Receipt Form that a noted amount of acid was added to samples IW92-04-EBT-7 (L08060384-15) and IW92-05-EBT-7 (-16) for metals and TOC analyses. The original or corrected pH values for these samples were not noted by the laboratory.
For SDG L08060383, the laboratory noted on the Sample Receipt Form that an acceptable amount of HNO_3 was added to sample IW101-09B-EBT-7 (L08060383-11) for metals analyses. The original value for this sample as noted by the laboratory was pH 4.0.
For SDG L08060413, the laboratory noted on the Sample Receipt Form that an acceptable amount of HNO_3 was added to samples IW101-05A-EBT-7 (L08060413-04), IW92-06-EBT-7 (-11) and IW92-07-EBT-7 (-12) for metals analyses. The laboratory also noted that H_2SO_4 was added to sample IW92-06-EBT-7 (-11) for TOC analysis. The original or corrected pH values for these samples were not noted by the laboratory.
For SDG L08060454, the laboratory noted on the Sample Receipt Form that only ¼ of the Sulfide sample for IW101-05B-EBT-7 (L08060454-09) was received. No Sulfide analysis report form was submitted by the laboratory for this sample. The laboratory also noted that acceptable amounts of zinc acetate and sodium hydroxide (NaOH) were added to sample DUP-3 (L08060454-15) for Sulfide analysis. The original value for this sample as noted by the laboratory was pH 7.0.
For SDG L08060495, the laboratory noted on the Sample Receipt Form that the pH of sample IW92-08-EBT-7 (L08060495-01) was adjusted for metals and TOC analyses, but the corrected pH value was still not acceptable. The laboratory also noted that the pH of samples IW85-06-EBT-7 (04) and IW21-05A-EBT-7 (-11) were adjusted for metals analyses. The corrected pH values were acceptable. The original or corrected pH values for these samples were not noted by the laboratory.

XIV. FIELD QC

A. Field QC samples (duplicates, SRMs) were identified.

Yes x No _____

The following Parent Sample and associated Duplicate were identified for each SDG.

SDG L08060250:	IW101-01A-EBT-7 and DUP4-EBT-7 (L08060250-07 and -08)
SDG L08060283:	PMW101-02A-EBT-7 and DUP-7 (L08060283-12 and -15)
SDG L08060348:	IW101-03C-EBT-7 and DUP5-EBT-7 (L08060348-07 & -01)
	PMW101-05B-EBT-7 and DUP8-EBT-7 (L08060348-11 & -02)
SDG L08060383:	PMW101-08A-EBT-7 and DUP9-EBT-7 (L08060383-05 & -01)
SDG L08060454:	PMW21-05-EBT-7 and DUP-3 (L08060454-07 & -15)
SDG L08060495:	IW21-01A-EBT-7 and DUP-1 (L08060495-05 & -19)
	IW21-05B-EBT-7 and DUP-2 (L08060495-17 & -18)
	IW101-08B-EBT-7 and DUP6-EBT-7 (L08060495-14 & -10)

B. Field duplicates were within the guidance limit of < 35% RPD for water samples or < 50% RPD for soil samples. If values are less than 5 × RL, the water limit is ± 2 × RL or the soil limit is ± 4 × RL. The Project Manager will make the final determination.

Yes _____ No x N/A _____

The following Field Duplicate results were outside the guidance limit. Qualification was not applied, but the results are given. Note results are NC not calculated when either of the results is ND as the RPD equation does not accept zero.

SDG	Analyte	Samples	Sample Result	Duplicate Result	RPD
L08060283	TOC	L08060283-12 & -15	3.55	5.70	47
L08060348	Sulfate	L08060348-07 & -01	ND	4.92	NC
L08060495	Alkalinity	L08060495-05 & -19	945	280	109
		L08060495-17 & -18	598	279	73
		L08060495-14 & -10	8.46	1450	198

One set of Field Duplicates was analyzed for SDG L08060250. The RPD results for Mn and Se are within the guidance limit. The RPD result for Arsenic was greater than the limit, but as the sample and duplicate values were less than 5 × RL and the difference between the two values less than the water limit of ± 2 × RL, this RPD result was not reported in the table of outliers. The RPD results for the wet chemistry analyses are within the guidance limits.
One set of Field Duplicates was analyzed for SDG L08060283. The RPD results for As and Mn are within the guidance limit. The RPD result for Selenium was greater than the limit since the compound was not detected for the initial sample result, but as the difference between the two values was less than the water limit of ± 2 × RL, this RPD result was not reported in the table. The RPD result for Total Organic Carbon (TOC) was greater than the limit, and even though the initial value was less than 5 × RL, the difference between the two values was greater than the water limit of ± 2 × RL. The RPD results for the remaining wet chemistry analyses are within the guidance limits.
Two sets of Field Duplicates were analyzed for SDG L08060348. The outlier value is given in the preceding table. The RPD results for As, Mn and Se and for the remaining wet chemistry analyses are within the guidance limit.
One set each of Field Duplicates was analyzed for SDG L08060383 and for SDG L08060454. The RPD results for As, Mn and Se and for the wet chemistry analyses are within the guidance limit.
Three sets of Field Duplicates were analyzed for SDG L08060495. The RPD results for As, Mn and Se are within the guidance limits. Two of the RPD results for Sulfate were greater than the limit since the compound was not detected in one of the samples, but as the differences between the two values were less than the water limit of ± 2 × RL, these RPD results were not reported in the table. The outlier values for Alkalinity are given in the preceding table. The RPD results for the remaining wet chemistry analyses are within the guidance limits.

XV. GENERAL COMMENTS

The laboratory has complied with the requested methods, and the quality of the data is acceptable and usable with consideration of the following comments.

SUMMARY OF QUALIFIERS:

The "JC#" qualifier is for ICV or CCV, where # is the % R. There could be variability to the reported data due to variability in the calibration factors.
The "JK" qualifier is for negative Method Blank detections, where # is the value of the blank. Only detected data less than 5 × the absolute value of the blank are qualified. A low bias could be present for detected results and false non-detects could be reported.

The "UFB#" qualifier is for Rinse Blank detections, where # is the value of the blank corrected to the units of the sample. Only detected data less than 5 × blank are qualified, but are fully usable as undetected values.
The "JS#" qualifier is for Matrix Spike recoveries, where # is the analyte recovery. The bias to the data is considered to be low or high proportional to the analyte recovery.

QUALIFICATION OR COMMENTS IN DETAIL:

The following are noted for clarification:
Data were submitted for the ICP analysis of Arsenic, Manganese and Selenium in addition to the wet chemistry analyses. Per the contract, all data packages were reviewed for holding time, summary QC and calibration (Level III). No raw data was reviewed except for that required to meet the calibration check criteria for wet chemistry.

The ICV standard percent recovery results for the Alkalinity analyses were not provided by the laboratory for any of the data packages. These recovery results were calculated by the reviewer for all of the data. Summaries of the CCV injections for the Total Organic Carbon (TOC) analyses were also not included in any of the data packages. The CCV standard percent recoveries for these analyses were calculated by the reviewer for all of the data (please refer to Section II. C).
The MS/MSD summary report for the Sulfide analysis for SDG L08060495 was not provided by the laboratory. The MS/MSD recovery results and RPD were calculated by the reviewer.

Calibrations

The ICV standard percent recovery results for the Alkalinity analyses were not provided by the laboratory. These recovery results were calculated by the reviewer for all of the data. A summary of CCV injections for the TOC analyses was not included in any of the data packages. These percent recoveries were calculated by the reviewer for all of the data as there were outliers found in the oversight review of the raw data.

Blanks

A summary of CCB results for the TOC analyses was not included in any of the data packages. The CCB injections for these analyses were evaluated by the reviewer for one data package (10% of the data).
Analytes were found in the Method Blank as negative detection in the Alkalinity analysis. Undetected and detected data are qualified for low bias or possible false undetected data.

Field Blanks

Field Blank RB1-EBT-7 was associated with SDG L08060283. Field Blank RB2-EBT-7 was associated with SDG L08060495. Analytes were found in the Rinse Blanks.

Matrix Spikes

The MS/MSD summary report for the Sulfide analysis for SDG L08060495 was not provided by the laboratory. The MS/MSD recovery results and RPD were calculated by the reviewer.
Matrix Spike recoveries (MS/MSD) data qualification was required for Alkalinity, Selenium, Chloride and Sulfate. Per the validation requirements, data have been qualified for Selenium, Chloride and Sulfate even though a non-client sample is reported. The reviewer notes that the qualifier is not expected to reflect the actual matrix effects in client matrices. There were no MS/MSD outliers for Selenium or Sulfate in client samples as reported in these data sets. The MS/MSD outliers for Chloride in client samples as reported in these data sets were in the range of 59 – 61%.

When four times (4 ×) the spike amount is less than the concentration of the analyte in the parent sample, no qualification is required as the recovery is statistically invalid. This latter condition was observed for the Alkalinity and TOC analyses in SDG L08060250, for the TOC analysis in SDG L08060348 and for Chloride in SDG L08060383 and SDG L08060543 (QC Prep Lot 274571).

The MS/MSD samples were client samples except as noted: The MS/MSD samples for QC Prep Lot 275427 for ICP analysis in SDG L08060413 are non-client sample L08060533-05. The MS/MSD samples for QC Prep Lot 275699 for ICP analysis in SDG L08060454 are non-client sample L08060631-02. The MS/MSD samples for QC Prep Lots 274569 and 274571 for Anions analysis in SDG L08060543 are non-client samples L08060545-08 and L08060545-26, respectively.

Post Digestion Spikes

The Post Digestion Spike recovery for Selenium in QC Prep Lot 275699 for SDG L08060454 was outside the required control limits of 75.0 – 125.0%. Data are not further qualified for the Level III review but the outier is noted as it confirms the selenium matrix effects. As this is not a client sample, it is not considered to impact the quality of client data.

Chains of Custody

The full assessment of the COC forms is in the associated organic report. The Chain of Custody (COC) forms were a mixture of types. Only one set of COC forms were reviewed for Client Sample Number accuracy. No courier identification or airbill number was present on the COC forms; however this information was given on the laboratory's Sample Receipt Form for each SDG.

No preservation was given on the COC forms. Details of preservation activities are in the body of the report. The matrix for this site has an inherent buffering effect and samples are routinely brought to pH <2 as soon as samples arrive at the laboratory. No qualifiers are added as this is done in a timely manner and the intent of the acidification has been met to the extent possible per the standard aliquot of acid in laboratory-supplied bottles. Data are not considered to be impacted.

Field QC

The following Parent Sample and associated Duplicate were identified for each SDG.

SDG L08060250:	IW101-01A-EBT-7 and DUP4-EBT-7 (L08060250-07 and -08)
SDG L08060283:	PMW101-02A-EBT-7 and DUP-7 (L08060283-12 and -15)
SDG L08060348:	IW101-03C-EBT-7 and DUP5-EBT-7 (L08060348-07 & -01)
	PMW101-05B-EBT-7 and DUP8-EBT-7 (L08060348-11 & -02)
SDG L08060383:	PMW101-08A-EBT-7 and DUP9-EBT-7 (L08060383-05 & -01)
SDG L08060454:	PMW21-05-EBT-7 and DUP-3 (L08060454-07 & -15)
SDG L08060495:	IW21-01A-EBT-7 and DUP-1 (L08060495-05 & -19)
	IW21-05B-EBT-7 and DUP-2 (L08060495-17 & -18)
	IW101-08B-EBT-7 and DUP6-EBT-7 (L08060495-14 & -10)

Field Duplicate results outside the guidance limit were not qualified.

One set of Field Duplicates was analyzed for SDG L08060250. The RPD results for Mn and Se are within the guidance limit. The RPD result for Arsenic was greater than the limit, but as the sample and duplicate values were less than 5 × RL and the difference between the two values less than the water limit of ± 2 × RL, this RPD result was not reported in the table of outliers. The RPD results for the wet chemistry analyses are within the guidance limits.

One set of Field Duplicates was analyzed for SDG L08060283. The RPD results for As and Mn are within the guidance limit. The RPD result for Selenium was greater than the limit since the compound was not detected for the initial sample result, but as the difference between the two values was less than the water limit of ± 2 × RL, this RPD result was not reported in the table. The RPD result for Total Organic Carbon (TOC) was greater than the limit, and even though the initial value was less than 5 × RL, the difference between the two values was greater than the water limit of ± 2 × RL. The RPD results for the remaining wet chemistry analyses are within the guidance limits.

Two sets of Field Duplicates were analyzed for SDG L08060348. The outlier value is given in the preceding table. The RPD results for As, Mn and Se and for the remaining wet chemistry analyses are within the guidance limit.

One set each of Field Duplicates was analyzed for SDG L08060383 and for SDG L08060454. The RPD results for As, Mn and Se and for the wet chemistry analyses are within the guidance limit.

Three sets of Field Duplicates were analyzed for SDG L08060495. The RPD results for As, Mn and Se are within the guidance limits. Two of the RPD results for Sulfate were greater than the limit since the compound was not detected in one of the samples, but as the differences between the two values were less than the water limit of ± 2 × RL; these RPD results were not reported in the table. The outlier values for Alkalinity are given in the preceding table. The RPD results for the remaining wet chemistry analyses are within the guidance limits.

ORGANIC DATA QUALITY REVIEW REPORT
VOLATILE ORGANICS SW-846 METHOD 8260B/5030B

8260B/5030B
SDG: L0812243, 343, 376, 394, 452, 478, 512

PROJECT: Memphis Defense Depot, EBT-8 for e2m, Texas

LABORATORY: Microbac Laboratories, Inc., Marietta, OH

SAMPLE MATRIX: Water

SAMPLING DATE (Month/Year): December 2008

NO. OF SAMPLES: 8260B/5030B (Waters) 106 samples including 7 Trip Blanks and 2 Rinse Blanks

ANALYSES REQUESTED: SW-846 8260B

SAMPLE NO.: See attached result forms

DATA REVIEWER: Sammy Huntington and John Huntington

QA REVIEWER: Diane Short and Associates Inc. INITIALS/DATE: _____

Telephone Logs included Yes____ No _X__

Contractual Violations Yes____ No _X___

The project QAPP (11/05), the EPA Contract Laboratory Program National Functional Guidelines for Organic Review, 1999 and 2001, and the SW-846 Method 8260B has been referenced by the reviewer to perform this data validation review. The EPA qualifiers have been expanded to include a descriptor code and value to define QC violations and their values, per the approval of the Project Manager. Per the Scope of Work, the review of these samples includes Level III validation of all chains of custody, calibrations and QC forms referencing the QC limits in the above documents.

I. DELIVERABLES

A. All deliverables were present as specified in the Statement of Work (SOW), SW-846, or in the project contract.

Yes _X__ No _____

This report has been requested to include the following review: Holding times and sample integrity (chains of custody, sample log in), Calibrations, Summary QC.

B. Chain of Custody Documentation was complete and accurate.

Yes __X___ No ___

No qualifiers have been added for chain of custody issues and the project manager will update chains per the following notes to complete the project record. The chain of custody on use has been discussed in detail in previous reports, and those general comments apply. All chain of custody documents in this set were properly signed and dated.

C. Samples were received at the required temperature, preservation and intact with no bubbles.

Yes __X____ No ____

EPA regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be equal to or less than 6° C. The sample receipt conditions are fully compliant with applicable regulations.

Volatiles samples cannot be checked for pH outliers on sample receipt. The laboratory checks the samples at runtime. A number of samples were not at pH <2, as follows:

For those samples that are pH 6-7, the sample should be regarded as being essentially unpreserved. 40CFR indicates that for chlorinated compounds this is still acceptable, but that aromatics (BTEX) may be subject to some degradation under these conditions.

The other samples are all sufficiently acidic that biodegradation should be inhibited despite the fact that a pH <2 was not achieved. Using professional judgment, no qualifiers are added.

Since it has been documented that the buffering capacity of the waters from this site is typically responsible for elevated pH after preservation, no qualifiers are added.

All sample receipt forms stated that the seals were intact except for SDG L08120512, for which NA was marked.

II. ANALYTICAL REPORT FORMS

A. The Analytical Report or Data Sheets are present and complete for all requested analyses.

Yes _X_ No ____

B. Holding Times

1. The contract holding times were met for all analyses (Time of sample receipt to time of analysis (VOA) or extraction and from extraction to analysis).

Yes __X___ No_____

2. The Clean Water Act (40 CFR 136) or method holding times were met for all analyses (14 days from time of sample collection to analysis or extraction).

Yes ___ No __X__

A reanalysis for MEK only was conducted on sample DR2-1 and was 4 days out of hold. The result is qualified as JH4 to indicate this. This is a relatively stable compound; samples are kept in the dark and at 4 °C. The impact is expected to be a minimal low bias.

III. INSTRUMENT CALIBRATION – GC/MS

A. Initial Calibration

1. The Response (RF) and Relative Response Factors (RRF) and average RRF for all compounds for all analyses met the contract criteria of >0.01.

Yes __X__ No ____ NA____

Per the project manager, the 2001 EPA CLP validation guidance has been applied to the common "poor responders". Acetone, 2-butanone, and 4-methyl-2-pentanone are the compounds for which any calibration response factors below 0.05 have been observed. The validation guidance used for this project allows for a response of 0.01 for these compounds if spectral integrity can be verified at low concentrations. These spectra are not commonly provided and are not part of the deliverable for these data sets. The laboratory has been tasked with providing to the client verification that the 0.01 RF is valid. Given the spectral verification is available, the data are not qualified for response >0.01 < 0.05. No data have been qualified.

Most of the low-responding compounds are highly water-soluble and capable of hydrogen bonding with water. This decreases their purge efficiency and results in the relatively low response. The implication of this low purge efficiency is that a relatively low absolute recovery of such compounds is achieved in the purge step of the analysis. If this recovery is consistent, reasonable accuracy and precision can be achieved in a given matrix, which is indicated for the lab matrix by acceptable recoveries in LCS and calibration checks. However, this causes these targets to be more sensitive to matrix variations that impact purge efficiency (such as ionic strength or the presence of varying levels of soluble non-target organic material) than are the more hydrophobic compounds typically analyzed by this method, and as a result they are more likely to exhibit matrix bias. The likelihood of matrix bias for these compounds in this site matrix can be evaluated from the MS/MSD recoveries, since the QAPP limits are uniform and will reveal difference in behavior between compounds.

2a.The relative standard deviation (RSD) for the five point calibration was within the 30% limit for the CCCs.

Yes _X__ No____ NA____

This is a method requirement and indicates that the analytical system is in control.

2b.The relative standard deviation (RSD) for the five point calibration was within the 30% limit for all other compounds or a linear curve was used.

Yes _____ No __X__ NA____

In most cases the laboratory has been able to achieve an acceptable regression curve if the RSD exceeds 15% (the laboratory limit). In two calibrations, the laboratory has reported results for certain compounds from a calibration which has %RSD outliers and no regression curve applied. Results for detected targets are qualified as JC#, where # is the RSD outlier observed.

SDG	ICAL Date	Analyte	%RSD outliers	Qualifiers Added
L08120343	12/10/08 16:46	All in control		None
	12/17/08 00:40	1,2-Dichloroethane	41.1	JC41 detects
		Bromomethane	35.8	None U from MB
L08120376	12/10/08 16:46	All in control		None
	11/25/08 21:08	All in control		None
	12/18/08 17:35	All in control		None
L08120243	12/10/08 16:46	All in control		None
	11/14/08 18:53	All in control		None
L08120512	12/10/08 16:46	All in control		None
	12/17/08 00:40	1,2-Dichloroethane	41.1	JC41 detects
		Bromomethane	35.8	None U from MB
	12/19/08 19:15	Vinyl Acetate	41.0	None, ND
	12/18/08 17:35	All in control		None
L08120394	12/10/08 16:46	All in control		None
	12/18/08 17:35	All in control		None
L98120452	12/10/08 16:46	All in control		None

SDG	ICAL Date	Analyte	%RSD outliers	Qualifiers Added
	11/25/08 21:08	All in control		None
	12/18/08 17:35	All in control		None
L08120478	12/10/08 16:46	All in control		None
	12/17/08 00:40	1,2-Dichloroethane	41.1	JC41 detects
		Bromomethane	35.8	None U from MB
	12/18/08 17:35	All in control		None

3. The 12 hour system Performance Check was performed as required in SW-846.
Yes __X__ No_____ NA____

B. Continuing Calibrations
1. The midpoint standard was analyzed for each analysis at the required frequency and the QC criteria of > 0.05 (.01 for CLP 2001) were met.
Yes __X___ No ____ NA____
The CCVs were analyzed at the proper frequency. The same compounds showed low responses in the continuing calibration as were observed in the initial calibrations. Qualifiers are not added for these outliers since none were below the lower limit of 0.01. No data have been qualified from the response factors and RRFs are not noted since they are essentially the same as the ICAL. This consistency of response for the poor-responding compounds is an indication that there is no significant bias for the laboratory water matrix.

2. The percent difference (%D) limits of ± 20% were met. The 2001 NFG also allow for 40% D for the poor responders. For other compounds the QAPP notes rejection of detected compounds with %D > 40%.
Yes _____ No __X__ NA___
See the table below. When there are no detections, unless the %D is biased low and so large as to indicate a significant probability of false negatives, no qualifiers are added for %D outliers when targets are not detected or for a high recovery for undetected compounds. Data are qualified JC#, where # is the %D. There could be variability to the data as there is variability to the response.

The QAPP indicates that compounds in a run should be rejected if the %D is > 40%. We interpret this to mean that non-detects should be rejected and that detected targets should be J-qualified, which is the normal validation process for rejection. In this case, only vinyl acetate has any %D values > 40% and there are no detections of this target. Where the calibration bias is high, such results should normally be usable for non-detects but per the QAPP the R qualifier has been added.

In some cases, CCVs were used to obtain reanalysis data for one or two compounds. In these cases, there may be outliers but they are not relevant unless they are the specific targets reported. The table below reflects the qualifiers added due to CCV outliers.

SDG	CCV Date	Batch	Analyte	%D outliers	Bias	Qualifiers Added
L08120343	12/18/08 9:07	WG290831	1,1,1-Trichloroethane	21.3	high	None, ND
			1,2-Dichloroethane	21.4	high	JC21 detect
			2,2-Dichloropropane	22.6	high	None, ND
			Carbon Tetrachloride	25.2	high	None, ND
			Vinyl Acetate	30.7	low	JC31 all
	12/18/08 10:54	WG290842	2,2-Dichloropropane	22.6	high	None, ND
			Acetone	23.7	low	JC24
			Vinyl Acetate	101	high	RC101 all
	12/18/08 20:03	WG290939	Acetone	30.5	low	JC31 all
			Vinyl Acetate	93.6	high	RC94 all
	12/19/08 15:20	WG290969	Bromomethane	28.4	high	none, ND
			Vinyl Acetate	20.8	high	none, ND
L08120376	12/19/08 8:04	WG290954	All in control			None

SDG	CCV Date	Batch	Analyte	%D outliers	Bias	Qualifiers Added
	12/19/08 15:20	WG290969	Bromomethane	28.4	high	none, ND
			Vinyl Acetate	20.8	high	none, ND
	12/19/08 17:12	WG291042	OK (only 2 analytes reported)			none
	12/19/08 19:55	WG291083	Vinyl Acetate	80.9	high	RC81 all
	12/20/08 10:25	WG291103	OK (only 2 analytes reported)			none
	12/20/08 13:14	WG291110	2,2-Dichloropropane	20.7	high	none, ND
			Vinyl Acetate	24.5	high	none, ND
L08120243	12/13/08 11:28	WG290445	Chloromethane	26.0	high	none, ND
			Carbon Tetrachloride	21.5	high	none, ND
	12/16/08 8:50	WG290468	Vinyl Acetate	34.7	low	JC35 all
	12/15/08 15:46	WG290504	OK (only 1 analyte reported)			none
	12/17/08 8:53	WG290710	All in control			none
	12/18/08 9:07	WG290831	1,1,1-Trichloroethane	21.3	high	None, ND
			1,2-Dichloroethane	21.4	high	JC21 detect
			2,2-Dichloropropane	22.6	high	None, ND
			Carbon Tetrachloride	25.2	high	None, ND
			Vinyl Acetate	30.7	low	JC31 all
	12/19/08 15:20	WG290969	Bromomethane	28.4	high	none, ND
			Vinyl Acetate	20.8	high	none, ND
L08120512	12/28/08 11:51	WG291405	Vinyl Acetate	83.2	high	RC83 all
	12/29/08 9:56	WG291426	All in control			none
	12/29/08 10:54	WG291450	OK (only 1 analyte reported)			none
	12/31/08 8:55	WG291606	OK (only 1 analyte reported)ne			none
L08120394	12/19/08 19:55	WG291083	Vinyl Acetate	80.9	high	RC81 all
	12/20/08 10:25	WG291103	OK (only 2 analytes reported)			none
	12/20/08 13:14	WG291110	2,2-Dichloropropane	20.7	high	none, ND
			Vinyl Acetate	24.5	high	none, ND
	12/31/08 10:55	WG291121	All in control			none
	12/30/08 8:46	WG291523	OK (only 1 analyte reported)			none
L08120452	12/22/08 9:04	WG291170	2,2-Dichloropropane	20.2	high	none, ND
			4-Chlorotoluene	20.5	high	none, ND
	12/22/08 9:57	WG291182	Dichlorodifluoromethane	20.2	low	JC20 all
			Vinyl Acetate	58.0	high	RC58 all
	12/23/08 9:26	WG291295	OK (only 1 analyte reported)			none
	12/23/08 13:37	WG291362	All in control			none
	12/29/08 11:59	WG291446	OK (only 1 analyte reported)			none
L08120478	12/23/08 8:13	WG291273	Bromomethane	23.7	low	JC24 all
			Trichlorofluoromethane	25.6	low	JC26 all
			Vinyl Acetate	72.9	high	RC73 all
	12/23/08 9:13	WG291298	2,2-Dichloropropane	26.9	high	None, ND
			4-Chlorotoluene	25.5	high	None, ND
			Acetone	21.6	low	JC22 all
			Vinyl Acetate	268	high	RC268 all
	12/29/08 9:56	WG291426	All in control			none

IV. GC/MS INSTRUMENT PERFORMANCE CHECK

The BFB (VOA) performance check was injected once at the beginning of each 12-hour period and relative abundance criteria for the ions were met.
Yes __X___ No ____ NA____

V. INTERNAL STANDARDS
The Internal Standards met the 100% upper and -50% lower limits criteria and the Retention times were within the required windows.
Yes __X__ No ____ NA____

VI. SURROGATE
Surrogate spikes were analyzed with every sample.
Yes __X__ No ____

And met the recovery limits defined in the QAPP of 70 – 130%.
Yes ___X__ No ____

VII. MATRIX SPIKE/MATRIX SPIKE DUPLICATE
A. Matrix spike (MS) and matrix spike duplicates (MSD) were analyzed for every analysis performed and for every 20 samples or for every matrix whichever is more frequent.
Yes ___X__ No _____
There are 5 MS/MSDs which meets the 1:20 ratio specification.

Method	SDG	Client Sample ID	Lab Sample ID
8260B\5030B	L08120243	PMW101-01B	L08120243-10
	L08120343	PMW101-07A	L08120343-13
	L08120376	IW101-07C	L08120376-04
	L08120452	IW101-04B	L08120452-07
	L08120478	IW21-03B	L08120478-03

B. The MS and MSD percent recoveries were within the limits defined in the QAPP of 70 – 130% with 5 compounds allowed to be within 60 – 140%.
Yes _____ No __X ___NA___
The full target list has been spiked.
Most MS/MSD recoveries and RPDs are in control. Cases where qualifiers have been added due to matrix spike outliers are shown in the table below. Qualifiers are only added to the parent sample.

As with the LCS, the laboratories are not using the QAPP limits for MS/MSD decisions and reporting, but rather their internal limits. Consequently there are differences between the outliers identified in validation and the outliers identified by the laboratory in its reports.

All data having recovery outliers out of QAPP limits have been qualified and the project manager will make the decision regarding which qualifiers can be removed per the 5 compound allowances. There is no evidence of severe matrix bias.

In several instances, the sample amount is 4x the spike level or greater. In such cases, the recovery cannot realistically be calculated, because the anticipated normal analytical variability is on the order of the spike level. Thus no qualifiers are added. If recoveries are elevated and the parent sample has no detection of the target, no qualifiers are added.

In some cases, the recovery is elevated in either the matrix spike or the matrix spike duplicate but the target is not detected in the sample. Since this indicates the potential for a high bias, no qualifier is needed when

there is no detection in the parent sample. Detected targets are qualified for both high and low recoveries, nondetected results are only qualified for low recoveries.

Where qualifiers are added for recoveries, they are added as JMS#, # being the recovery observed. The parent sample may be biased roughly proportional to the recovery.

SDG	Sample	Analyte	MS/MSD/RPD	Qualifier
L08120376	4	Bromomethane	OK/67.1/34.9	JMS67D35
		Chloromethane	OK/55.8/44.5	JMS55D45
		cis-1,2-Dichloroethene	-124/-152/OK	None, parent > 4x spike
		Dichlorodifluormethane	OK/45.4/59.9	JMS45D60
		2-Butanone	.966/-244/OK	None, parent > 4x spike
		Trichlorofluoromethane	OK/66.5/23	JMS67
L08120243	10	Bromomethane	69.1/68.9/OK	JMS69
		cis-1,2-Dichloroethene	57.5/49.5/OK	JMS50
		2-Butanone	64.7/60.3/OK	JMS60
		Vinyl Acetate	62.9/66.2/OK	JMS63
		Vinyl Chloride	143/138/OK	None, ND in parent
L98120452	7	Hexachlorobutadiene	138/137/OK	None, ND in parent
		2-Butanone	OK/275/OK	None, parent > 4x spike
		Vinyl Acetate	52.9/54.9/OK	JMS53
L08120478	3	Acetone	18.9/13.2/OK	None, parent > 4x spike
		Carbon disulfide	59.6/59.4/OK	JMS60
		Vinyl Acetate	44/44.5/OK	JMS44
L08120343	13	All OK		None

C. The MSD relative percent differences (RPD) were within the defined contract limits of 30% water, 40 soil, with 5 compounds allowed to be < 40%.RPD
Yes ____ No __X__NA____
A few RPDs were above the upper limit. Qualifiers are added only when the MS or MSD recovery is also out of limits. Data are qualified JD#, where # is the RPD. As the RPD increases, the matrix precision decreases.

D. The MS/MSD were client samples.
Yes __X_ No ____NA____

VIII. LABORATORY CONTROL SAMPLE
A. Laboratory Control Samples (LCS) was analyzed for every analysis performed and for every 20 samples.
Yes _X___ No ____

B. The LCS percent recoveries were within the limits defined in the QAPP of 80-120% for water and 75 – 125% for soil. Five compounds are allowed to be 60 – 140%. If an LCS and LCSD are analyzed, both samples must have the same compounds out for data to be qualified.
Yes _____ No __ X ____
The full target list has been spiked. Most outliers are elevated, with a few low recoveries. Qualifiers added are shown in the table below. When a high recovery is associated with a non-detect in samples, no qualifier is added since the indicated bias is high. When the target is detected, the result is qualified as JL#, where # is the elevated recovery. Data could be biased high proportional to the LCS %R. All results associated with low recoveries are qualified.

The QAPP specifies a window of 80-120 for waters. Qualifiers have been assigned on this basis. The laboratory is allowed to have 5 targets in a full-list LCS that are outside of this window. The laboratory is

not using the QAPP limits to control their decisions, but rather reports results based on their own internal statistical limits. In many cases, these limits are wider, particularly for compounds that do not behave well in this analysis, or that tend to degrade (such as vinyl acetate). Consequently, there are a number of instances in which the number of LCS outliers per the QAPP is greater than 5 but is less than 5 per the laboratory limits.

Qualifiers have been added based on the QAPP limits. However, professional judgment is that the laboratory limits are more realistic and more reflective of normal method accuracy than are the QAPP limits. Because of this, the data associated with LCS qualifiers in this data set should not be regarded as indicative of any significant laboratory bias.

Qualifiers added due to LCS outliers are shown in the table below. This does not reflect the number of outliers in each LCS due to the fact that many elevated outliers are associated with non-detects and consequently result in no qualification.

SDG	Batch	Analyte	LCS Qualifier
L08120243	WG290468	Vinyl acetate	JL67
L08120243	WG290468	Vinyl acetate	JL67
L08120243	WG290468	Vinyl acetate	JL67
L08120243	WG290468	Vinyl acetate	JL67
L08120243	WG290468	Vinyl acetate	JL67
L08120243	WG290831	Acetone	JL123
L08120243	WG290831	Acetone	JL123
L08120243	WG290831	Carbon tetrachloride	JL131
L08120243	WG290831	Carbon tetrachloride	JL131
L08120243	WG290831	Chloroform	JL125
L08120243	WG290831	Chloroform	JL125
L08120243	WG290831	MEK (2-Butanone)	JL123
L08120243	WG290831	MEK (2-Butanone)	JL123
L08120243	WG290831	Vinyl acetate	JL49
L08120243	WG290831	Vinyl acetate	JL49
L08120243	WG290969	Acetone	JL129
L08120243	WG290969	Carbon tetrachloride	JL123
L08120243	WG290969	Chloroform	JL121
L08120243	WG290969	Vinyl acetate	JL37
L08120343	WG290831	1,2-Dichloroethane	JL129
L08120343	WG290831	Acetone	JL123
L08120343	WG290831	Acetone	JL123
L08120343	WG290831	Acetone	JL123
L08120343	WG290831	MEK (2-Butanone)	JL123
L08120343	WG290831	Vinyl acetate	JL49
L08120343	WG290831	Vinyl acetate	JL49
L08120343	WG290831	Vinyl acetate	JL49
L08120343	WG290939	Acetone	JL71
L08120343	WG290939	Acetone	JL71
L08120343	WG290939	Acetone	JL71
L08120343	WG290939	Acetone	JL71
L08120343	WG290939	Acetone	JL71
L08120343	WG290939	Acetone	JL71
L08120343	WG290939	Acetone	JL71

SDG	Batch	Analyte	LCS Qualifier
L08120343	WG290939	Acetone	JL71
L08120343	WG290969	Acetone	JL129
L08120343	WG290969	Vinyl acetate	JL37
L08120376	WG290954	Vinyl acetate	JL71
L08120376	WG290969	Chloroform	JL121
L08120376	WG290969	Chloroform	JL121
L08120376	WG290969	Chloroform	JL121
L08120376	WG290969	Chloroform	JL121
L08120376	WG290969	Methyl t-butyl ether (MTBE)	JL121
L08120376	WG290969	Methyl t-butyl ether (MTBE)	JL121
L08120376	WG290969	Methyl t-butyl ether (MTBE)	JL121
L08120376	WG290969	Methyl t-butyl ether (MTBE)	JL121
L08120376	WG290969	Methyl t-butyl ether (MTBE)	JL121
L08120376	WG290969	Methyl t-butyl ether (MTBE)	JL121
L08120376	WG290969	Vinyl acetate	JL37
L08120376	WG290969	Vinyl acetate	JL37
L08120376	WG290969	Vinyl acetate	JL37
L08120376	WG290969	Vinyl acetate	JL37
L08120376	WG290969	Vinyl acetate	JL37
L08120376	WG290969	Vinyl acetate	JL37
L08120376	WG290969	Vinyl acetate	JL37
L08120376	WG290969	Vinyl acetate	JL37
L08120376	WG290969	Vinyl acetate	JL37
L08120376	WG290969	Vinyl acetate	JL37
L08120376	WG290969	Vinyl acetate	JL37
L08120376	WG290969	Vinyl acetate	JL37
L08120376	WG290969	Vinyl acetate	JL37
L08120376	WG291083	Trichlorofluoromethane	JL75
L08120376	WG291083	Trichlorofluoromethane	JL75
L08120376	WG291083	Trichlorofluoromethane	JL75
L08120376	WG291083	Trichlorofluoromethane	JL75
L08120376	WG291083	Trichlorofluoromethane	JL75
L08120376	WG291083	Vinyl acetate	JL63
L08120376	WG291083	Vinyl acetate	JL63
L08120376	WG291083	Vinyl acetate	JL63
L08120376	WG291083	Vinyl acetate	JL63
L08120376	WG291083	Vinyl acetate	JL63
L08120376	WG291110	Vinyl acetate	JL41
L08120394	WG291083	Trichlorofluoromethane	JL75
L08120394	WG291083	Trichlorofluoromethane	JL75
L08120394	WG291083	Trichlorofluoromethane	JL75
L08120394	WG291083	Trichlorofluoromethane	JL75
L08120394	WG291083	Trichlorofluoromethane	JL75
L08120394	WG291083	Trichlorofluoromethane	JL75
L08120394	WG291083	Vinyl acetate	JL63
L08120394	WG291083	Vinyl acetate	JL63
L08120394	WG291083	Vinyl acetate	JL63
L08120394	WG291083	Vinyl acetate	JL63

SDG	Batch	Analyte	LCS Qualifier
L08120394	WG291083	Vinyl acetate	JL63
L08120394	WG291083	Vinyl acetate	JL63
L08120394	WG291110	Vinyl acetate	JL41
L08120394	WG291110	Vinyl acetate	JL41
L08120394	WG291110	Vinyl acetate	JL41
L08120394	WG291110	Vinyl acetate	JL41
L08120394	WG291110	Vinyl acetate	JL41
L08120394	WG291110	Vinyl acetate	JL41
L08120394	WG291110	Vinyl acetate	JL41
L08120394	WG291110	Vinyl acetate	JL41
L08120394	WG291110	Vinyl acetate	JL41
L08120394	WG291110	Vinyl acetate	JL41
L08120394	WG291110	Vinyl acetate	JL41
L08120452	WG291170	Vinyl acetate	JL34
L08120452	WG291170	Vinyl acetate	JL34
L08120452	WG291170	Vinyl acetate	JL34
L08120452	WG291170	Vinyl acetate	JL34
L08120452	WG291170	Vinyl acetate	JL34
L08120452	WG291170	Vinyl acetate	JL34
L08120452	WG291170	Vinyl acetate	JL34
L08120452	WG291170	Vinyl acetate	JL34
L08120452	WG291182	Methyl t-butyl ether (MTBE)	JL125
L08120452	WG291182	Methyl t-butyl ether (MTBE)	JL125
L08120452	WG291182	Methyl t-butyl ether (MTBE)	JL125
L08120452	WG291182	Vinyl acetate	JL61
L08120452	WG291182	Vinyl acetate	JL61
L08120452	WG291182	Vinyl acetate	JL61
L08120452	WG291182	Vinyl acetate	JL61
L08120478	WG291273	Trichlorofluoromethane	JL74
L08120478	WG291273	Trichlorofluoromethane	JL74
L08120478	WG291273	Trichlorofluoromethane	JL74
L08120478	WG291273	Trichlorofluoromethane	JL74
L08120478	WG291273	Trichlorofluoromethane	JL74
L08120478	WG291273	Trichlorofluoromethane	JL74
L08120478	WG291273	Vinyl acetate	JL54
L08120478	WG291273	Vinyl acetate	JL54
L08120478	WG291273	Vinyl acetate	JL54
L08120478	WG291273	Vinyl acetate	JL54
L08120478	WG291273	Vinyl acetate	JL54
L08120478	WG291273	Vinyl acetate	JL54
L08120478	WG291426	Chloromethane	JL64
L08120478	WG291426	Chloromethane	JL64
L08120478	WG291426	Dichlorodifluoromethane	JL77
L08120478	WG291426	Dichlorodifluoromethane	JL77
L08120478	WG291426	Vinyl acetate	JL24
L08120478	WG291426	Vinyl acetate	JL24
L08120478	WG291450	MEK (2-Butanone)	JL78
L08120478	WG291450	MEK (2-Butanone)	JL78

SDG	Batch	Analyte	LCS Qualifier
L08120512	WG291405	2-Hexanone	JL77
L08120512	WG291405	2-Hexanone	JL77
L08120512	WG291405	2-Hexanone	JL77
L08120512	WG291405	2-Hexanone	JL77
L08120512	WG291405	2-Hexanone	JL77
L08120512	WG291405	2-Hexanone	JL77
L08120512	WG291405	Carbon disulfide	JL73
L08120512	WG291405	Carbon disulfide	JL73
L08120512	WG291405	Carbon disulfide	JL73
L08120512	WG291405	Carbon disulfide	JL73
L08120512	WG291405	Carbon disulfide	JL73
L08120512	WG291405	Carbon disulfide	JL73
L08120512	WG291405	Carbon tetrachloride	JL132
L08120512	WG291405	Vinyl acetate	JL44
L08120512	WG291405	Vinyl acetate	JL44
L08120512	WG291405	Vinyl acetate	JL44
L08120512	WG291405	Vinyl acetate	JL44
L08120512	WG291405	Vinyl acetate	JL44
L08120512	WG291405	Vinyl acetate	JL44
L08120512	WG291426	Chloromethane	JL64
L08120512	WG291426	Chloromethane	JL64
L08120512	WG291426	Dichlorodifluoromethane	JL77
L08120512	WG291426	Dichlorodifluoromethane	JL77
L08120512	WG291426	Vinyl acetate	JL24
L08120512	WG291426	Vinyl acetate	JL24
L08120512	WG291450	MEK (2-Butanone)	JL78
L08120512	WG291450	MEK (2-Butanone)	JL78
L08120512	WG291450	MEK (2-Butanone)	JL78
L08120512	WG291606	MEK (2-Butanone)	JL154

IX. BLANKS

A. Method Blanks were analyzed at the required frequency and for each matrix and analysis.
Yes _X___ No____

B. No blank contamination was found in the Method Blank.
Yes____ No _X___
Contamination was observed in some method blanks and resulted in qualifiers as shown in the table below. Whenever methylene chloride, acetone, or 2-butanone are detected in associated samples at a level less than 10x the method blank (corrected for dilution), the result is qualified as UMB#, where # is the corrected method blank level. Such results are usable as nondetects. For other targets, the factor used is 5x.

Note that in some batches the laboratory has reported more than one method blank. For the purposes of data validation no distinction between these blanks is made and all blanks in the batch are considered. In the Case Narrative, the laboratory has reported on blank outliers but appears to only discuss method blank detections that are above ½ the reporting limit. For evaluation of blanks it is important to consider all detections, and this has been done in the validation process.

SDG	Batch	Targets Detected	Results	Qualifiers
L08120343	WG290831	methylene chloride	0.297F	UMB.3 detected targets < 10x MB

SDG	Batch	Targets Detected	Results	Qualifiers
	WG290969	methylene chloride	0.286F	UMB.29 detected targets < 10x MB
	WG290842	bromomethane	3.1	UMB3.1 detected targets < 5x MB
	WG290939	bromomethane	2.9	UMB2.9 detected targets < 5x MB
L08120376	WG290969	methylene chloride	0.286F	UMB.29 detected targets < 10x MB
	WG290954	1,2,3-trichlorobenzene	0.22F	None, ND
		hexachlorobutadiene	0.34	None, ND
L08120243	WG290831	methylene chloride	0.297F	UMB.3 detected targets < 10x MB
L0812024	WG290969	methylene chloride	0.286F	UMB.29 detected targets < 10x MB
	WG290445	1,2,3-trichlorobenzene	0.34F	None, ND
		1,2,4-trichlorobenzene	0.32F	None, ND
L08120512	WG291426	1,2,3-trichlorobenzene	0.24F	None, ND
		naphthalene	1.24	None, ND
L08120394	WG291523	1,2,3-trichlorobenzene	0.268	None, MB for MEK only
		naphthalene	1.2	None, MB for MEK only
L08120452	WG291362	chlorobenzene	0.546	UMB.55 detected target
L08120512	WG291426	1,2,3-trichlorobenzene	0.24F	None, ND
		naphthalene	1.24	None, ND
	WG291298	bromomethane	2.95	UMB3 detected target

C. If Field Blanks were identified, no blank contamination was found.
Yes____ No __X__
There are 7 trip blanks and 2 rinse blanks. There are detections observed below the reporting limit in the field and trip blanks. When analytes are present in both the field blank and the associated samples, the results in the samples are qualified in the same manner as for method blanks. For clarity, the qualifiers used in this case are UTB# for trip blanks and UFB# for rinse blanks, where # is the associated blank value. Qualifiers added are shown in the table below. Results so qualified are usable as non-detects.

Method	SDG	Sample ID	Sample Date	Analyte	Result	Qualifier
8260B	L08120243	TB-121909	12/8/2008	Methylene chloride	1.85	None, Q from MB
	L08120243	TB-121909	12/8/2008	Naphthalene	0.515F	UTB.52 detect
	L08120343	TB-121008	12/10/2008	Bromomethane	2.93B	None, Q from MB
	L08120376	RB 1	12/11/2008	1,4-Dichlorobenzene	1.63	UFB1.6 detects
	L08120376	RB 1	12/11/2008	Acetone	22.3	UFB22 detects
	L08120376	RB 1	12/11/2008	Benzene	0.247F	UFB.25 detects
	L08120376	RB 1	12/11/2008	MEK (2-Butanone)	4.99F	UFB# results < 10x MB
	L08120376	RB 1	12/11/2008	Toluene	0.65F	None, ND
	L08120376	TB-121108	12/11/2008	Methylene chloride	0.306F	None, ND and TB UMB
	L08120394	TB-121208	12/12/2008	1,4-Dichlorobenzene	0.174F	UTB.17 detects
	L08120394	TB-121208	12/12/2008	Methylene chloride	0.498F	UTB.5 results < 10x TB
	L08120452	RB2	12/15/2008	1,4-Dichlorobenzene	1.45	UFB1.5 detects
	L08120452	RB2	12/15/2008	Acetone	26.3	UFB26 detects
	L08120452	RB2	12/15/2008	Benzene	0.308F	UFB.31 detects
	L08120452	RB2	12/15/2008	Chlorobenzene	0.266F	None, ND
	L08120452	RB2	12/15/2008	MEK (2-Butanone)	4.56F	None, detects > 10x RB
	L08120452	RB2	12/15/2008	Naphthalene	1.25	UFB result < 5x FB
	L08120452	RB2	12/15/2008	Toluene	0.689F	UFB.69 detect
	L08120452	TB-121308	12/15/2008		All OK	None

Method	SDG	Sample ID	Sample Date	Analyte	Result	Qualifier
	L08120478	TB-121608	12/16/2008	Bromomethane	2.91Q	None, ND and TB UMB
	L08120512	TB-121708	12/17/2008	1,4-Dichlorobenzene	0.147F	UTB.15 detects
	L08120512	TB-121708	12/17/2008	Acetone	3.93F	UTB# result > 10x TB

X. FIELD QC

If Field duplicates were identified, they met guidance RPD of < 35% for water or < 50% for soils. For values reported at < 5 x the reporting limit (RL), a difference of 2 x RL is used as guidance (4 x RL for soils). Data are not qualified for field duplicates as these are evaluated for the total project by the client.

Yes __X____ No ___ NA____

There are 9 identified field duplicates, all in control.

SDG	Field Duplicate	Parent Sample	Observations
L08120452	DUP-1	IW21-01B -EBT-8	OK
L08120376	DUP-2	PMW21-01-EBT-8	OK
L08120394	DUP-3	MW-115-EBT-8	OK
L08120243	DUP-4	IW101-02C -EBT-8	OK
L08120394	DUP-5	IW101-05A -EBT-8	OK
L08120376	DUP-6	IW101-09C -EBT-8	OK
L08120243	DUP-7	PMW101-03A -EBT-8	OK
L08120343	DUP-8	PMW101-06A -EBT-8	OK
L08120376	DUP-9	PMW101-08B -EBT-8	OK

XI. SYSTEM PERFORMANCE

A. The RICs, chromatograms, tunes and general system performance were acceptable for all instruments and analytical systems.

Yes ____ No____ NA__X__

Not part of this review level

B. The suggested EQLs for the sample matrices in this set were met.

Yes __X__ No____ NA____

XII. TCL COMPOUNDS

A. The identification is accurate and all retention times, library spectra and reconstructed ion chromatograms (RIC) were evaluated for all detected compounds.

Yes ____ No____ NA __X__

Not part of this review level

B. Quantitation was checked to determine the accuracy of calculations for representative compounds in each internal standards quantitation set.

Yes ____ No____ NA__X__

Not part of this review level

XIII. TENTATIVELY IDENTIFIED COMPOUNDS

TICs were properly identified and met the library identification criteria.

Yes____ No____ NA__X___

Not part of this review level

XIV. OVERALL ASSESSMENT OF THE CASE

The laboratory has complied with the requested method. Data are fully usable after consideration of qualifiers.
The following is noted:

Sample Condition:
EPA regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be equal to or less than 6° C. The sample receipt conditions are fully compliant with applicable regulations.

Volatiles samples cannot be checked for pH outliers on sample receipt. The laboratory checks the samples at runtime. A number of samples were not at pH <2, as follows:

For those samples that are pH 6-7, the sample should be regarded as being essentially unpreserved. 40CFR indicates that for chlorinated compounds this is still acceptable, but that aromatics (BTEX) may be subject to some degradation under these conditions.

The other samples are all sufficiently acidic that biodegradation should be inhibited despite the fact that a pH <2 was not achieved. Using professional judgment, no qualifiers are added.

Since it has been documented that the buffering capacity of the waters from this site is typically responsible for elevated pH after preservation, no qualifiers are added.

All sample receipt forms stated that the seals were intact except for SDG L08120512, for which NA was marked.

Holding Time:
A reanalysis for MEK only was conducted on sample DR2-1 and was 4 days out of hold. The result is qualified as JH4 to indicate this. This is a relatively stable compound; samples are kept in the dark and at 4 °C. The impact is expected to be a minimal low bias.

Initial Calibration:
In most cases the laboratory has been able to achieve an acceptable regression curve if the RSD exceeds 15% (the laboratory limit). In two calibrations, the laboratory has reported results for certain compounds from a calibration which has %RSD outliers and no regression curve applied. Results for detected targets are qualified as JC#, where # is the RSD outlier observed.

Continuing Calibrations:
See the table within the body of this report. When there are no detections, unless the %D is biased low and so large as to indicate a significant probability of false negatives, no qualifiers are added for %D outliers when targets are not detected or for a high recovery for undetected compounds. Data are qualified JC#, where # is the %D. There could be variability to the data as there is variability to the response.

The QAPP indicates that compounds in a run should be rejected if the %D is > 40%. We interpret this to mean that non-detects should be rejected and that detected targets should be J-qualified, which is the normal validation process for rejection. In this case, only vinyl acetate has any %D values > 40% and there are no detections of this target. Where the calibration bias is high, such results should normally be usable for non-detects but per the QAPP the R qualifier has been added.

In some cases, CCVs were used to obtain reanalysis data for one or two compounds. In these cases, there may be outliers but they are not relevant unless they are the specific targets reported.

Matrix Spikes:

There are 5 MS/MSDs which meets the 1:20 ratio specification.
The full target list has been spiked.
Most MS/MSD recoveries and RPDs are in control. Cases where qualifiers have been added due to matrix spike outliers are shown in the table below. Qualifiers are only added to the parent sample.

As with the LCS, the laboratories are not using the QAPP limits for MS/MSD decisions and reporting, but rather their internal limits. Consequently there are differences between the outliers identified in validation and the outliers identified by the laboratory in its reports.

All data having recovery outliers out of QAPP limits have been qualified and the project manager will make the decision regarding which qualifiers can be removed per the 5 compound allowances. There is no evidence of severe matrix bias.

In several instances, the sample amount is 4x the spike level or greater. In such cases, the recovery cannot realistically be calculated, because the anticipated normal analytical variability is on the order of the spike level. Thus no qualifiers are added. If recoveries are elevated and the parent sample has no detection of the target, no qualifiers are added.

In some cases, the recovery is elevated in either the matrix spike or the matrix spike duplicate but the target is not detected in the sample. Since this indicates the potential for a high bias, no qualifier is needed when there is no detection in the parent sample. Detected targets are qualified for both high and low recoveries, nondetected results are only qualified for low recoveries.

Where qualifiers are added for recoveries, they are added as JMS#, # being the recovery observed. The parent sample may be biased roughly proportional to the recovery.

A few RPDs were above the upper limit. Qualifiers are added only when the MS or MSD recovery is also out of limits. Data are qualified JD#, where # is the RPD. As the RPD increases, the matrix precision decreases.

Method Blanks:
Contamination was observed in some method blanks and resulted in qualifiers as shown in the table within the body of this report. Whenever methylene chloride, acetone, or 2-butanone are detected in associated samples at a level less than 10x the method blank (corrected for dilution), the result is qualified as UB#, where # is the corrected method blank level. Such results are usable as nondetects. For other targets, the factor used is 5x.

Note that in some batches the laboratory has reported more than one method blank. For the purposes of data validation no distinction between these blanks is made and all blanks in the batch are considered. In the Case Narrative, the laboratory has reported on blank outliers but appears to only discuss method blank detections that are above ½ the reporting limit. For evaluation of blanks it is important to consider all detections, and this has been done in the validation process.

Field Blanks:
There are 7 trip blanks and 2 rinse blanks. There are detections observed below the reporting limit in the field and trip blanks. When analytes are present in both the field blank and the associated samples, the results in the samples are qualified in the same manner as for method blanks. For clarity, the qualifiers used in this case are UTB# for trip blanks and UFB# for rinse blanks, where # is the associated blank value. Qualifiers added are shown in the table within the body of this report. Results so qualified are usable as non-detects.

LCS Recoveries:
The full target list has been spiked. Most outliers are elevated, with a few low recoveries. Qualifiers added are shown in the table in the body of the report. When a high recovery is associated with a non-detect in

samples, no qualifier is added since the indicated bias is high. When the target is detected, the result is qualified as JL#, where # is the elevated recovery. Data could be biased high proportional to the LCS %R. All results associated with low recoveries are qualified.

The QAPP specifies a window of 80-120 for waters. Qualifiers have been assigned on this basis. The laboratory is allowed to have 5 targets in a full-list LCS that are outside of this window. The laboratory is not using the QAPP limits to control their decisions, but rather reports results based on their own internal statistical limits. In many cases, these limits are wider, particularly for compounds that do not behave well in this analysis, or that tend to degrade (such as vinyl acetate). Consequently, there are a number of instances in which the number of LCS outliers per the QAPP is greater than 5 but is less than 5 per the laboratory limits.

Qualifiers have been added based on the QAPP limits. However, professional judgment is that the laboratory limits are more realistic and more reflective of normal method accuracy than are the QAPP limits. Because of this, the data associated with LCS qualifiers in this data set should not be regarded as indicative of any significant laboratory bias.

Qualifiers added due to LCS outliers are shown in the table within the body of this report. This does not reflect the number of outliers in each LCS due to the fact that many elevated outliers are associated with non-detects and consequently result in no qualification.

Field QC:
There are 9 identified field duplicates, all in control.

ORGANIC DATA QUALITY REVIEW REPORT
GC REPORT FOR Metabolic Acids by HPLC; Ethane, Methane, Ethene, Carbon dioxide by EPA SOP RSK-175

RSK-175 and Metabolic Acids:
SDG: L0812: 243, 343, 376, 394, 452, 478, 512

PROJECT: Memphis Defense Depot, EBT-8 for e2m, Texas

LABORATORY: Microbac Laboratories, Inc., Marietta, OH

SAMPLE MATRIX: Water

SAMPLING DATE (Month/Year): December 2008

NO. OF SAMPLES: Metabolic acids – 99 waters including 2 rinse blanks; RSK-175 – 99 waters including 2 rinse blanks

ANALYSES REQUESTED: Metabolic Acids by HPLC; EPA SOP RSK-175

SAMPLE NO.: Attached

DATA REVIEWER: Sammy Huntington and John Huntington

QA REVIEWER: Diane Short & Associates, Inc., INITIALS/DATE:

Telephone Logs included Yes____ No __X__

Contractual Violations Yes____ No __X__

The project QAPP (11/05), EPA Contract Laboratory Program National Functional Guidelines for Organic Review, 2001 (SOP), the EPA SW 846 Methods for Evaluating Solid Waste, Physical/ Chemical Methods Third Edition, (SW-846), current updates, and the project-specific methods have been referenced by the reviewer to perform this data validation review. The EPA qualifiers have been expanded to include a descriptor code and value to define QC violations and their values, per the approval of the Project Manager. The review has been tasked as Level III for review of all calibrations, holding times, and QC for all samples.

I. DELIVERABLES

All deliverables were present as specified in the Statement of Work (SOW), SW-846, or in the project contract.

Yes __X__ No ____

This report has been requested to include the following review: Holding times and sample integrity (chains of custody, sample log in), Calibrations, Summary QC.

II. ANALYTICAL REPORT FORMS

The Analytical Report or Data Sheets are present and complete for all requested analyses.

Yes __ X___ No ____

III. HOLDING TIMES

A. The contract holding times were met for all analyses (Time of sample receipt to time of extraction and from extraction to analysis.)

Yes __X___ No ____

See Section B. below. Per EPA guidance, for validation purposes we calculate the holding time to the nearest day in cases where the regulation or method specifies holding time units of days.

B. The Clean Water Act (40 CFR 136) or method holding times were met for all analyses (Time of sample collection to time of extraction and from extraction to analysis.)

Yes __X___ No ____

Metabolic Acids: The reviewer has not been able to find 40 CFR or documented holding times for the metabolic acids. The holding time for an analogous HPLC method 8310 is 14 days for preserved water samples and the QAPP holding time is 28 days, both were met for all samples.

RSK-175: For RSK-175, pH should not be adjusted when CO_2 is determined, which is the case in this project. The laboratory run logs document that the pH of the samples for this method had not been adjusted. When pH is adjusted, the holding time is 14 days per the method, and we have used this as the acceptable holding time. The laboratory has used 14 days for all RSK analytes. The QAPP holding time for CO2 is 7 days, but the project manager has approved a 14 day holding time for both laboratory and validation. No data have been qualified per the updated holding times.

C. All chains of custody are complete with signatures and dates.

Yes __X___ No ____

The chain of custody on use has been discussed in detail in previous reports, and those general comments apply. All chain of custody documents in this set were properly signed and dated.

D. Samples were received at the proper temperature and preservation.

Yes _X__ No _____

The most current regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be equal to or less than 6° C. The documented sample receipt conditions are fully compliant with applicable regulations.

Many of the report narratives and sample receipt documentation stated that several of the metabolic acid samples required pH adjustment upon arrival.

The need for pH adjustment is a common occurrence for samples at this site. The proper sample bottles have been issued and used. There is a buffering capacity to these matrices that results in slightly elevated pH. The pH is adjusted as soon as the samples reach the laboratory and the impact on the sample data is considered to be minimal. No qualifiers have been added.

IV. INSTRUMENT CALIBRATION (IC) AND CONTINUING CALIBRATION (CC) VERIFICATION

A. The GC standards were analyzed at the required frequency.
Yes __X__ No_____

B. The chromatographic resolution and separation criteria were met.
Yes __X__ No_____

C. The suggested columns were used and the EQLs were met.
Yes __X__ No_____

D. Calibration factors for IC met the 20% RSD (25% for VFA and RSK) limit or the regression curves were prepared with a correlation coefficient 'r' greater than 0.99, per SW-846, Method 8000B.
Yes _____ No __X__
MBA: The initial calibration reports for the metabolic acids are inaccurate. The calibration report provides only a %RSD for each analyte, with a note at the bottom that the linear calibration model is used. However, the observed r or r^2 values are not reported, although the criteria used are shown. In the Case Narrative, the laboratory has indicated that all initial calibrations have used linear regression, and that all acceptance criteria are met.

In a previous level IV data review for this project, we were able to confirm from the raw data that regression curves were in fact used and that they met criteria. We cannot confirm this for the present Level III review, but have assumed that the laboratory Case Narrative is correct and have not qualified the results for the %RSDs in the initial calibration reports that are out of limits.
RSK-175: All initial calibrations are in control.

Method	SDG	ICAL Date	Analyte	%RSD outliers	Qualifiers Added
MBA	All SDGs	12/11/08	Acetic Acid	27.9	None, see text above
			Butyric Acid	32.5	None, see text above
			Lactic Acid	28.9	None, see text above
			Propionic Acid	97.6	None, see text above
			Pyruvic Acid	28.0	None, see text above

E. Percent Difference (%D's) for Continuing Calibration Factors and retention times (RT) were within the 25% Limits (15% for 8081/ 8082 or average 15% for all compounds).
Yes ____ No ___X__
MBA: All calibrations are in control.

RSK-175: The laboratory conducts opening and closing calibrations (bracketing the samples during the analytical run). For RSK-175 there is not a specific requirement in the procedure for closing calibrations, and only calibration verification each 12 hours is specified. SW-846 guidance (method 8000B), however specifically requires such closing calibrations for external standard methods. For detected analytes, SW-846 specifies that the closing calibration must meet the same criteria as the opening calibration. This has been achieved for all analytes except for carbon dioxide, for which a number of opening and closing calibrations do not meet the 25% QAPP criterion specified for RSK-175. In such cases, detected levels of carbon dioxide are qualified as JC#, where # is the applicable opening or closing CCV outlier. Such results may be biased due to calibration drift.

Qualifiers added for calibration outliers are summarized below:

SDG	Client Sample ID	Lab Sample ID	Batch	Analyte	Qualifiers
L08120243	IW101-01C	L08120243-04	WG290184	Carbon Dioxide	JC28
L08120243	DUP4	L08120243-01	WG290184	Carbon Dioxide	JC28
L08120243	IW101-01A	L08120243-02	WG290184	Carbon Dioxide	JC28
L08120243	DUP7	L08120243-08	WG290184	Carbon Dioxide	JC28
L08120243	IW101-02A	L08120243-05	WG290184	Carbon Dioxide	JC28
L08120243	IW101-02B	L08120243-06	WG290184	Carbon Dioxide	JC28
L08120243	IW101-01B	L08120243-03	WG290184	Carbon Dioxide	JC28
L08120243	IW101-02C	L08120243-07	WG290184	Carbon Dioxide	JC28
L08120343	IW101-03B	L08120343-02	WG290385	Carbon Dioxide	JC36
L08120343	IW101-07A	L08120343-04	WG290385	Carbon Dioxide	JC36
L08120343	IW101-03C	L08120343-03	WG290385	Carbon Dioxide	JC36
L08120343	IW101-03A	L08120343-01	WG290385	Carbon Dioxide	JC36
L08120343	MW-101T	L08120343-05	WG290385	Carbon Dioxide	JC36
L08120343	MW-101B	L08120343-06	WG290385	Carbon Dioxide	JC36
L08120343	DUP8	L08120343-07	WG290385	Carbon Dioxide	JC36
L08120343	PMW101-04B	L08120343-08	WG290385	Carbon Dioxide	JC36
L08120343	PMW101-05A	L08120343-09	WG290385	Carbon Dioxide	JC37
L08120343	PMW101-05B	L08120343-10	WG290385	Carbon Dioxide	JC37
L08120343	PMW101-06A	L08120343-11	WG290385	Carbon Dioxide	JC37
L08120343	PMW101-06B	L08120343-12	WG290385	Carbon Dioxide	JC37
L08120343	PMW101-07A	L08120343-13	WG290385	Carbon Dioxide	JC37
L08120343	PMW101-07B	L08120343-16	WG290385	Carbon Dioxide	JC37
L08120343	PMW92-04	L08120343-18	WG290385	Carbon Dioxide	JC37
L08120343	PMW92-05	L08120343-19	WG290385	Carbon Dioxide	JC37
L08120376	PMW21-05	L08120376-14	WG290971	Carbon Dioxide	JC32
L08120376	DR1-3	L08120376-18	WG290971	Carbon Dioxide	JC32
L08120376	IW101-08A	L08120376-07	WG290542	Carbon Dioxide	JC31
L08120376	IW101-09C	L08120376-10	WG290542	Carbon Dioxide	JC31
L08120376	IW101-09B	L08120376-09	WG290542	Carbon Dioxide	JC31
L08120376	IW101-07B	L08120376-03	WG290542	Carbon Dioxide	JC31
L08120376	IW101-07C	L08120376-04	WG290542	Carbon Dioxide	JC31
L08120376	DUP 9	L08120376-12	WG290542	Carbon Dioxide	JC28
L08120376	DUP 6	L08120376-01	WG290542	Carbon Dioxide	JC31
L08120394	IW85-02	L08120394-15	WG290971	Carbon Dioxide	JC32
L08120394	IW101-08C	L08120394-08	WG290756	Carbon Dioxide	JC32
L08120394	IW101-06A	L08120394-04	WG290898	Carbon Dioxide	JC35
L08120394	DUP 3	L08120394-09	WG290971	Carbon Dioxide	JC32
L08120394	IW101-06C	L08120394-06	WG290971	Carbon Dioxide	JC32
L08120394	IW101-06B	L08120394-05	WG290971	Carbon Dioxide	JC32

SDG	Client Sample ID	Lab Sample ID	Batch	Analyte	Qualifiers
L08120394	PMW21-02	L08120394-10	WG290971	Carbon Dioxide	JC32
L08120394	PMW21-03	L08120394-11	WG290971	Carbon Dioxide	JC32
L08120394	IW101-08B	L08120394-07	WG290971	Carbon Dioxide	JC32
L08120452	RB2	L08120452-05	WG290971	Carbon Dioxide	JC32
L08120478	IW21-03A	L08120478-02	WG291213	Carbon Dioxide	JC31
L08120478	IW92-02	L08120478-12	WG291031	Carbon Dioxide	JC26
L08120478	IW21-05B	L08120478-09	WG291031	Carbon Dioxide	JC26
L08120478	IW92-01	L08120478-11	WG291031	Carbon Dioxide	JC26
L08120512	IW92-07	L08120512-01	WG291031	Carbon Dioxide	JC26
L08120512	IW92-05	L08120512-04	WG291031	Carbon Dioxide	JC32
L08120512	IW92-06	L08120512-05	WG291031	Carbon Dioxide	JC32
L08120512	IW92-08	L08120512-02	WG291031	Carbon Dioxide	JC26
L08120512	MW-85	L08120512-06	WG291213	Carbon Dioxide	JC31
L08120512	IW92-04	L08120512-08	WG291031	Carbon Dioxide	JC32
L08120512	DR2-5	L08120512-03	WG291213	Carbon Dioxide	JC31

V. BLANKS

A. Laboratory blanks

1. Laboratory blanks were analyzed for every sample set and for each matrix type or once in every ten samples, whichever is more frequent.

Yes __X__ No_____

2. No blank contamination was found in the method blank.

Yes __X__ No ____

MBA: All method blanks are in control.

RSK-175: All method blanks are in control.

3. Instrument blank analysis was performed following all samples that contained analytes at high concentrations.

Yes _____ No____ NA__X___

B. Field Blanks

If field blanks were identified, no blank contamination was found.

Yes _____ No __X ___ NA_____

There are 2 field blanks.

For metabolic acids and RSK-175, the table below summarizes the results.

Detected targets associated with a field blank outlier are qualified as UFB#, where # is the field blank level corrected for sample dilution, when the result is less than 5x the corrected field blank level.

Method	SDG	FB ID	Sample Date	Analyte	Result	Qualifier
830-MBA	L08120376	RB 1	12/11/2008		All OK	None
	L08120452	RB2	12/15/2008	Acetic Acid	2.34	UFB# detect < 5x RB
RSK175	L08120376	RB 1	12/11/2008		All OK	None

	L08120452	RB2	12/15/2008	Methane	1.7F	None, results > 5x FB

VI. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

A. Matrix spike (MS) and matrix duplicate or matrix spike duplicate (MSD) were analyzed for every analyses performed for every 20 samples or for every matrix whichever is more frequent.
Yes __X___ No ____
RSK-175: There were five (5) MS/MSDs which meets the 20 to 1 ratio.
Metabolic Acids: There were five (5) MS/MSDs which meets the 20 to 1 ratio.

The MS/MSDs conducted are summarized in the table below.

Method	SDG	Client Sample ID	Lab Sample ID
830-MBA	L08120243	PMW101-01B	L08120243-10
	L08120343	PMW101-07A	L08120343-13
	L08120376	IW101-07C	L08120376-04
	L08120452	IW101-04B	L08120452-07
	L08120478	IW21-03B	L08120478-03
RSK175	L08120243	PMW101-01B	L08120243-10
	L08120343	PMW101-07A	L08120343-13
	L08120376	IW101-07C	L08120376-04
	L08120452	IW101-04B	L08120452-07
	L08120478	IW21-03B	L08120478-03

B. The MS and MSD percent recoveries (%R) were within the limits defined in the QAPP of 40 – 140% for soil and water for Method 8081/ 8082. Two compounds are allowed to be 30 -150%. Both the MS and the MSD %R are required to be out of limits for data to be qualified. No limits are defined in the QAPP for the RSK-175 or VFA methods and lab limits have been applied.
Yes _____ No __X__
There are a number of outliers in the MS/MSDs, listed in the table below. Qualifiers are added as shown in that table. For high recoveries associated with nondetects in the parent sample, no qualifiers are added. When the parent sample is greater than 4x the spike level, no qualifiers are added for outliers since under those conditions the recovery cannot reliably be calculated. Otherwise results are qualified as JMS#, where # is the observed outlier. If the recovery is very low and the target is not detected in the parent, the parent result is rejected. This has occurred in one case for pyruvic acid.
Following the intent of the GC method 2 compound out allowance, the methane qualifier JMS130 could be removed. The final determination is made by the project manager.

Method	SDG	Sample	Analyte	MS/MSD/RPD	Qualifier
MBA	L08120376	4	Acetic Acid	-111/OK/OK	none, parent> 4x spike
			Pyruvic Acid	OK/176/OK	none, ND in parent
			Propionic Acid	-263/173/OK	none, parent> 4x spike
	L08120243	10	Acetic Acid	63.8/63/7/OK	JMS64 parent
	L08120452	7	Pyruvic Acid	167/166/OK	None, ND in parent
			Lactic Acid	48.9/48.3/OK	JMS48 parent
			Acetic Acid	-145/-153/OK	none, parent> 4x spike
			Propionic Acid	-266/-273/OK	none, parent> 4x spike
	L08120478	3	Acetic Acid	-328/-377/OK	none, parent> 4x spike
			Butyric Acid	-1960/-1810/OK	none, parent> 4x spike

Method	SDG	Sample	Analyte	MS/MSD/RPD	Qualifier
			Propionic Acid	-825/-1010/OK	none, parent> 4x spike
			Pyruvic Acid	-57.2/-59.2/OK	RMS0 parent
RSK-175	L08120376	4	Methane	OK/195/OK	JMS195 parent
	L08120343	13	Methane	OK/130/OK	JMS130 parent
	L08120243	10	Methane	156/173/OK	JMS173 parent
	L08120452	7	Methane	271/271/OK	JMS271 parent

C. The MSD relative percent differences (RPD) were within the defined QAPP limits of < 50% RPD. None are acceptable if greater than 60% RPD.
Yes __X___ No _____

D. The MS/MSD were client samples.
Yes __X__ No _____

VII. LABORATORY CONTROL SAMPLE AND DUPLICATE (LCS/LCSD)

A. Laboratory Control Sample (LCS) and LCS duplicate were analyzed for every analyses performed and for every 20 samples or for every matrix whichever is more frequent.
Yes __X___ No_____

B. The LCS percent recovery (%R) are within the limits defined by QAPP of 50 – 130% for soil and water for pesticides and PCBs. For RSK and VFA, the QAPP limit is the lab limits for both LCS and LCSD. Two compounds are allowed to be 30 -150%. If an LCS and LCDS are analyzed, both samples have to have outliers in order for data to be qualified.
Yes ____ No __X__
RSK-175: Carbon dioxide was not recovered (0.22%) in one LCS. The associated sample detection is qualified as JL.22 to indicate a potential bias of unknown magnitude. The recovery is an extreme and data should be used with caution.
Metabolic Acids: All LCS recoveries are in control.

Method	SDG	Batch	Analyte	Qualifier
RSK175	L08120376	WG291340	Carbon Dioxide	JL0.22 detect

VIII. SURROGATE RECOVERY

A. The Surrogate spike was analyzed with every sample.
Yes _____ No ____ NA_X___
RSK-175: Surrogates are not required for this analysis.
Metabolic Acids: Surrogates are not required for this analysis.

B. And met the recovery limits defined in the QAPP of 40 – 140%. If recovery limits were exceeded for both surrogates, the sample was re-extracted and re-analyzed.
Yes _____ No_____ NA __X___

IX. INTERNAL STANDARDS

The Internal Standards met the 100% upper and -50% lower limits criteria and the Retention times were within the required windows. Note: Internal standards are not required for GC analysis, but if they are used, SW-846 stipulates that they meet the same recovery requirements as those specified for GCMS methods.

Yes ____ No _____ NA__X__
RSK-175, Metabolic Acids: The laboratory uses the external standard procedure, so no internal standards are present or required.

X. FIELD QC

If Field duplicates were identified, they met guidance RPD of < 35% for water or < 50% for soils and gases. For values reported at < 5 x the reporting limit (RL), a difference of 2 x RL is used as guidance (4 x RL for soils). Data are not qualified for field duplicates as these are evaluated for the total project by the client.
Yes _____ No __X__ NA_____

There are 9 identified field duplicates. Some are out of RPD limits, as shown in the table below.

SDG	Field Duplicate	Parent Sample	Observations
L08120452	DUP-1	IW21-01B -EBT-8	OK
L08120376	DUP-2	PMW21-01-EBT-8	butyric acid RPD=49%; all others OK
L08120394	DUP-3	MW-115-EBT-8	CO2 RPD = 55%; lactic acid RPD=36%; all others OK
L08120243	DUP-4	IW101-02C -EBT-8	CO2 ND in FD; methane RPD 93%; lactic acid RPD 36%; All others OK
L08120394	DUP-5	IW101-05A -EBT-8	OK
L08120376	DUP-6	IW101-09C -EBT-8	methane RPD 51%; All others OK
L08120243	DUP-7	PMW101-03A -EBT-8	OK
L08120343	DUP-8	PMW101-06A -EBT-8	OK
L08120376	DUP-9	PMW101-08B -EBT-8	methane RPD 81%; all others OK

XI. COMPOUND IDENTIFICATION

A. All raw data chromatograms and data system printouts were evaluated for all detected compounds and the identification is accurate.
Yes ____ No _____ NA __X___
This evaluation is not performed at this level of review.

B. Retention time limits or peak pattern identifications are met.
Yes _____ No _____ NA__X___
This evaluation is not performed at this level of review.

C. If two column or two detector confirmation was performed, the value of the confirmation was within 25%D of the quantitation value for results > 5 x RL. If the laboratory has flagged data 'COL' for %D > 40%, a JP qualifier has been added for low level results. For values below (5 x RL), the difference is not considered to impact the precision of the data.
Yes ____ No ____ NA __X__
Not part of this level of review. Dual columns are not required for these methods.

XII. COMPOUND QUANTITATION AND REPORTED CRQLS

A. Raw data examination verified that all sample results were correctly calculated.
Yes _____ No_____ NA__X___
This evaluation is not performed at this level of review.

B. The chromatograms and general system performance were acceptable for all instruments and analytical systems.
Yes _____ No _____ NA__X___
This evaluation is not performed at this level of review.

XIII. OVERALL ASSESSMENT OF THE CASE
The method criteria have been met and the quality of the data, after consideration of qualifiers, is considered acceptable and usable as far as can be determined at this level of review.
The following is noted:

Sample Condition:
Many of the report narratives and sample receipt documentation stated that several of the metabolic acid samples required pH adjustment upon arrival.

The need for pH adjustment is a common occurrence for samples at this site. The proper sample bottles have been issued and used. There is a buffering capacity to these matrices that results in slightly elevated pH. The pH is adjusted as soon as the samples reach the laboratory and the impact on the sample data is considered to be minimal. No qualifiers have been added.

Continuing Calibrations:
MBA: All calibrations are in control.

RSK-175: The laboratory conducts opening and closing calibrations (bracketing the samples during the analytical run). For RSK-175 there is not a specific requirement in the procedure for closing calibrations, and only calibration verification each 12 hours is specified. SW-846 guidance (method 8000B), however specifically requires such closing calibrations for external standard methods. For detected analytes, SW-846 specifies that the closing calibration must meet the same criteria as the opening calibration. This has been achieved for all analytes except for carbon dioxide, for which a number of opening and closing calibrations do not meet the 30% D method criterion specified for RSK-175. In such cases, detected levels of carbon dioxide are qualified as JC#, where # is the applicable opening or closing CCV outlier. Such results may be biased due to calibration drift.

Qualifiers added for calibration outliers are summarized within the body of the report.

LCS Recoveries:
RSK-175: Carbon dioxide was not recovered (0.22%) in one LCS. The associated sample detection is qualified as JL.22 to indicate a potential bias of unknown magnitude. The recovery is an extreme and data should be used with caution.
Metabolic Acids: All LCS recoveries are in control.

MS/MSD Recoveries:
RSK-175: There were five (5) MS/MSDs which meets the 20 to 1 ratio.
Metabolic Acids: There were five (5) MS/MSDs which meets the 20 to 1 ratio.

There are a number of outliers in the MS/MSDs, listed in the table within the body of this report. Qualifiers are added as shown in that table. For high recoveries associated with nondetects in the parent sample, no qualifiers are added. When the parent sample is greater than 4x the spike level, no qualifiers are added for outliers since under those conditions the recovery cannot reliably be calculated. Otherwise

results are qualified as JMS#, where # is the observed outlier. If the recovery is very low and the target is not detected in the parent, the parent result is rejected. This has occurred in one case for pyruvic acid. Following the intent of the GC method 2 compound out allowance, the methane qualifier JMS130 could be removed. The final determination is made by the project manager.

Field Blanks:
There are 2 field blanks.
For metabolic acids and RSK-175, the table within the body of this report summarizes the results. Detected targets associated with a field blank outlier are qualified as UFB#, where # is the field blank level corrected for sample dilution, when the result is less than 5x the corrected field blank level.

Field Duplicates:
There are 9 identified field duplicates. Some are out of RPD limits, as shown in the table within the body of this report. As the RPD increases, the precision decreases.

ADDENDUM TO REPORT – TOTAL ORGANIC CARBON (TOC)
REVIEW OF GENERAL CHEMISTRY RESULTS

There were 99 samples, including 2 field blanks, that were analyzed by SW-846 Method 9060MOD.

All method criteria, holding times, QC (MS/ MSD, LCS and method blank) and calibrations, have been met and dates are fully usable for project purposes with the qualifications or considerations noted below.

SDG: L0812: 243, 343, 376, 394, 452, 478, 512

Sample Condition:
Some SDGs note that the pH was not in limits on sample receipt. The laboratory attempted to adjust the pH of these samples on receipt but in some cases was not able to achieve the specified pH. This is due to the known high buffering capacity of some samples from this site, and no qualifiers have been added due to this issue.

Holding Times:
Several samples in SDG L08120512 were analyzed beyond the 28-day holding time, by one day. These results are qualified as JH1. Although these outliers are reported in the laboratory holding time report, the Case Narrative states that all holding times were met. The outlier is not considered to impact data as TOC is a gross measurement and changes to constituents would not impact overall result.

Method	SDG	Client Sample ID	Lab Sample ID	HT	Qualifier
9060MOD	L08120512	IW92-04	L08120512-09	29	JH1
9060MOD	L08120512	IW92-04	L08120512-08	29	JH1
9060MOD	L08120512	IW92-08	L08120512-02	29	JH1
9060MOD	L08120512	IW92-06	L08120512-05	29	JH1

Matrix Spike
There were 5 MS/MSDs, which meets frequency requirements.
All MS/MSDs are either fully in control or have the parent sample result > 4x the spike level. In the latter case, no qualifiers are applied since at that level the normal analytical variability is larger than the spike and no recoveries can be calculated.

SDG	SDG	Client Sample ID	Lab Sample ID
9060MOD	L08120243	PMW101-01B	L08120243-10
9060MOD	L08120343	PMW101-07A	L08120343-13
9060MOD	L08120376	IW101-07C	L08120376-04
9060MOD	L08120452	IW101-04B	L08120452-07
9060MOD	L08120478	IW21-03B	L08120478-03

Field Blanks
There are two rinse blanks, in control

Field Duplicates

Field duplicates meet criteria except as shown below.

SDG	Field Duplicate	Parent Sample	Observations
L08120452	DUP-1	IW21-01B -EBT-8	OK
L08120376	DUP-2	PMW21-01-EBT-8	OK
L08120394	DUP-3	MW-115-EBT-8	OK
L08120243	DUP-4	IW101-02C -EBT-8	OK
L08120394	DUP-5	IW101-05A -EBT-8	OK
L08120376	DUP-6	IW101-09C -EBT-8	RPD 63%
L08120243	DUP-7	PMW101-03A -EBT-8	OK (sample < 5x RL)
L08120343	DUP-8	PMW101-06A -EBT-8	OK
L08120376	DUP-9	PMW101-08B -EBT-8	OK

ORGANIC DATA QUALITY REVIEW REPORT

VOLATILE ORGANICS SW-846 METHOD 8260B
8260B/5030B
SDG: L09030224, L09030265, L09030418, L09030297, L09030323, L09030334, L09030379

PROJECT: Memphis Defense Depot, EBT-9 for e2m, Texas

LABORATORY: Microbac Laboratories, Inc., Marietta, OH

SAMPLE MATRIX: Water

SAMPLING DATE (Month/Year): March 2009

NO. OF SAMPLES: 8260B: 106 aqueous samples; including 7 trip blanks and 2 rinse blanks

ANALYSES REQUESTED: SW-846 8260B

SAMPLE NO.: See attached result

DATA REVIEWER: Sammy Huntington and John Huntington

QA REVIEWER: Diane Short and Associates Inc. INITIALS/DATE: _____

Telephone Logs included Yes____ No _X__

Contractual Violations Yes____ No _X___

The project QAPP (11/05), the EPA Contract Laboratory Program National Functional Guidelines for Organic Review, 1999 and 2001, and the SW-846 Method 8260B have been referenced by the reviewer to perform this data validation review. The EPA qualifiers have been expanded to include a descriptor code and value to define QC violations and their values, per the approval of the Project Manager. Per the Scope of Work, the review of these samples includes Level III validation of all chains of custody, calibrations and QC forms referencing the QC limits in the above documents.

I. DELIVERABLES

A. All deliverables were present as specified in the Statement of Work (SOW), SW-846, or in the project contract.

Yes _X_ No _____

This report has been requested to include the following review: Holding times and sample integrity (chains of custody, sample log in), Calibrations, Summary QC.

B. Chain of Custody Documentation was complete and accurate.

Yes ___X___ No ___

No qualifiers have been added for chain of custody issues and the project manager will update chains per the following notes to complete the project record.

8260B samples cannot be checked for pH on receipt. pH is checked for 8260B samples at run time.

C. Samples were received at the required temperature, preservation and intact with no bubbles.

Yes ___X___ No ____

EPA regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be equal to or less than 6° C. The sample receipt conditions are fully compliant with applicable regulations.

As has been noted in previous samplings from this site, a number of the 8260B samples were not at pH < 2, due to the buffering capacity of the water. No qualifiers are added. Most samples were analyzed within 7 days, with 13 samples being analyzed between 8-10 days of sampling. Thus the practical implications of pH outliers are minimal.

II. ANALYTICAL REPORT FORMS

A. The Analytical Report or Data Sheets are present and complete for all requested analyses.

Yes _X_ No ____

B. Holding Times

1. The contract holding times were met for all analyses (Time of sample receipt to time of analysis (VOA) or extraction and from extraction to analysis).

Yes __X___ No_____

2. The Clean Water Act (40 CFR 136) or method holding times were met for all analyses (14 days from time of sample collection to analysis or extraction).

Yes _X__ No ____

III. INSTRUMENT CALIBRATION – GC/MS

A. Initial Calibration

1. The Response (RF) and Relative Response Factors (RRF) and average RRF for all compounds for all analyses met the contract criteria of >0.01 for volatiles and 0.05 for semi-volatiles.

Yes __X__ No ____ NA____

Method 8260: Per the project manager, the 2001 EPA CLP validation guidance has been applied to the common "poor responders". Acetone, 2-butanone, and 4-methyl-2-pentanone are the compounds for which any calibration response factors below 0.05 have been observed. The validation guidance used for this project allows for a response of 0.01 for these compounds if spectral integrity can be verified at low concentrations. These spectra are not commonly provided and are not part of the deliverable for these data sets. The laboratory has been tasked with providing to the client verification that the 0.01 RF is valid. Given the spectral verification is available, the data are not qualified for response >0.01 < 0.05. No data have been qualified.

Most of the low-responding compounds are highly water-soluble and capable of hydrogen bonding with water. This decreases their purge efficiency and results in the relatively low response. The implication of this low purge efficiency is that a relatively low absolute recovery of such compounds is achieved in the purge step of the analysis. If this recovery is consistent, reasonable accuracy and precision can be achieved in a given matrix, which is indicated for the lab matrix by acceptable recoveries in LCS and calibration checks. However, this causes these targets to be more sensitive to matrix variations that impact purge efficiency (such as ionic strength or the presence of varying levels of soluble non-target organic material) than are the more hydrophobic compounds typically analyzed by this method, and as a result they are more likely to exhibit matrix bias.

2a.The relative standard deviation (RSD) for the five point calibration was within the 30% limit for the CCCs.
Yes _X__ No____ NA____
This is a method requirement and indicates that the analytical system is in control.

2b.The relative standard deviation (RSD) for the five point calibration was within the 30% limit for all other compounds, the average %RSD was <15%, or a linear curve was used.
Yes __X___ No ____ NA____

3. The 12 hour system Performance Check was performed as required in SW-846.
Yes __X__ No_____ NA____

B. Continuing Calibrations
1. The midpoint standard was analyzed for each analysis at the required frequency and the QC criteria of > 0.05 (.01 for CLP 2001 VOA) were met.
Yes __X___ No ____ NA____

2. The percent difference (%D) limits of $\pm$ 25% were met. The 2001 NFG also allow for 40% D for the poor responders (pr). For other compounds the QAPP notes rejection of detected compounds with %D > 40%.
Yes _____ No __X__ NA___
See the tables below. When there are no detections, unless the %D is biased low and so large as to indicate a significant probability of false negatives, no qualifiers are added for %D outliers when targets are not detected or for a high recovery for undetected compounds. Data are qualified JC#, where # is the %D. There could be variability to the data as there is variability to the response.

The QAPP indicates that compounds in a run should be rejected if the %D is > 40%. We interpret this to mean that non-detects should be rejected and that detected targets should be J-qualified, which is the normal validation process for rejection. Note that in the cases below where %Ds are above 40%, the bias of the CCV is high. Professional judgment is that high bias CCVs with a %D above 40% should not be rejected for non-detects.

Method 8260 Outliers: The table below shows the outliers observed in CCVs for this method.

SDG	BATCH	Analysis Date	Analyte	Bias	%D	Qualifier
L09030265	WG297438	03/17/2009 08:32	Hexachlorobutadiene	low	26.0	None, ND
L09030297	WG297438	03/17/2009 08:32	Hexachlorobutadiene	low	26.0	None, ND
L09030323	WG297666	03/19/2009 16:26	Vinyl Acetate	low	34.5	None, ND
L09030323	WG297561	03/18/2009 09:23	Vinyl Acetate	high	45.5	None, ND
L09030334	WG297666	03/19/2009 16:26	Vinyl Acetate	low	34.5	None, ND
L09030334	WG297680	03/19/2009 11:50	Vinyl Acetate	high	65.3	None, ND
L09030379	WG297559	03/19/2009 17:05	Vinyl Acetate	low	29.4	None, ND
L09030379	WG297666	03/19/2009 16:26	Vinyl Acetate	low	34.5	None, ND
L09030418	WG297666	03/19/2009 16:26	Vinyl Acetate	low	34.5	None, ND
L09030418	WG297811	03/20/2009 12:20	Vinyl Acetate	high	53.7	None, ND

IV. GC/MS INSTRUMENT PERFORMANCE CHECK
The BFB (VOA) performance check was injected once at the beginning of each 12-hour period and relative abundance criteria for the ions were met.
Yes __X___ No ____ NA____

V. INTERNAL STANDARDS
The Internal Standards met the 100% upper and -50% lower limits criteria and the Retention times were within the required windows.
Yes _X__ No ____ NA____
The Case Narrative for SDG L09030265 lists internal standards out for two samples, but the samples listed are not part of this set.

VI. SURROGATE
Surrogate spikes were analyzed with every sample.
Yes __X__ No ____

And met the recovery limits defined in the QAPP of 70 – 130% for VOA and 45-135% for SVOA base/neutral fraction or 35-140% for the acid fraction. For SVOA, one surrogate per fraction is allowed to be at 15 – 150%.
Yes __X___ No ____

VII. MATRIX SPIKE/MATRIX SPIKE DUPLICATE
A. Matrix spike (MS) and matrix spike duplicates (MSD) were analyzed for every analysis performed and for every 20 samples or for every matrix whichever is more frequent.
Yes __X___ No _____
There are 5 MS/MSDs, meeting the 1:20 ratio specification.

Method	SDG	Client Sample ID	Lab Sample ID
8260B\5030B	L09030224	PMW101-02A-EBT	L09030224-08
8260B\5030B	L09030297	PMW101-07B-EBT-9	L09030297-05
8260B\5030B	L09030323	IW101-04C-EBT-9	L09030323-04
8260B\5030B	L09030379	IW101-08A-EBT-9	L09030379-09
8260B\5030B	L09030418	IW21-04A-EBT-9	L09030418-02

B. The MS and MSD percent recoveries were within the limits defined in the QAPP of VOA at 70 – 130% with 5 compounds allowed to be within 60 – 140%;
Yes _____ No __X__NA___
The full target list has been spiked.

All data having recovery outliers out of QAPP limits have been qualified and the project manager will make the decision regarding which qualifiers can be removed per the 5 compound allowances.

Method 8260 MS/MSD Outliers: Outliers observed per the QAPP limits for Method 8260 MS/MSD runs are shown in the table below.

SDG	Parent	Analyte	%Rec	MSD Rec	%RPD	Vflag	Vdflag	Qualifiers
L09030297	L09030297-04	Vinyl chloride	146	131	11.1	high	high	OK
L09030323	L09030323-03	cis-1,2-Dichloroethene	28.3	67.7	7.00	low	low	None, spike > 4x

L09030323	L09030323-03	MEK (2-Butanone)	-254	190	6.53	low	high	None, spike > 4x
L09030379	L09030379-08	2-Hexanone	146	143	2.34	high	high	OK
L09030379	L09030379-08	cis-1,2-Dichloroethene	58	62.4	1.61	low	low	JMS58 parent
L09030379	L09030379-08	Naphthalene	131	132	0.754	high	high	OK
L09030418	L09030418-01	Vinyl acetate	61.2	65.3	6.50	low	low	JMS61 parent

C. The MSD relative percent differences (RPD) were within the defined contract limits for VOA of 30% water, 40 soil, with 5 compounds allowed to be < 40%.RPD.
Yes __X__ No ____NA____
Qualifiers are added only when the MS or MSD recovery is also out of limits. Data are qualified JD#, where # is the RPD. As the RPD increases, the matrix precision decreases.

D. The MS/MSD were client samples.
Yes _X__ No ____NA____

VIII. LABORATORY CONTROL SAMPLE

A. Laboratory Control Samples (LCS) was analyzed for every analysis performed and for every 20 samples.
Yes __X__ No ____

B. The LCS percent recoveries were within the limits defined in the QAPP for VOA of 80-120% for water and 75 – 125% for soil. Five compounds are allowed to be 60 – 140%. If an LCS and LCSD are analyzed, both samples must have the same compounds out for data to be qualified.
Yes _____ No __X____
The full target list has been spiked. When a high LCS recovery is associated with a non-detect in samples, no qualifier is added since the indicated bias is high. When the target is detected, the result is qualified as JL#, where # is the elevated recovery. Data could be biased high proportional to the LCS %R. All results associated with low recoveries are qualified.

8260B: The table below shows the outliers and the limits applied per the QAPP. The limits are specified per matrix. Outliers associated with the contingency limits indicated (60-140) are also shown. Qualifiers are added for all outliers as described here but the project manager may consider reversing some of these when the limits fall within the contingency limits.

8260B LCS Outliers:

SDG	BATCH	Analyte	Recovery	Bias	Qualifiers Required
L09030224	WG297121	Acetone	73.7	low	OK
L09030265	WG297332	Carbon disulfide	76.8	low	JL76.8
L09030265	WG297332	Dichlorodifluoromethane	70.2	low	OK
L09030265	WG297438	Vinyl chloride	137	high	OK
L09030297	WG297332	Carbon disulfide	76.8	low	JL76.8
L09030297	WG297332	Dichlorodifluoromethane	70.2	low	OK
L09030297	WG297436	Bromomethane	121	high	OK
L09030297	WG297436	Dichlorodifluoromethane	131	high	OK
L09030297	WG297436	n-Propylbenzene	121	high	OK
L09030297	WG297436	Styrene	121	high	OK
L09030297	WG297436	Vinyl chloride	127	high	OK
L09030297	WG297436	Vinyl chloride	127	high	OK
L09030297	WG297438	Vinyl chloride	137	high	OK
L09030323	WG297436	Bromomethane	121	high	OK
L09030323	WG297436	Dichlorodifluoromethane	131	high	OK

SDG	BATCH	Analyte	Recovery	Bias	Qualifiers Required
L09030323	WG297436	n-Propylbenzene	121	high	OK
L09030323	WG297436	Styrene	121	high	OK
L09030323	WG297436	Vinyl chloride	127	high	OK
L09030323	WG297436	Vinyl chloride	127	high	OK
L09030334	WG297931	Vinyl acetate	65.6	low	OK
L09030379	WG297931	MEK (2-Butanone)	124	high	OK
L09030379	WG297931	MEK (2-Butanone)	124	high	OK
L09030379	WG297931	Vinyl acetate	65.6	low	JL65.6
L09030379	WG298032	Bromomethane	123	high	OK
L09030379	WG298032	MEK (2-Butanone)	153	high	OK
L09030379	WG298032	Vinyl acetate	72.9	low	JL72.9
L09030418	WG297795	Bromomethane	123	high	OK
L09030418	WG297795	Dichlorodifluoromethane	121	high	OK
L09030418	WG297795	Vinyl acetate	67	low	JL67
L09030418	WG297795	Vinyl acetate	67	low	JMS61L67

8260 LCS/LCSD Recoveries: In some cases, the laboratory analyzed both an LCS and an LCSD. In such cases, per the QAPP only results in which both recoveries are out of limits are qualified. Outliers are shown in the table below for LCS/LCSDs.

8260B LCSD Outliers:

SDG	BATCH	Analytes	Recov	LCSD Recov	Qualifiers Required
L09030224	WG297256	MEK (2-Butanone)	139	147	OK
L09030265	WG297256	MEK (2-Butanone)	139	147	OK
L09030265	WG297256	MEK (2-Butanone)	139	147	JL147
L09030323	WG297561	Chloromethane	60	58	JL58
L09030323	WG297561	Dichlorodifluoromethane	43	41	OK
L09030323	WG297561	MEK (2-Butanone)	121	127	OK
L09030323	WG297561	MEK (2-Butanone)	121	127	OK
L09030323	WG297561	Vinyl acetate	128	128	OK
L09030323	WG297561	Vinyl chloride	73	72	OK
L09030334	WG297680	Dichlorodifluoromethane	125	121	OK
L09030334	WG297811	MEK (2-Butanone)	129	126	OK
L09030379	WG297904	Bromomethane	121	129	OK
L09030379	WG297904	Vinyl acetate	69	72	JL69.3
L09030418	WG297811	2,2-Dichloropropane	67	70	JL67.1
L09030418	WG297811	Acetone	27	29	JL26.6
L09030418	WG297811	Acetone	27	29	JL27
L09030418	WG297811	MEK (2-Butanone)	129	126	OK
L09030418	WG297937	MEK (2-Butanone)	127	130	OK

IX. BLANKS

A. Method Blanks were analyzed at the required frequency and for each matrix and analysis.
Yes __X__ No____

B. No blank contamination was found in the Method Blank.
Yes____ No _X___
Contamination was observed in some method blanks. Whenever methylene chloride, acetone, 2-butanone or phthalate esters are detected in associated samples at a level less than 10x the method blank (corrected for

dilution), the result is qualified as UMB#, where # is the corrected method blank level. Such results are usable as nondetects. For other targets, the factor used is 5x.

Method 8260: There is one qualifier added in this set of data for associated naphthalene detections. The other targets found in the method blanks were not detected in associated samples and no qualifiers are required in such cases.

Method 8260 Method Blank Detections:

SDG	Batch	Analytes	MB Level	DVAL
L09030224	WG297121	1,2,3-Trichlorobenzene	0.166	OK
L09030224	WG297121	Hexachlorobutadiene	0.397	OK
L09030224	WG297256	1,2,3-Trichlorobenzene	0.182	OK
L09030265	WG297256	1,2,3-Trichlorobenzene	0.182	OK
L09030265	WG297438	1,2,3-Trichlorobenzene	0.187	OK
L09030265	WG297438	Hexachlorobutadiene	0.333	OK
L09030265	WG297438	Naphthalene	0.218	OK
L09030297	WG297436	1,2,3-Trichlorobenzene	0.153	OK
L09030297	WG297436	Hexachlorobutadiene	0.506	OK
L09030297	WG297438	1,2,3-Trichlorobenzene	0.187	OK
L09030297	WG297438	Hexachlorobutadiene	0.333	OK
L09030297	WG297438	Naphthalene	0.218	OK
L09030297	WG297438	Naphthalene	0.218	UMB0.218 detect
L09030323	WG297436	1,2,3-Trichlorobenzene	0.153	OK
L09030323	WG297436	Hexachlorobutadiene	0.506	OK
L09030334	WG297931	1,2,3-Trichlorobenzene	0.154	OK
L09030334	WG297931	Hexachlorobutadiene	0.479	OK
L09030379	WG297931	1,2,3-Trichlorobenzene	0.154	OK
L09030379	WG297931	Hexachlorobutadiene	0.479	OK
L09030379	WG298032	Hexachlorobutadiene	0.435	OK
L09030418	WG297795	Methylene chloride	0.365	OK

C. If Field Blanks were identified, no blank contamination was found.
Yes____ No __X__
There are 7 trip blanks for 8260, and 2 rinse blanks for 8260. There are detections observed below the reporting limit in the field and trip blanks. When analytes are present in both the field blank and the associated samples, the results in the samples are qualified in the same manner as for method blanks. For clarity, the qualifiers used in this case are UTB# for trip blanks and UFB# for rinse blanks, where # is the associated blank value. Qualifiers added are shown in the table below. Results so qualified are usable as non-detects.

SDG	Sample ID	Sample Date	Analyte	Result	Qualifier
L09030224	TB-030909	3/9/2009 12:01 AM		All OK	OK
L09030297	RB1-EBT-9	3/11/2009 04:32 PM	1,4-Dichlorobenzene	1.1	UFB1.1 detects
L09030297	RB1-EBT-9	3/11/2009 04:32 PM	Acetone	18.4	UFB# detects
L09030297	RB1-EBT-9	3/11/2009 04:32 PM	Benzene	0.261F	UFB.26 detects
L09030297	RB1-EBT-9	3/11/2009 04:32 PM	MEK (2-Butanone)	6.29F	UFB# detects < 10X FB
L09030297	RB1-EBT-9	3/11/2009 04:32 PM	Naphthalene	0.298F	OK
L09030297	RB1-EBT-9	3/11/2009 04:32 PM	Toluene	8.62	UFB8.6
L09030297	TB-031109	3/11/2009 12:01 AM		All OK	OK
L09030323	TB-031209	3/12/2009 12:01 AM	Acetone	2.66F	UTB# detects < 10X TB
L09030323	TB-031209	3/12/2009 12:01 AM	Toluene	0.46F	UTB.46 detect

SDG	Sample ID	Sample Date	Analyte	Result	Qualifier
L09030334	TB-031309	3/13/2009 12:01 AM		All OK	OK
L09030334	TB-031309	3/13/2009 12:01 AM	Toluene	0.379F	UTB.38 detects
L09030379	RB2-EBT-9	3/16/2009 10:07 AM		All OK	OK
L09030379	RB2-EBT-9	3/16/2009 10:07 AM	1,4-Dichlorobenzene	0.492F	UFB.49 detect
L09030379	RB2-EBT-9	3/16/2009 10:07 AM	Acetone	28	UFB# detects
L09030379	RB2-EBT-9	3/16/2009 10:07 AM	Benzene	0.229F	UFB.23 detect
L09030379	RB2-EBT-9	3/16/2009 10:07 AM	MEK (2-Butanone)	9.11F	UFB# detects < 10X FB
L09030379	RB2-EBT-9	3/16/2009 10:07 AM	Toluene	1.97	None, from TB
L09030379	TB-031609	3/16/2009 12:01 AM	Toluene	0.322F	UTB.32 detects < 5x TB
L09030418	TB-031709	3/17/2009 12:01 AM		All OK	OK

X. FIELD QC

If Field duplicates were identified, they met guidance for VOA of RPD of < 35% for water or < 50% for soils. For values reported at < 5 x the reporting limit (RL), a difference of 2 x RL is used as guidance (4 x RL for soils). Data are not qualified for field duplicates as these are evaluated for the total project by the client.
Yes ___ No ___ NA____
There are 9 identified field duplicates, all in control.

SDG	Matrix	Field Dup	Parent Sample	Observations
L09030379	Water	DUP-1	IW21-02A -EBT-9	OK
L09030323	Water	DUP-2	PMW21-02-EBT-9	OK
L09030224	Water	DUP-3	IW101-01A -EBT-9	OK
L09030265	Water	DUP-4	IW101-03A -EBT-9	OK
L09030334	Water	DUP-5	IW101-05B -EBT-9	OK
L09030297	Water	DUP-6	IW92-01-EBT-9	OK
L09030224	Water	DUP-7	PMW101-03B -EBT-9	OK
L09030265	Water	DUP-8	PMW101-05B -EBT-9	OK
L09030297	Water	DUP-9	PMW101-08A -EBT-9	OK

XI. SYSTEM PERFORMANCE

A. The RICs, chromatograms, tunes and general system performance were acceptable for all instruments and analytical systems.
Yes ____ No____ NA__X__
Not part of this review level

B. The suggested EQLs for the sample matrices in this set were met.
Yes __X__ No____ NA____

XII. TCL COMPOUNDS

A. The identification is accurate and all retention times, library spectra and reconstructed ion chromatograms (RIC) were evaluated for all detected compounds.
Yes ____ No____ NA__X__
Not part of this review level

B. Quantitation was checked to determine the accuracy of calculations for representative compounds in each internal standards quantitation set.
Yes ____ No____ NA__X__
Not part of this review level

XIII. TENTATIVELY IDENTIFIED COMPOUNDS

TICs were properly identified and met the library identification criteria.
Yes ____ No____ NA__X__
Not part of this review level

XIV. OVERALL ASSESSMENT OF THE CASE
The laboratory has complied with the requested method. Data are fully usable after consideration of qualifiers.
The following is noted:

Sample Condition:
As has been noted in previous samplings from this site, a number of the 8260B samples were not at pH < 2, due to the buffering capacity of the water. No qualifiers are added. Most samples were analyzed within 7 days, with 13 samples being analyzed between 8-10 days of sampling. Thus the practical implications of pH outliers are minimal.

Continuing Calibrations:
See the tables within the body of this report. When there are no detections, unless the %D is biased low and so large as to indicate a significant probability of false negatives, no qualifiers are added for %D outliers when targets are not detected or for a high recovery for undetected compounds. Data are qualified JC#, where # is the %D. There could be variability to the data as there is variability to the response.

The QAPP indicates that compounds in a run should be rejected if the %D is > 40%. We interpret this to mean that non-detects should be rejected and that detected targets should be J-qualified, which is the normal validation process for rejection. Note that in the cases below where %Ds are above 40%, the bias of the CCV is high. Professional judgment is that high bias CCVs with a %D above 40% should not be rejected for non-detects.

Matrix Spikes:
There are 5 MS/MSDs, meeting the 1:20 ratio specification.

The full target list has been spiked.
All data having recovery outliers out of QAPP limits have been qualified and the project manager will make the decision regarding which qualifiers can be removed per the 5 compound allowances.
Method 8260 MS/MSD Outliers: Outliers observed per the QAPP limits for Method 8260 MS/MSD runs are shown in the table within the body of this report.

Method Blanks:
Contamination was observed in some method blanks. Whenever methylene chloride, acetone, 2-butanone or phthalate esters are detected in associated samples at a level less than 10x the method blank (corrected for dilution), the result is qualified as UMB#, where # is the corrected method blank level. Such results are usable as nondetects. For other targets, the factor used is 5x.

Method 8260: There is one qualifier added in this set of data for associated naphthalene detections. The other targets found in the method blanks were not detected in associated samples and no qualifiers are required in such cases. .

Field Blanks:
There are 7 trip blanks for 8260, and 2 rinse blanks for 8260. There are detections observed below the reporting limit in the field and trip blanks. When analytes are present in both the field blank and the associated samples, the results in the samples are qualified in the same manner as for method blanks. For clarity, the qualifiers used in this case are UTB# for trip blanks and UFB# for rinse blanks, where # is the associated blank value.

Qualifiers added are shown in the table within the body of this report. Results so qualified are usable as non-detects.

LCS Recoveries:
The full target list has been spiked. When a high LCS recovery is associated with a non-detect in samples, no qualifier is added since the indicated bias is high. When the target is detected, the result is qualified as JL#, where # is the elevated recovery. Data could be biased high proportional to the LCS %R. All results associated with low recoveries are qualified.

8260B: The table within the body of this report shows the outliers and the limits applied per the QAPP. The limits are specified per matrix. Outliers associated with the contingency limits indicated (60-140) are also shown. Qualifiers are added for all outliers as described here but the project manager may consider reversing some of these when the limits fall within the contingency limits.

Field QC:
There are 9 identified field duplicates, all in control.

ORGANIC DATA QUALITY REVIEW REPORT
GC REPORT FOR Metabolic Acids by HPLC; Ethane, Methane, Ethene, Carbon dioxide by EPA SOP RSK-175, TOC by SW-846 9060

RSK-175 and Metabolic Acids
SDG: L09030224, L09030265, L09030418, L09030297, L09030323, L09030334, L09030379

TOC
SDG: L09030224, L09030265, L09030418, L09030297, L09030323, L09030334, L09030379

PROJECT: Memphis Defense Depot, EBT-9 for e2m, Texas

LABORATORY: Microbac Laboratories, Inc., Marietta, OH

SAMPLE MATRIX: Water

SAMPLING DATE (Month/Year): March 2009

NO. OF SAMPLES: Metabolic acids – 99 waters including 2 rinse blanks; RSK-175 - 99 waters including 2 rinse blank; 9060 – 100 waters including 2 rinse blanks

ANALYSES REQUESTED: Metabolic Acids by HPLC; EPA SOP RSK-175, SW-846 9060 (TOC)

SAMPLE NO.: Attached

DATA REVIEWER: Sammy Huntington and John Huntington

QA REVIEWER: Diane Short & Associates, Inc., INITIALS/DATE:

Telephone Logs included Yes____ No __X_

Contractual Violations Yes____ No __X_

The project QAPP (11/05), EPA Contract Laboratory Program National Functional Guidelines for Organic Review, 2001 (SOP), the EPA SW 846 Methods for Evaluating Solid Waste, Physical/ Chemical Methods Third Edition, (SW-846), current updates, and the project-specific methods have been referenced by the reviewer to perform this data validation review. The EPA qualifiers have been expanded to include a descriptor code and value to define QC violations and their values, per the approval of the Project Manager. The review has been tasked as Level III for review of all calibrations, holding times, and QC for all samples.

I. DELIVERABLES

All deliverables were present as specified in the Statement of Work (SOW), SW-846, or in the project contract.

Yes __X__ No ____

This report has been requested to include the following review: Holding times and sample integrity (chains of custody, sample log in), Calibrations, Summary QC.

II. ANALYTICAL REPORT FORMS

The Analytical Report or Data Sheets are present and complete for all requested analyses.

Yes __X___ No ____

III. HOLDING TIMES

A. The contract holding times were met for all analyses (Time of sample receipt to time of extraction and from extraction to analysis.)

Yes ___X__ No ____

See Section B. below. Per EPA guidance, for validation purposes we calculate the holding time to the nearest day in cases where the regulation or method specifies holding time units of days.

B. The Clean Water Act (40 CFR 136) or method holding times were met for all analyses (Time of sample collection to time of extraction and from extraction to analysis.)

Yes ___X__ No ____

Metabolic Acids: The reviewer has not been able to find 40 CFR or documented holding times for the metabolic acids. The holding time for an analogous HPLC method 8310 is 14 days for preserved water samples and the QAPP holding time is 28 days.

RSK-175: For RSK-175, pH should not be adjusted when CO_2 is determined, which is the case in this project. The laboratory run logs document that the pH of the samples for this method had not been adjusted. When pH is adjusted, the holding time is 14 days per the method, and we have used this as the acceptable holding time. The laboratory has used 14 days for all RSK analytes. The QAPP holding time for CO2 is 7 days, but the project manager has approved a 14 day holding time for both laboratory and validation. No data have been qualified per the updated holding times.

Method 9060: Holding time for preserved samples is 28 days. All samples are within this limit.

C. All chains of custody are complete with signatures and dates.

Yes __X___ No ____

D. Samples were received at the proper temperature and preservation.

Yes __X_ No _____

The most current regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be equal to or less than 6° C. The documented sample receipt conditions are fully compliant with applicable regulations.

Many of the report narratives and sample receipt documentation stated that several of the metabolic acid samples required pH adjustment upon arrival.

The need for pH adjustment is a common occurrence for samples at this site. The proper sample bottles have been issued and used. There is a buffering capacity to these matrices that results in slightly elevated

pH. The pH is adjusted as soon as the samples reach the laboratory and the impact on the sample data is considered to be minimal. No qualifiers have been added.

IV. INSTRUMENT CALIBRATION (IC) AND CONTINUING CALIBRATION (CC) VERIFICATION

A. The GC standards were analyzed at the required frequency.
Yes __X____ No_____

B. The chromatographic resolution and separation criteria were met.
Yes __X__ No_____

C. The suggested columns were used and the EQLs were met.
Yes ___X__ No_____

D. Calibration factors for IC met the 25% RSD (25% for VFA and RSK) limit or the regression curves were prepared with a correlation coefficient 'r' greater than 0.99, per SW-846, Method 8000B.
Yes ___X__ No ____

MBA: The initial calibration reports for the metabolic acids are inaccurate. The calibration report provides only a %RSD for each analyte, with a note at the bottom that the linear calibration model is used. However, the observed r or r^2 values are not reported, although the criteria used are shown. In the Case Narrative, the laboratory has indicated that all initial calibrations have used linear regression, and that all acceptance criteria are met.

In a previous level IV data review for this project, we were able to confirm from the raw data that regression curves were in fact used and that they met criteria. We cannot confirm this for the present Level III review, but have assumed that the laboratory Case Narrative is correct and have not qualified the results for the %RSDs in the initial calibration reports that are out of limits.
RSK-175: All initial calibrations are in control.

E. Percent Difference (%D's) for Continuing Calibration Factors and retention times (RT) were within the 25% Limits (15% for 8081/ 8082 or average 15% for all compounds).

Yes ____ No __X___
MBA: All calibrations are in control.
TOC: All calibrations are in control.

RSK-175: The laboratory conducts opening and closing calibrations (bracketing the samples during the analytical run). For RSK-175 there is not a specific requirement in the procedure for closing calibrations, and only calibration verification each 12 hours is specified. SW-846 guidance (method 8000B), however specifically requires such closing calibrations for external standard methods. For detected analytes, SW-846 specifies that the closing calibration must meet the same criteria as the opening calibration. This has been achieved for all analytes except for carbon dioxide, for which a number of opening and closing calibrations do not meet the 25% QAPP criterion specified for RSK-175. In such cases, detected levels of carbon dioxide are qualified as JC#, where # is the applicable opening or closing CCV outlier. Such results may be biased due to calibration drift.

The outliers observed are shown below. All detected carbon dioxide results associated with these calibrations have been qualified.

CCV BATCH	CCV Date	Analyte	%D	BIAS
WG287221	11/07/2008 10:50	carbon dioxide	28.1	high
WG297264	03/13/2009 13:11	carbon dioxide	27	high
WG297264	03/13/2009 15:26	carbon dioxide	30.9	high
WG297264	03/13/2009 16:03	carbon dioxide	41.2	high
WG297264	03/13/2009 18:21	carbon dioxide	38.5	high
WG297264	03/13/2009 19:47	carbon dioxide	37.1	high
WG297314	03/15/2009 16:43	carbon dioxide	30.4	high
WG297315	03/15/2009 17:44	carbon dioxide	30.1	high
WG297315	03/15/2009 19:59	carbon dioxide	37.4	high
WG297315	03/15/2009 22:14	carbon dioxide	33.6	high
WG297315	03/15/2009 22:38	carbon dioxide	37.9	high
WG297495	03/17/2009 18:04	carbon dioxide	28.9	high
WG297586	03/18/2009 14:56	carbon dioxide	35.1	high
WG297586	03/18/2009 17:11	carbon dioxide	41.4	high
WG297586	03/20/2009 08:55	carbon dioxide	25.4	high
WG297586	03/20/2009 11:25	carbon dioxide	29.2	high
WG297621	03/25/2009 08:24	carbon dioxide	35.4	high
WG297621	03/25/2009 10:39	carbon dioxide	34.3	high
WG297621	03/25/2009 13:03	carbon dioxide	33.7	high
WG297621	03/25/2009 15:14	carbon dioxide	25.7	high
WG297800	03/20/2009 08:55	carbon dioxide	25.4	high
WG297800	03/20/2009 11:25	carbon dioxide	29.2	high
WG297800	03/20/2009 13:40	carbon dioxide	34.4	high
WG297800	03/20/2009 15:07	carbon dioxide	32.6	high
WG297965	03/23/2009 14:01	carbon dioxide	33.6	high
WG297965	03/23/2009 16:57	carbon dioxide	27.9	high
WG298090	03/24/2009 15:37	carbon dioxide	30.5	high
WG298090	03/24/2009 17:52	carbon dioxide	36.4	high
WG298443	03/27/2009 18:02	carbon dioxide	28.6	high
WG298443	03/27/2009 20:17	carbon dioxide	40.4	high

V. BLANKS

A. Laboratory blanks

1. Laboratory blanks were analyzed for every sample set and for each matrix type or once in every 20 samples, whichever is more frequent.

Yes __X__ No_____

2. No blank contamination was found in the method blank.

Yes __X__ No ____

MBA: All method blanks are in control.

RSK-175: All method blanks are in control.

TOC: All method blanks are in control.

3. Instrument blank analysis was performed following all samples that contained analytes at high concentrations.

Yes _____ No____ NA__X___

B. Field Blanks
If field blanks were identified, no blank contamination was found.
Yes _____ No __X___ NA_____
There are 2 field blanks for each method.
The table below summarizes the results.
Detected targets associated with a field blank outlier are qualified as UFB#, where # is the field blank level corrected for sample dilution, when the result is less than 5x the corrected field blank level.

Method	SDG	Sample ID	Sample Date	Analyte	Result	Qualifier
830-MBA	L09030297	RB1-EBT-9	3/11/2009 04:32 PM		All OK	OK
830-MBA	L09030379	RB2-EBT-9	3/16/2009 10:07 AM	Acetic Acid	0.766F	OK (results > 5x)
9060MOD	L09030297	RB1-EBT-9	3/11/2009 04:32 PM	TOC	0.62F	UFB.62 result < 5x
9060MOD	L09030379	RB2-EBT-9	3/16/2009 10:07 AM	TOC	0.522F	OK (results > 5x)
RSK175	L09030297	RB1-EBT-9	3/11/2009 04:32 PM		All OK	OK
RSK175	L09030379	RB2-EBT-9	3/16/2009 10:07 AM		All OK	OK

VI. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

A. Matrix spike (MS) and matrix duplicate or matrix spike duplicate (MSD) were analyzed for every analyses performed for every 20 samples or for every matrix whichever is more frequent.
Yes __X___ No ____
There are 5 MS/MSDS for each method, which meets frequency requirements.
The MS/MSDs conducted are summarized in the table below.

Method	SDG	Client Sample ID	Lab Sample ID
830-MBA	L09030224	PMW101-02A-EBT	L09030224-07
830-MBA	L09030297	PMW101-07B-EBT-9	L09030297-04
830-MBA	L09030323	IW101-04C-EBT-9	L09030323-03
830-MBA	L09030379	IW101-08A-EBT-9	L09030379-08
830-MBA	L09030418	IW21-04A-EBT-9	L09030418-01
9060MOD	L09030224	PMW101-02A-EBT	L09030224-07
9060MOD	L09030297	PMW101-07B-EBT-9	L09030297-04
9060MOD	L09030323	IW101-04C-EBT-9	L09030323-03
9060MOD	L09030379	IW101-08A-EBT-9	L09030379-08
9060MOD	L09030418	IW21-04A-EBT-9	L09030418-01
RSK175	L09030224	PMW101-02A-EBT	L09030224-07
RSK175	L09030297	PMW101-07B-EBT-9	L09030297-04
RSK175	L09030323	IW101-04C-EBT-9	L09030323-03
RSK175	L09030379	IW101-08A-EBT-9	L09030379-08
RSK175	L09030418	IW21-04A-EBT-9	L09030418-01

B. The MS and MSD percent recoveries (%R) were within the limits defined in the QAPP of 40 – 140% for soil and water for Method 8081/ 8082. Two compounds are allowed to be 30 -150%. Both the MS and the MSD %R are required to be out of limits for data to be qualified. No limits are defined in the QAPP for the RSK-175 or VFA methods and lab limits have been applied.
Yes _____ No __X__
RSK-175:

In SDG L09030224, the laboratory narrative states that an MS/MSD associated with this sample set was not analyzed. However, an MS/MSD report for the sample shown in the table above is provided. In this report, methane is reported as out of limits due to extremely high recoveries. However, the incorrect sample result is used in the MS/MSD table. If the correct sample result is used, it is clear that the parent sample is much higher than 4x the spike, so no qualifiers are required.

In L03090297, the parent sample is > 4x the spike, so no recoveries can be calculated and no qualifiers are required. The laboratory has again apparently used an incorrect value in the MS/MSD table for the parent sample, but the results are the same when the correct value is used.
In L03090323, recoveries are in control in the MS/MSD.
In L03090379, recoveries are in control except for methane in the MSD. The level in the parent sample is high, and the MSD recovery is only slightly high (122%). Professional judgment is that no qualifier is appropriate in this case.
In L03090418, recoveries are in control except for methane which has a level in the parent sample greater than twice the spike. The MSD is in control, only the MS is out of limits and the RPD is in control. Professional judgment is that no qualifier is appropriate in this case.

MBA:
In SDG L09030224, acetic acid shows a low recovery in the MS/MSD, but the sample level is nearly 4x the spike level. The RPD is in control and professional judgment is that no qualifier is appropriate in this case.

In L03090297, recoveries in the MS/MSD are in control.
In L03090323, all analytes but for pyruvic acid are present at levels > 4x the spike and no qualifiers are applied for those analytes. Pyruvic acid is not recovered and the parent sample is qualified as RMS0.
In L03090379, recoveries in the MS/MSD are in control.
In L03090418, recoveries are in control except for two analytes that are present at levels > 4x the spike. No qualifiers are added.

TOC:
In SDG L09030224, the parent sample is greater than 4x the spike and no qualifier is applied.

In L03090297, recoveries in the MS/MSD are in control.
In SDG L09030323, the parent sample is greater than 4x the spike and no qualifier is applied.
In SDG L09030379, the parent sample is greater than 4x the spike and no qualifier is applied.
In L03090418, the parent sample is greater than 4x the spike and no qualifier is applied.

C. The MSD relative percent differences (RPD) were within the defined QAPP limits of < 50% RPD. None are acceptable if greater than 60% RPD.
Yes __X___ No _____

D. The MS/MSD were client samples.
Yes _X___ No _____

VII. LABORATORY CONTROL SAMPLE AND DUPLICATE (LCS/LCSD)
A. Laboratory Control Sample (LCS) and LCS duplicate were analyzed for every analyses performed and for every 20 samples or for every matrix whichever is more frequent.
Yes ___X__ No_____

B. The LCS percent recovery (%R) are within the limits defined by QAPP of 50 – 130% for soil and water for pesticides and PCBs. For RSK and VFA, the QAPP limit is the lab limits for both LCS and LCSD. Two compounds are allowed to be 30 -150%. If an LCS and LCDS are analyzed, both samples have to have outliers in order for data to be qualified.
Yes __X__ No ____

VIII. SURROGATE RECOVERY
A. The Surrogate spike was analyzed with every sample.
Yes _____ No ____ NA__X__

B. And met the recovery limits defined in the QAPP of 40 – 140%. If recovery limits were exceeded for both surrogates, the sample was re-extracted and re-analyzed.
Yes _____ No_____ NA __X__

IX. INTERNAL STANDARDS
The Internal Standards met the 100% upper and -50% lower limits criteria and the Retention times were within the required windows. Note: Internal standards are not required for GC analysis, but if they are used, SW-846 stipulates that they meet the same recovery requirements as those specified for GCMS methods.
Yes ____ No _____ NA__X__

X. FIELD QC
If Field duplicates were identified, they met guidance RPD of < 35% for water or < 50% for soils and gases. For values reported at < 5 x the reporting limit (RL), a difference of 2 x RL is used as guidance (4 x RL for soils). Data are not qualified for field duplicates as these are evaluated for the total project by the client.
Yes _____ No __X__ NA_____
A number of analytes are out of limits in field duplicates, as shown in the table below.

SDG	Matrix	Field Dup	Parent Sample	Observations
L09030379	Water	DUP-1	IW21-02A -EBT-9	OK all methods
L09030323	Water	DUP-2	PMW21-02-EBT-9	OK all methods
L09030224	Water	DUP-3	IW101-01A -EBT-9	OK all methods
L09030265	Water	DUP-4	IW101-03A -EBT-9	Carbon dioxide RPD 67%, methane 92%
L09030334	Water	DUP-5	IW101-05B -EBT-9	Acetic acid RPD 69%, propionic acid 74%
L09030297	Water	DUP-6	IW92-01-EBT-9	Methane RPD 41%
L09030224	Water	DUP-7	PMW101-03B -EBT-9	Carbon dioxide RPD 40%
L09030265	Water	DUP-8	PMW101-05B -EBT-9	Methane RPD 63%
L09030297	Water	DUP-9	PMW101-08A -EBT-9	Carbon dioxide RPD 56%, Methane 53%

XI. COMPOUND IDENTIFICATION
A. All raw data chromatograms and data system printouts were evaluated for all detected compounds and the identification is accurate.
Yes ____ No _____ NA ___X___
This evaluation is not performed at this level of review.

B. Retention time limits or peak pattern identifications are met.
Yes _____ No _____ NA__X___
This evaluation is not performed at this level of review.

C. If two column or two detector confirmation was performed, the value of the confirmation was within 25%D of the quantitation value for results > 5 x RL. If the laboratory has flagged data 'COL' for %D > 40%, a JP qualifier has been added for low level results. For values below (5 x RL), the difference is not considered to impact the precision of the data.
Yes ____ No ____ NA __X__
Not part of this level of review. Dual columns are not required for these methods.

XII. COMPOUND QUANTITATION AND REPORTED CRQLS
A. Raw data examination verified that all sample results were correctly calculated.
Yes _____ No_____ NA__X___
This evaluation is not performed at this level of review.

B. The chromatograms and general system performance were acceptable for all instruments and analytical systems.
Yes _____ No _____ NA__X___
This evaluation is not performed at this level of review.

XIII. OVERALL ASSESSMENT OF THE CASE
The method criteria have been met and the quality of the data, after consideration of qualifiers, is considered acceptable and usable as far as can be determined at this level of review.
The following is noted:

Sample Condition:
Many of the report narratives and sample receipt documentation stated that several of the metabolic acid samples required pH adjustment upon arrival.

The need for pH adjustment is a common occurrence for samples at this site. The proper sample bottles have been issued and used. There is a buffering capacity to these matrices that results in slightly elevated pH. The pH is adjusted as soon as the samples reach the laboratory and the impact on the sample data is considered to be minimal. No qualifiers have been added.

Continuing Calibrations:
RSK-175: The laboratory conducts opening and closing calibrations (bracketing the samples during the analytical run). For RSK-175 there is not a specific requirement in the procedure for closing calibrations, and only calibration verification each 12 hours is specified. SW-846 guidance (method 8000B), however specifically requires such closing calibrations for external standard methods. For detected analytes, SW-846 specifies that the closing calibration must meet the same criteria as the opening calibration. This has been achieved for all analytes except for carbon dioxide, for which a number of opening and closing calibrations do not meet the 25% QAPP criterion specified for RSK-175. In such cases, detected levels of carbon dioxide are qualified as JC#, where # is the applicable opening or closing CCV outlier. Such results may be biased due to calibration drift.

The outliers observed are shown in the table within this report. Most detected carbon dioxide results have been qualified.

MS/MSD Recoveries:
There are 5 MS/MSDS for each method, which meets frequency requirements.
RSK-175: In SDG L09030224, the laboratory narrative states that an MS/MSD associated with this sample set was not analyzed. However, an MS/MSD report for the sample shown in the table above is

provided. In this report, methane is reported as out of limits due to extremely high recoveries. However, the incorrect sample result is used in the MS/MSD table. If the correct sample result is used, it is clear that the parent sample is much higher than 4x the spike, so no qualifiers are required.

In L03090297, the parent sample is > 4x the spike, so no recoveries can be calculated and no qualifiers are required. The laboratory has again apparently used an incorrect value in the MS/MSD table for the parent sample, but the results are the same when the correct value is used.
In L03090323, recoveries are in control in the MS/MSD.
In L03090379, recoveries are in control except for methane in the MSD. The level in the parent sample is high, and the MSD recovery is only slightly high (122%). Professional judgment is that no qualifier is appropriate in this case.
In L03090418, recoveries are in control except for methane which has a level in the parent sample greater than twice the spike. The MSD is in control, only the MS is out of limits and the RPD is in control. Professional judgment is that no qualifier is appropriate in this case.

MBA: In SDG L09030224, acetic acid shows a low recovery in the MS/MSD, but the sample level is nearly 4x the spike level. The RPD is in control and professional judgment is that no qualifier is appropriate in this case.

In L03090297, recoveries in the MS/MSD are in control.
In L03090323, all analytes but for pyruvic acid are present at levels > 4x the spike and no qualifiers are applied for those analytes. Pyruvic acid is not recovered and the parent sample is qualified as RMS0.
In L03090379, recoveries in the MS/MSD are in control.
In L03090418, recoveries are in control except for two analytes that are present at levels > 4x the spike. No qualifiers are added.

TOC: In SDG L09030224, the parent sample is greater than 4x the spike and no qualifier is applied.

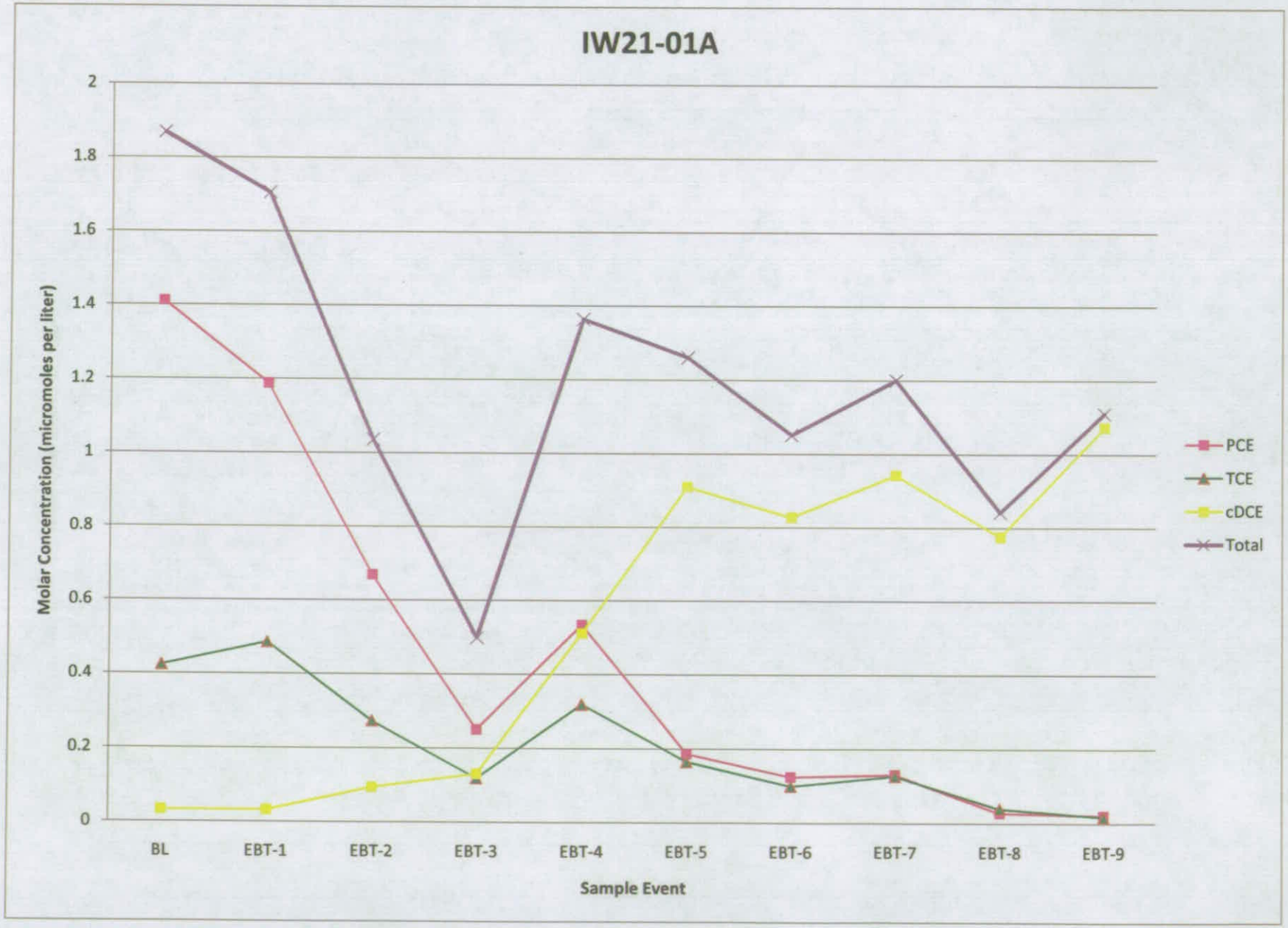
In L03090297, recoveries in the MS/MSD are in control.
In SDG L09030323, the parent sample is greater than 4x the spike and no qualifier is applied.
In SDG L09030379, the parent sample is greater than 4x the spike and no qualifier is applied.
In L03090418, the parent sample is greater than 4x the spike and no qualifier is applied.

Field Blanks:
There are 2 field blanks for each method.
The table within the body of this report summarizes the results.
Detected targets associated with a field blank outlier are qualified as UFB#, where # is the field blank level corrected for sample dilution, when the result is less than 5x the corrected field blank level.

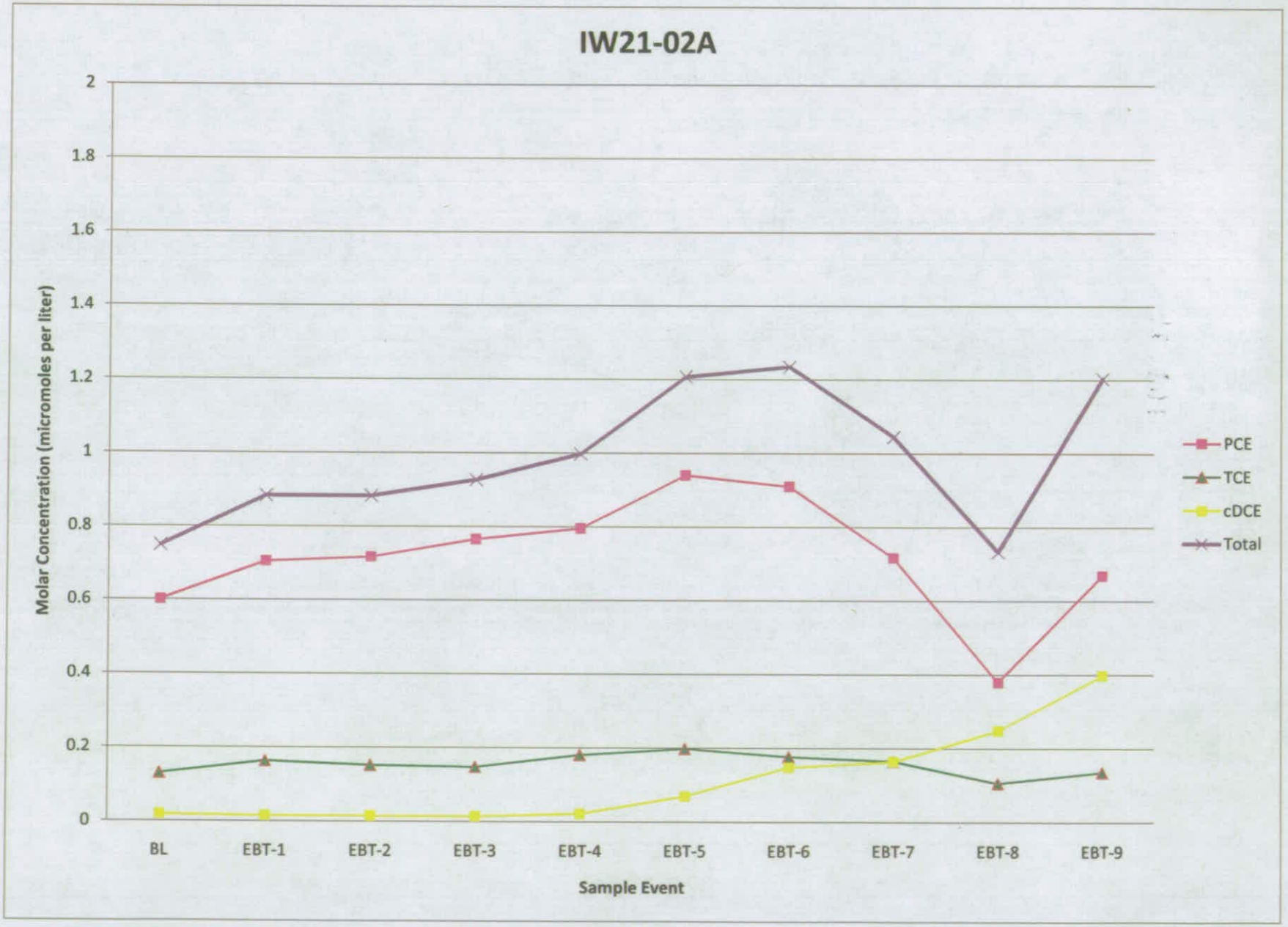
Field Duplicates:
A number of analytes are out of limits in field duplicates, as shown in the table within the body of this report.

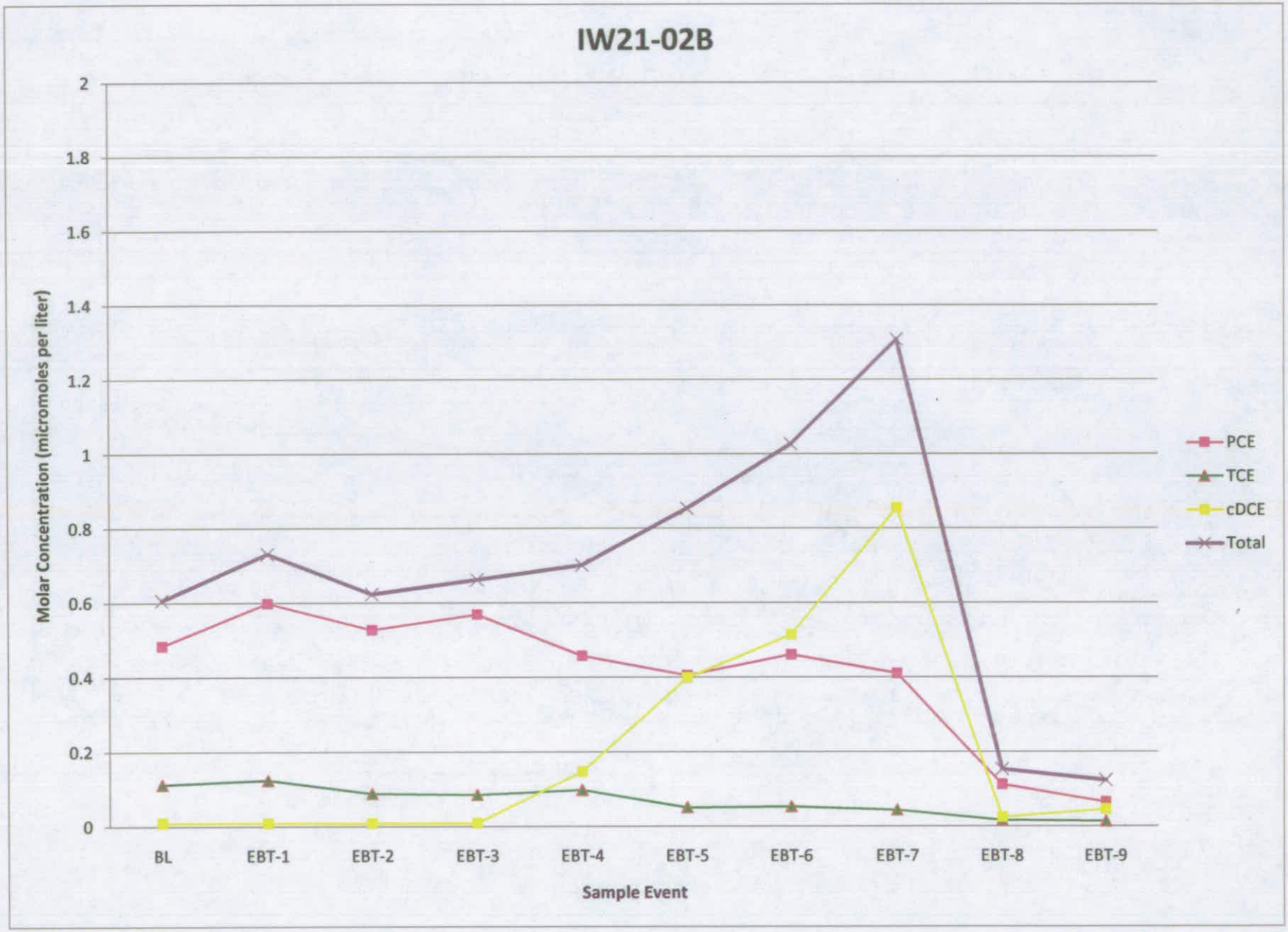
APPENDIX F

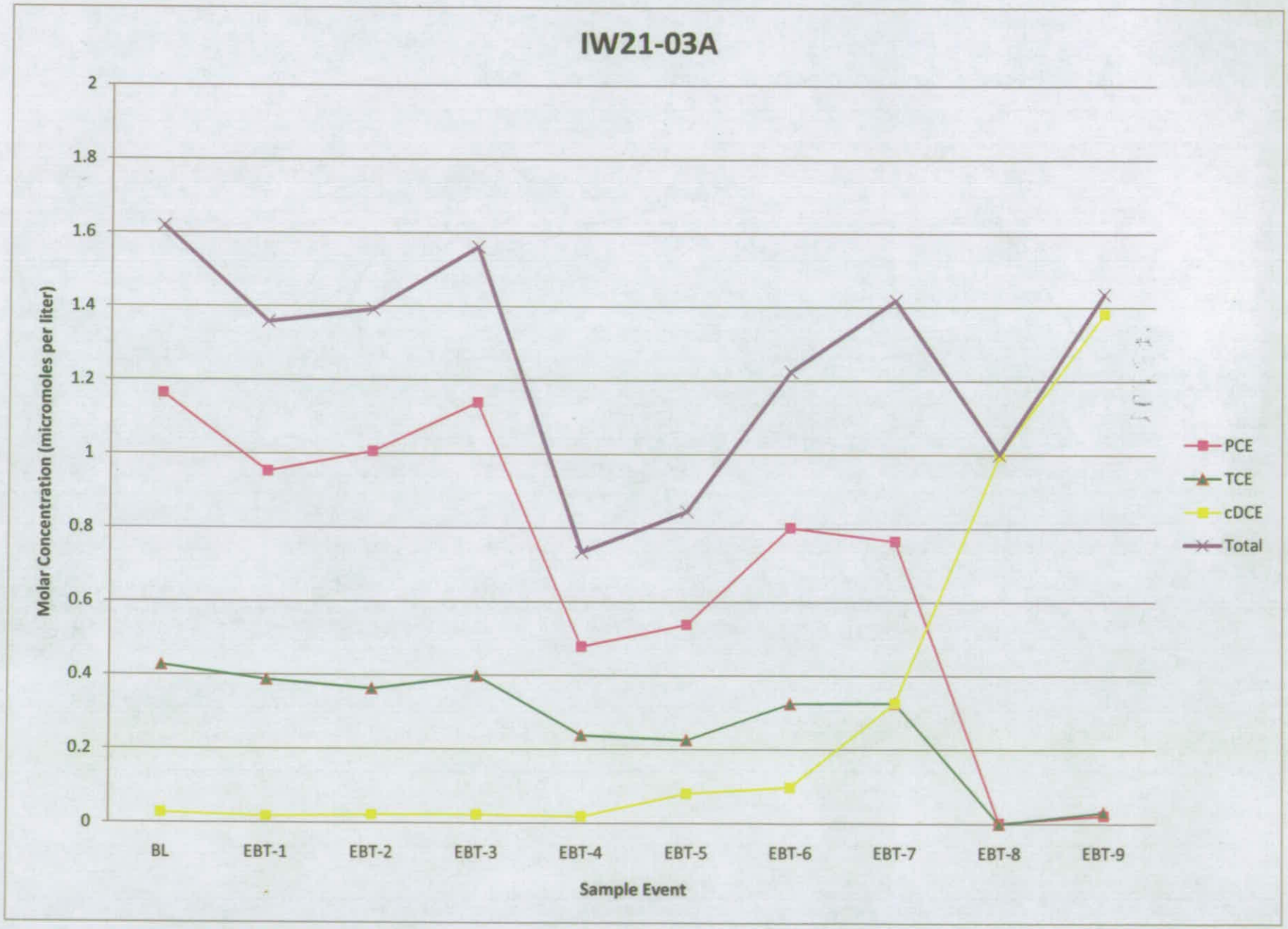
MASS BALANCE CHARTS

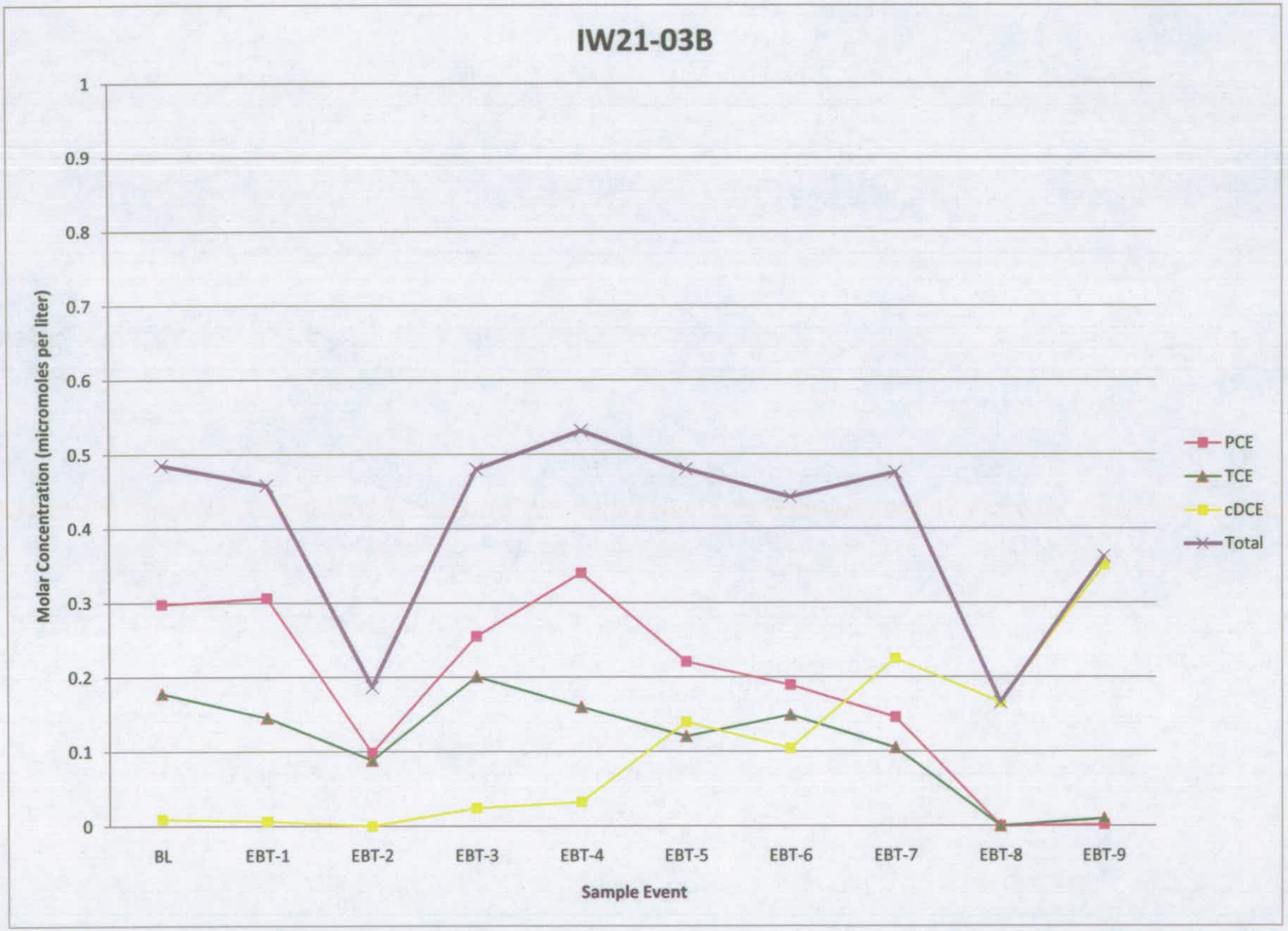

IW21-01A
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

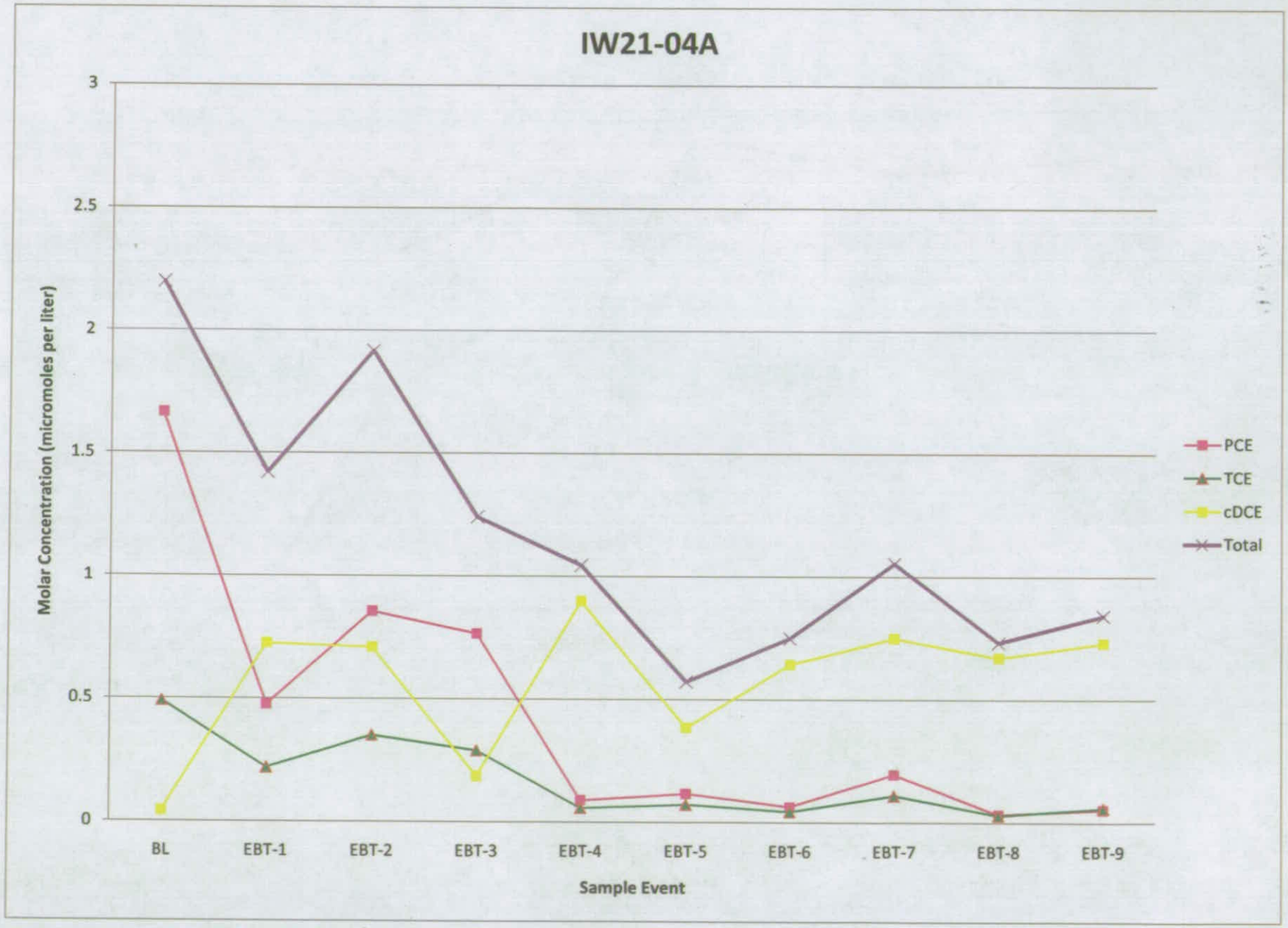

IW21-01B
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

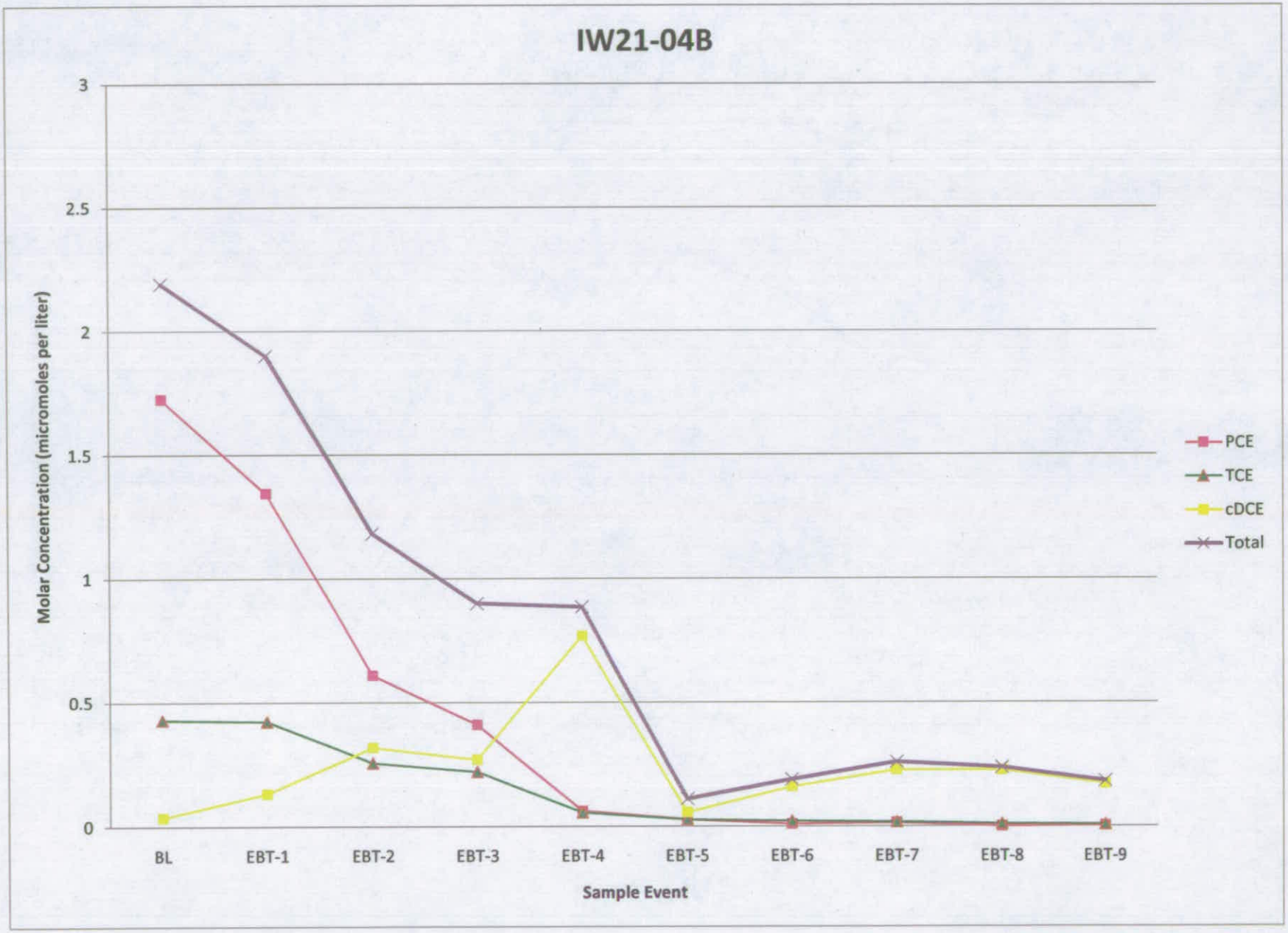

IW21-02A
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total


IW21-02B
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

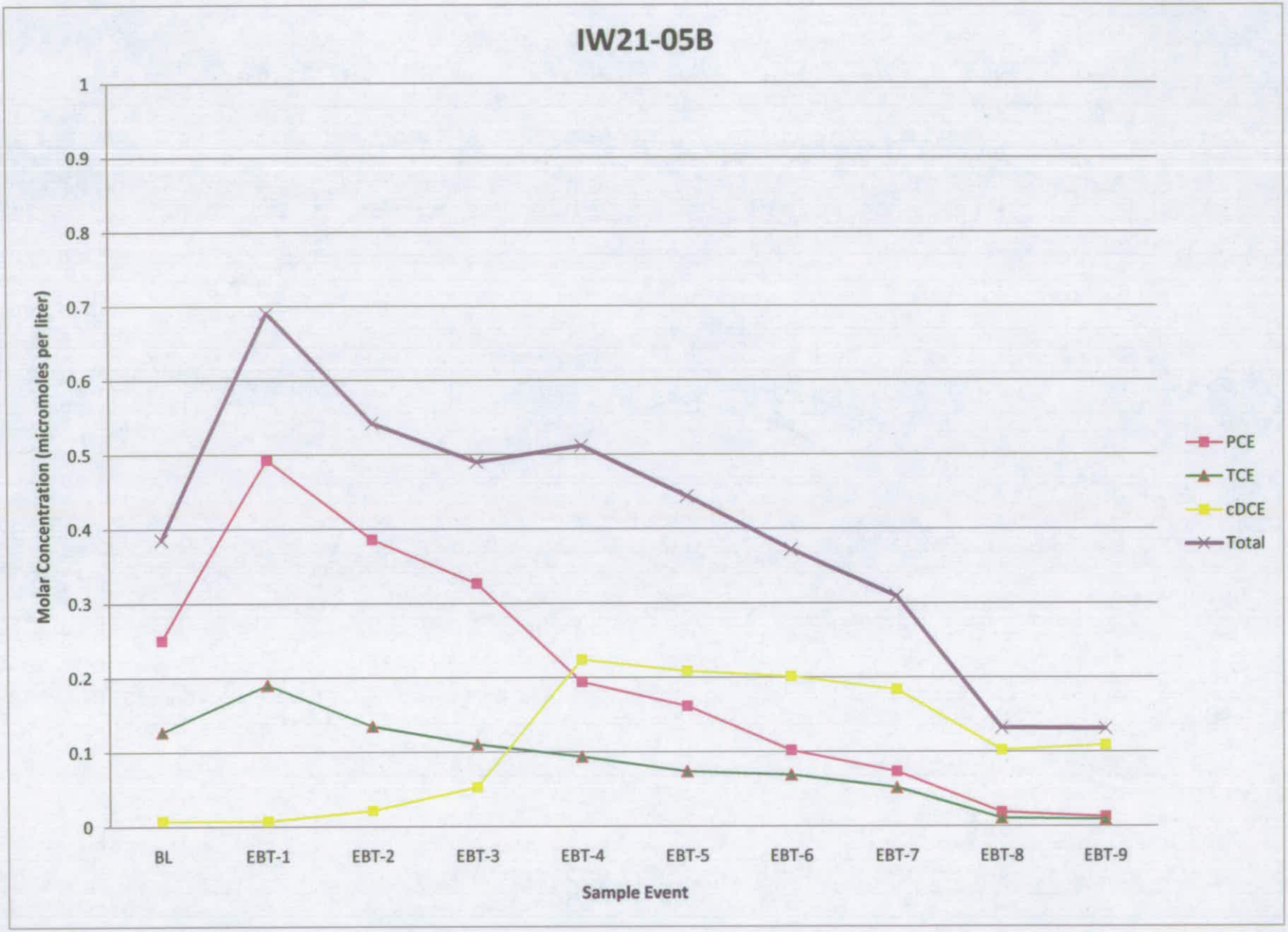

IW21-03A
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

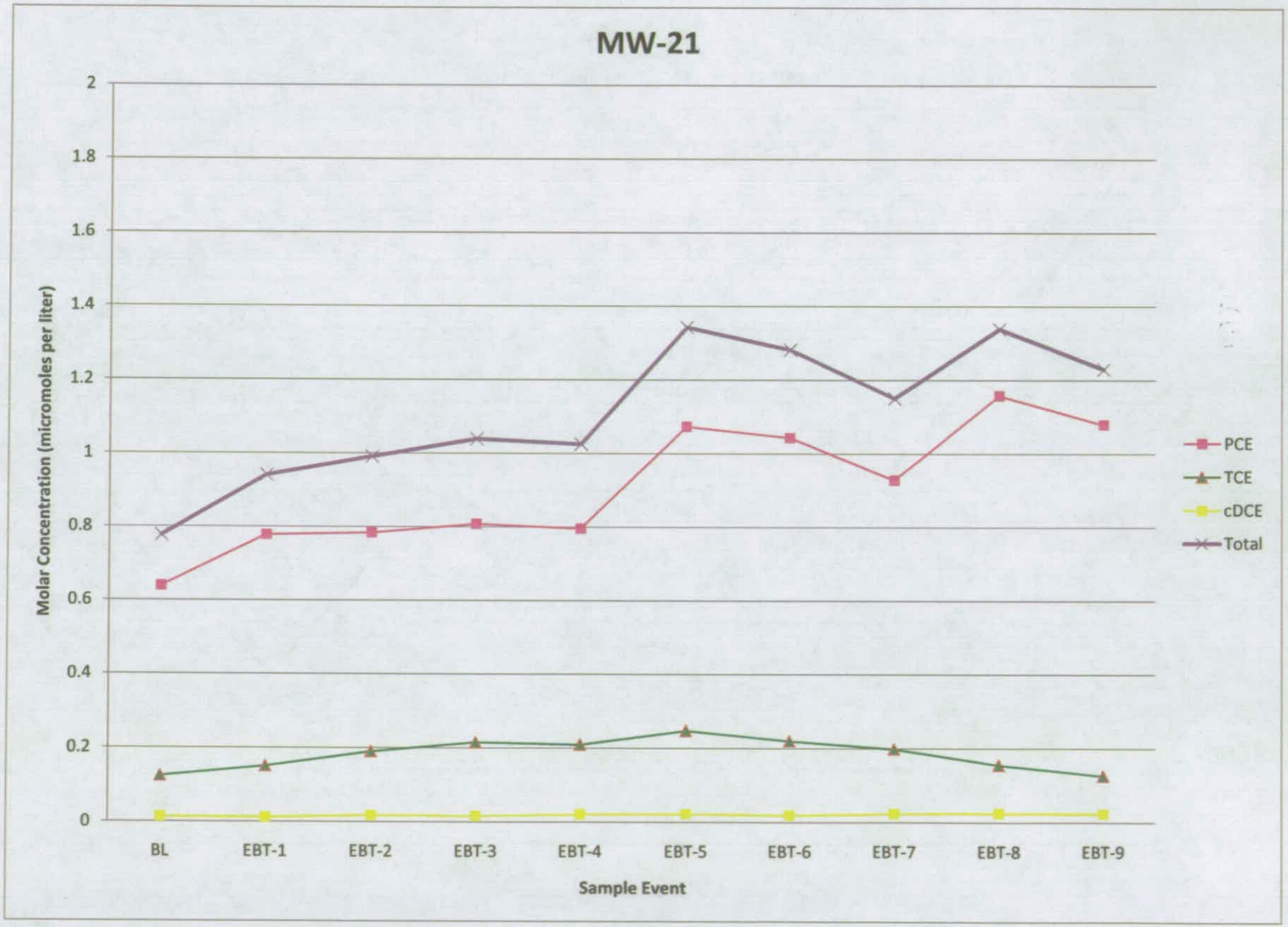

IW21-03B
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total


IW21-04A
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total


IW21-04B
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total


IW21-05A
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total


IW21-05B
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total


MW-21
Molar Concentration (micromoles per liter)
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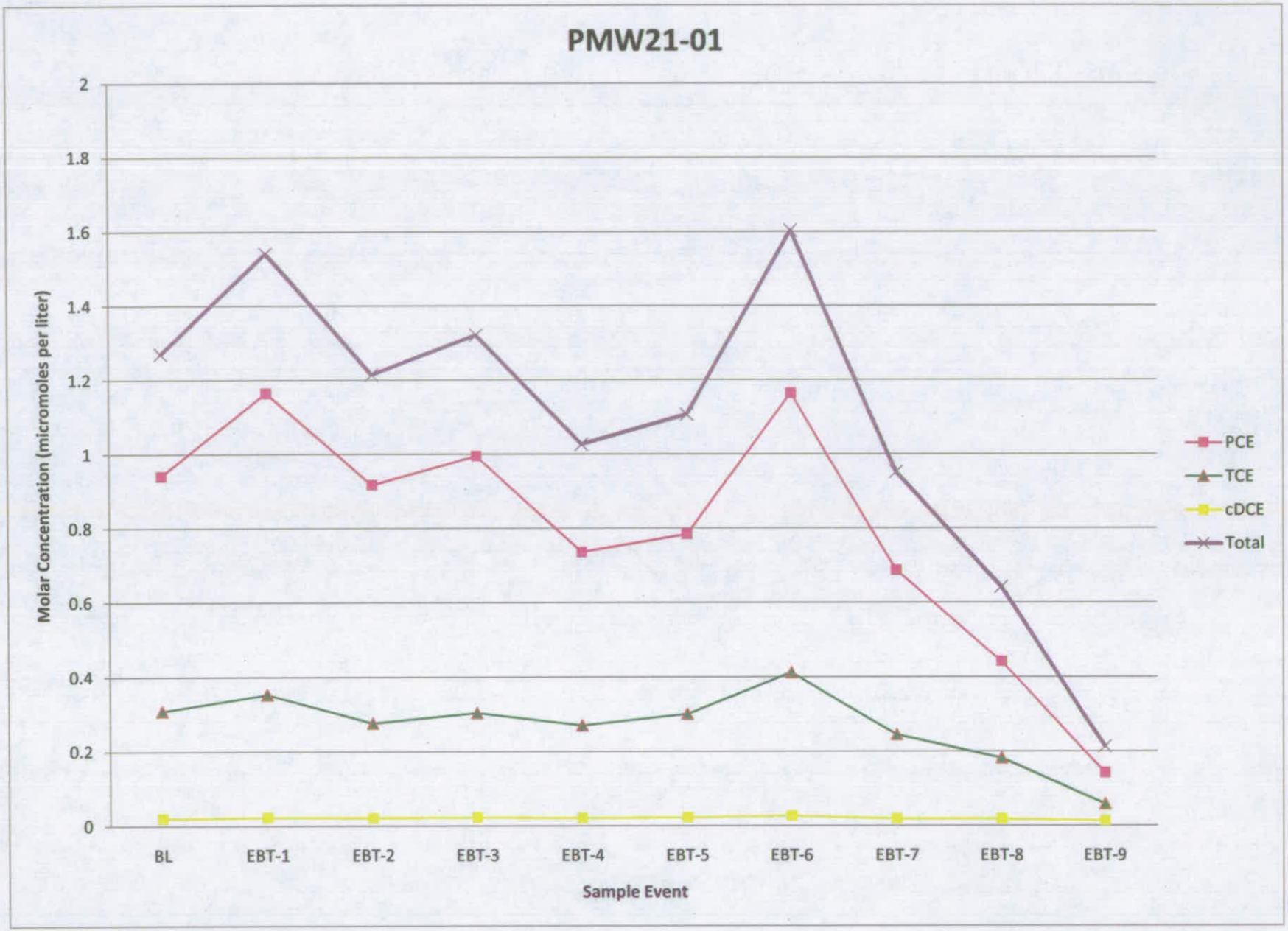
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total


PMW21-01
Molar Concentration (micromoles per liter)
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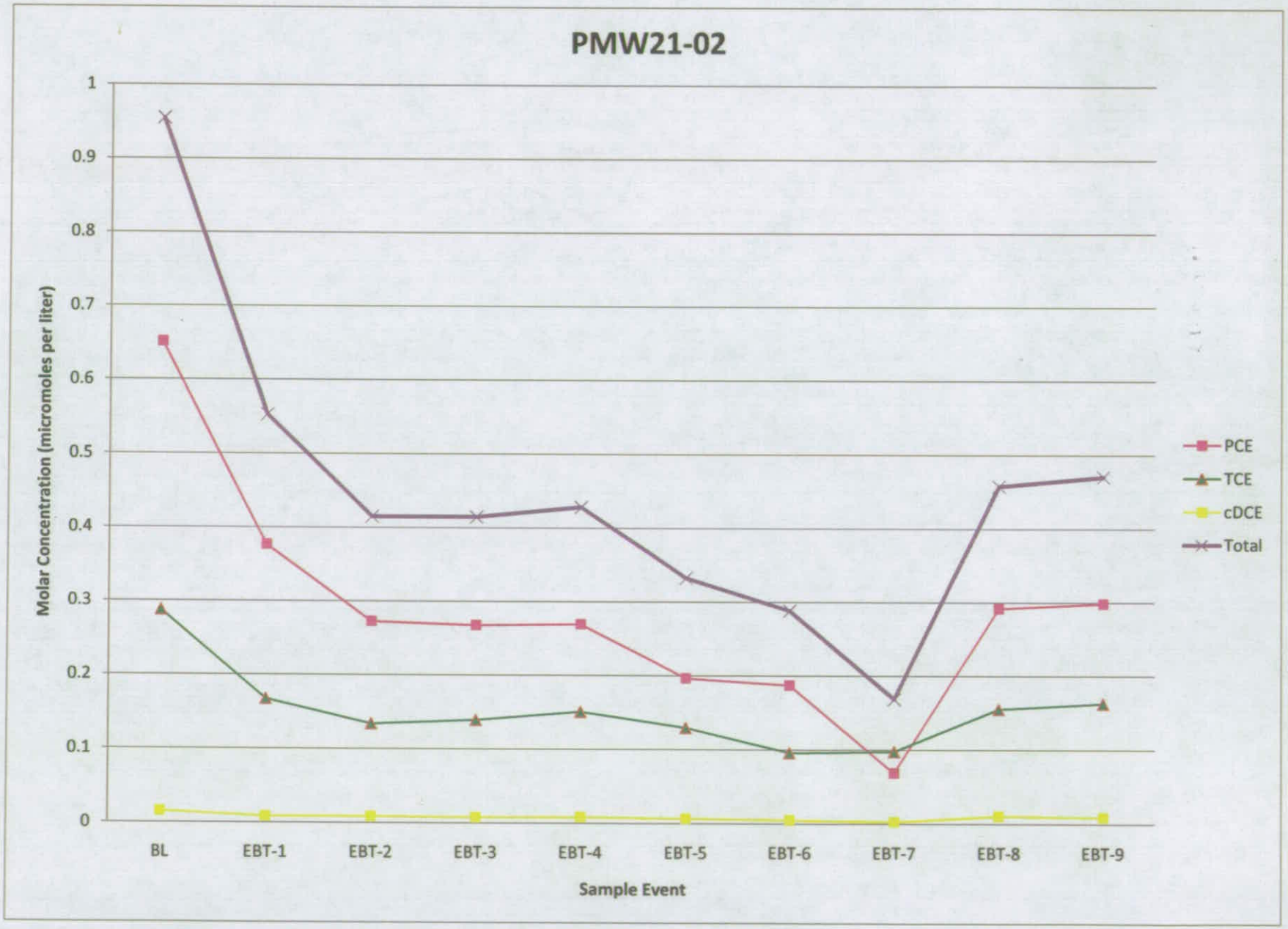
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total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Molar Concentration (micromoles per liter)
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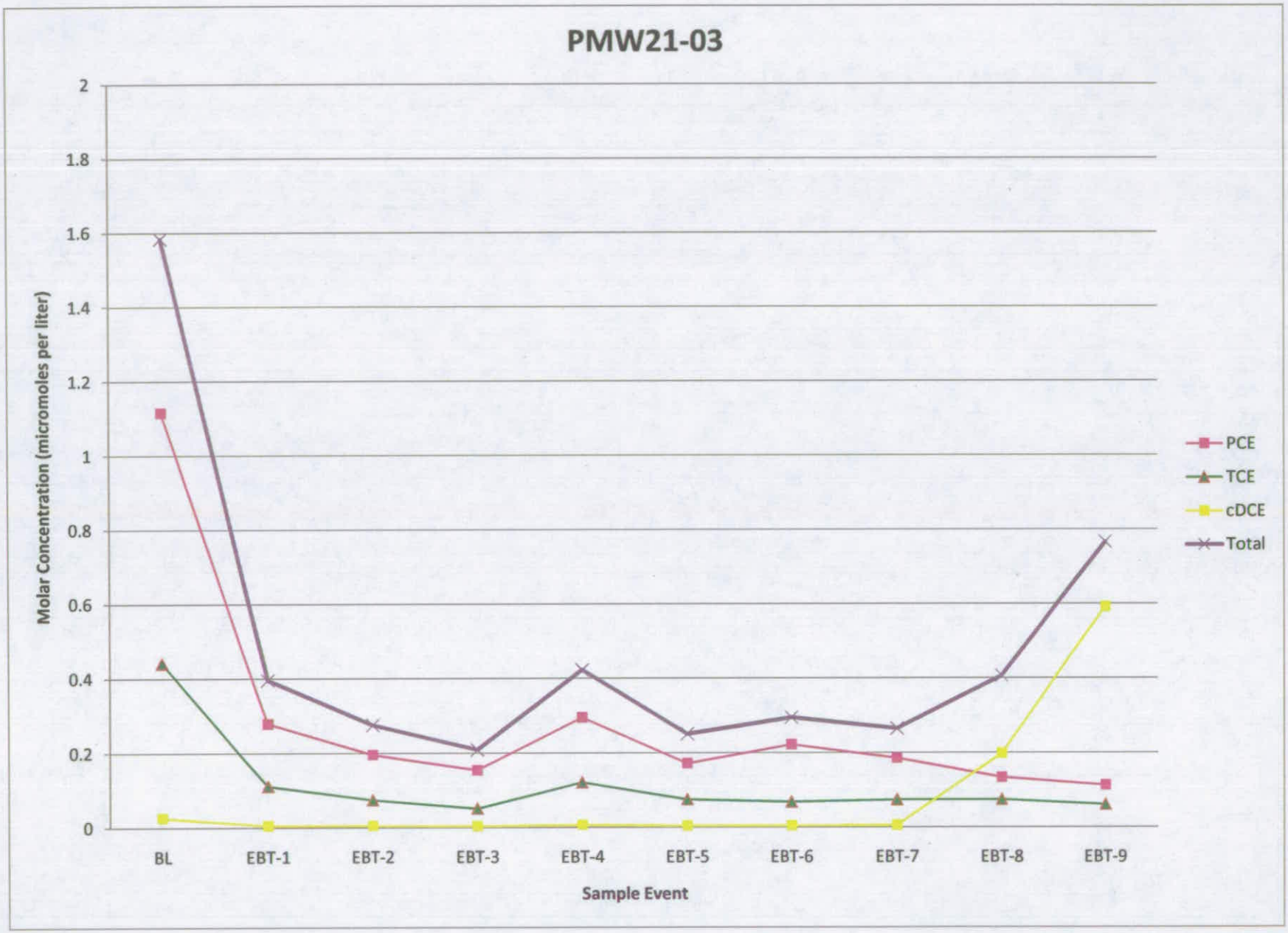
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total


PMW21-03
Molar Concentration (micromoles per liter)
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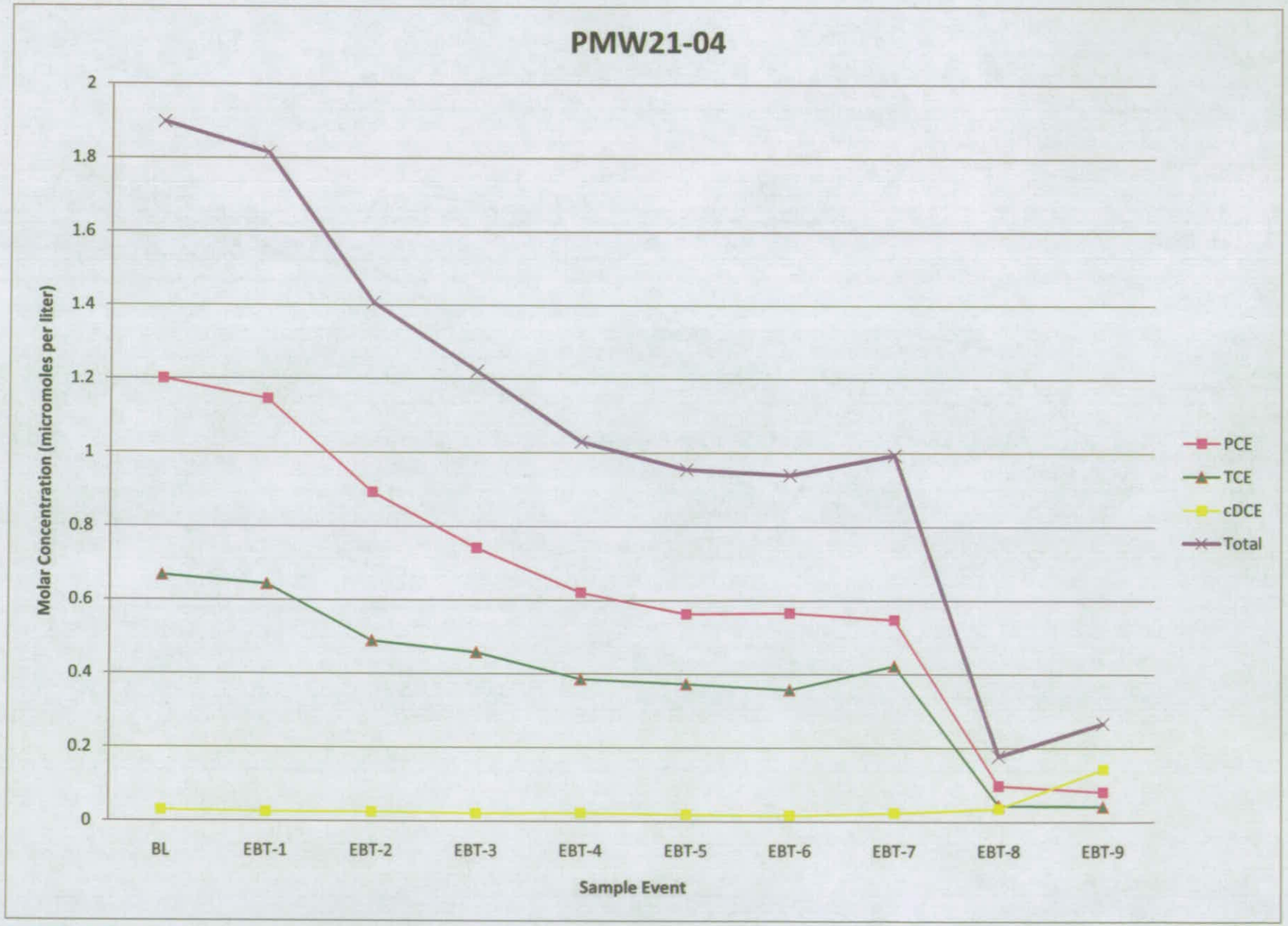
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total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Molar Concentration (micromoles per liter)
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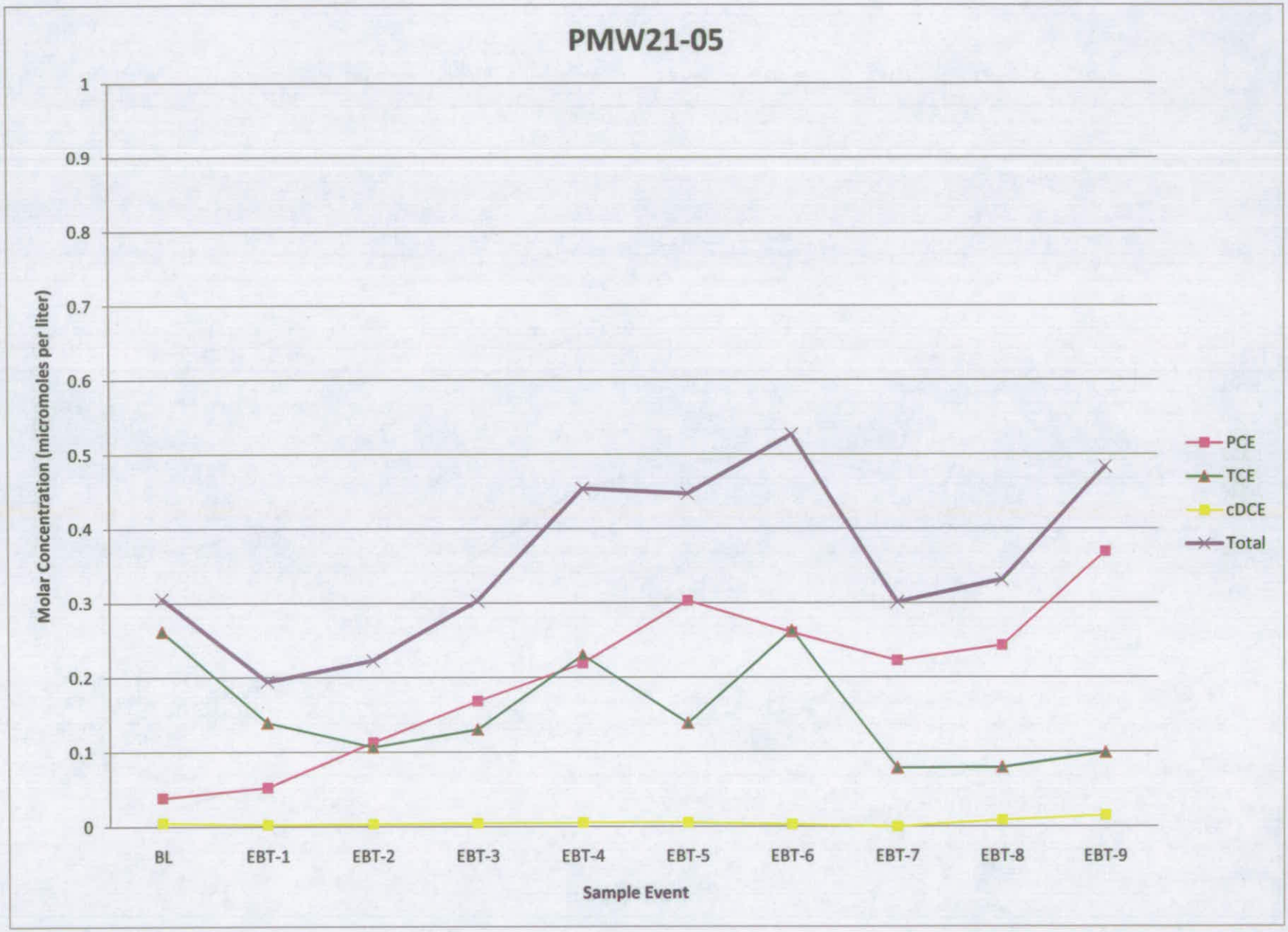
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total


PMW21-05
Molar Concentration (micromoles per liter)
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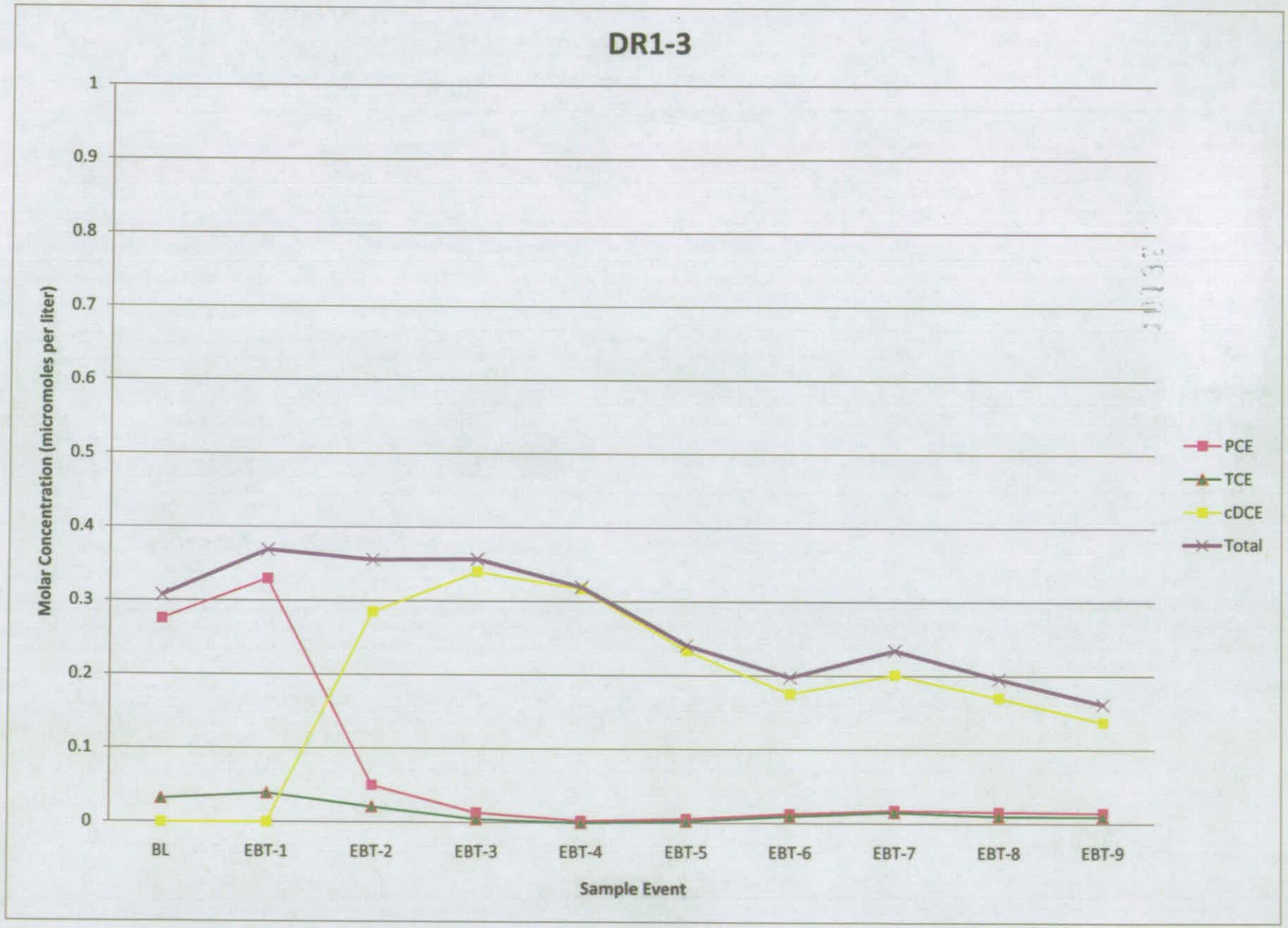
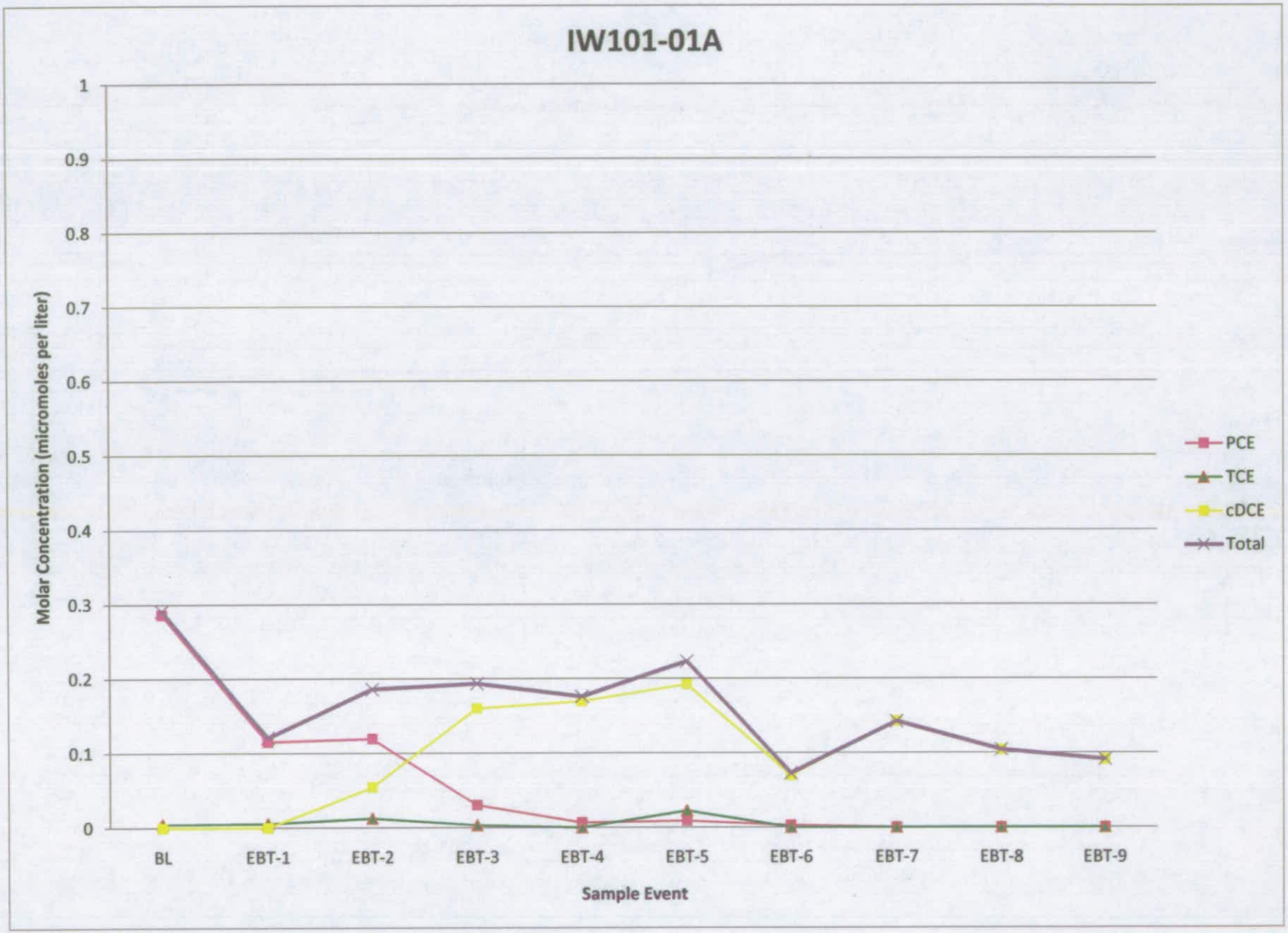
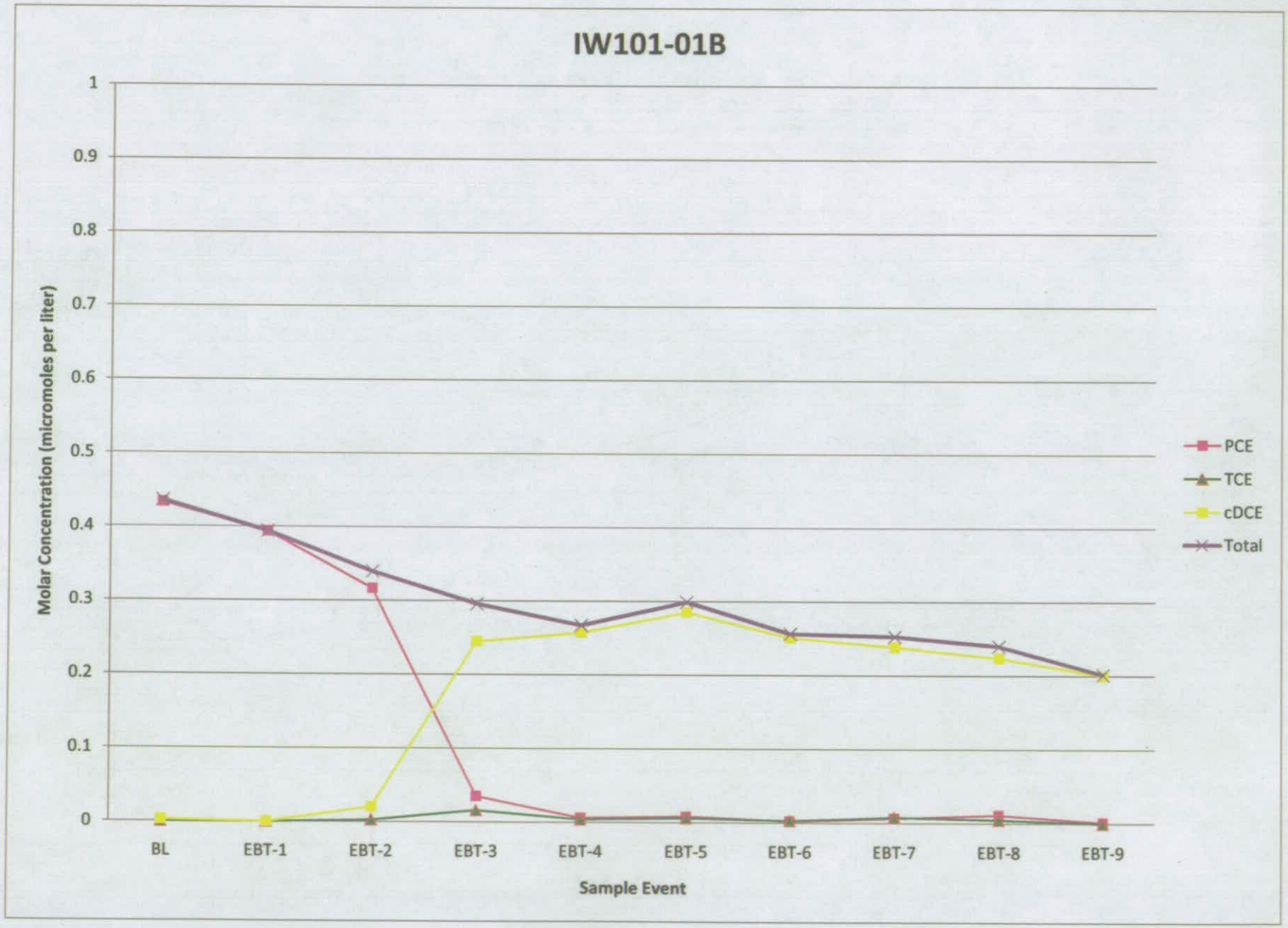
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

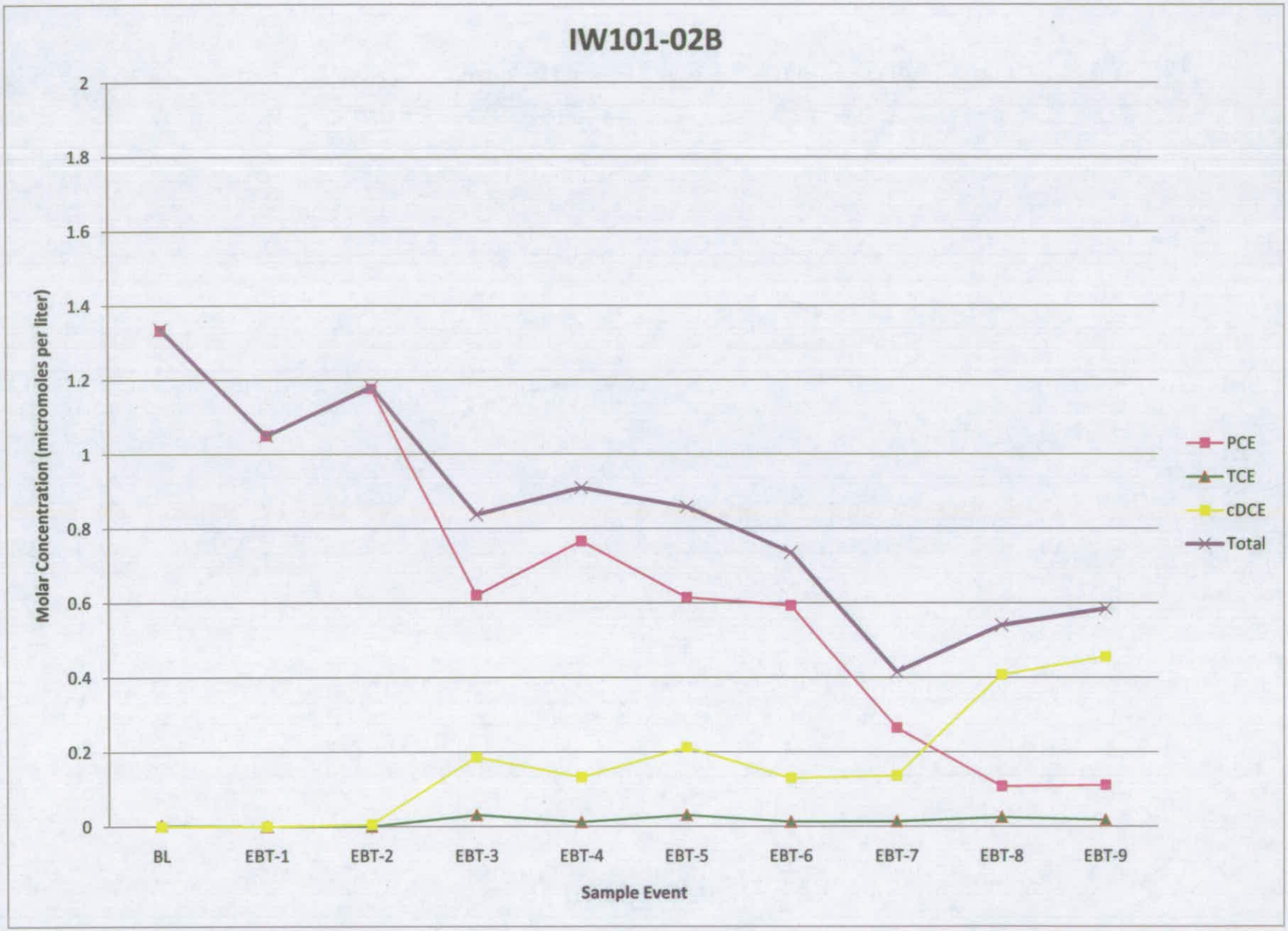

DR1-3
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

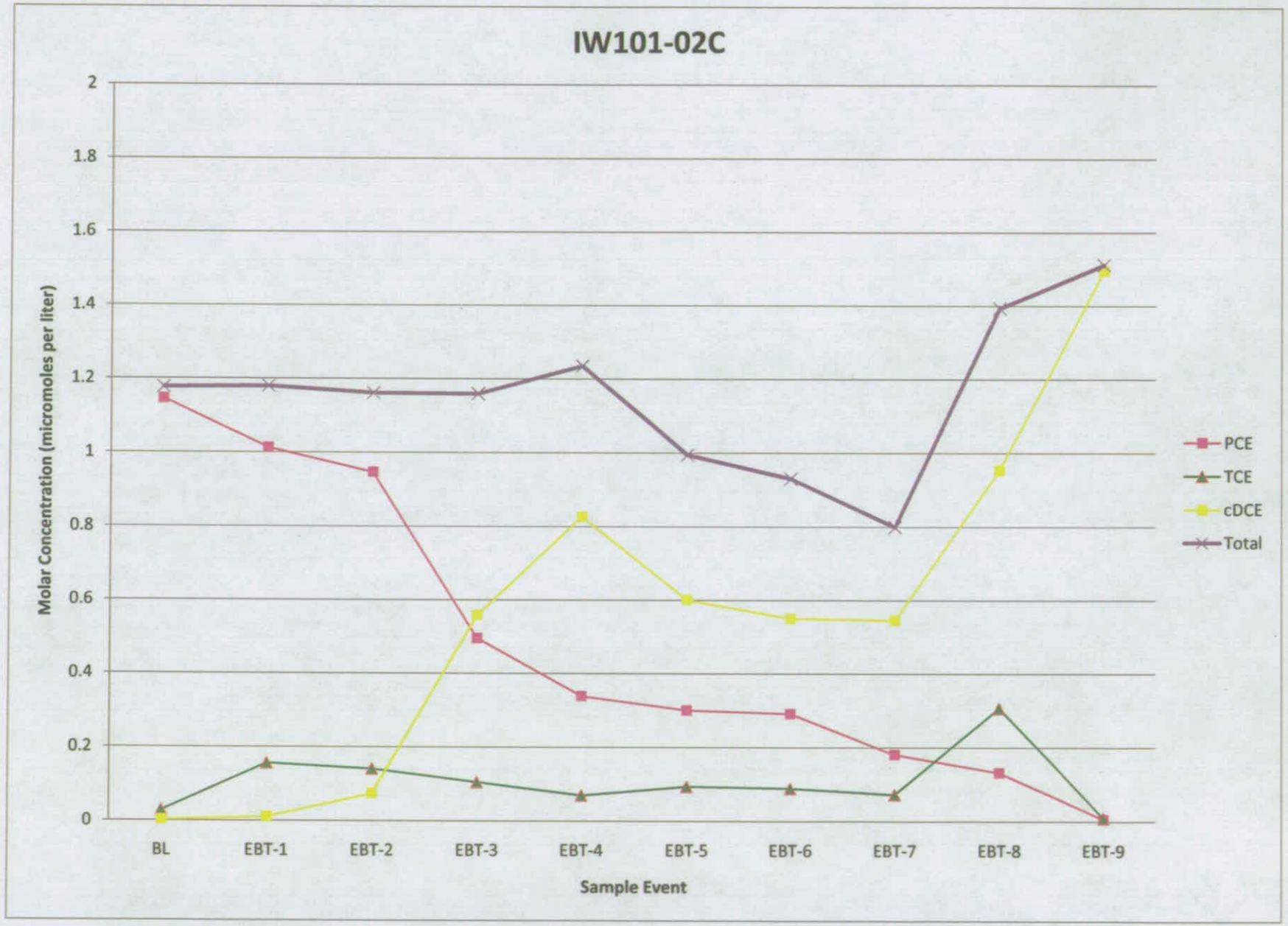

IW101-01A
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

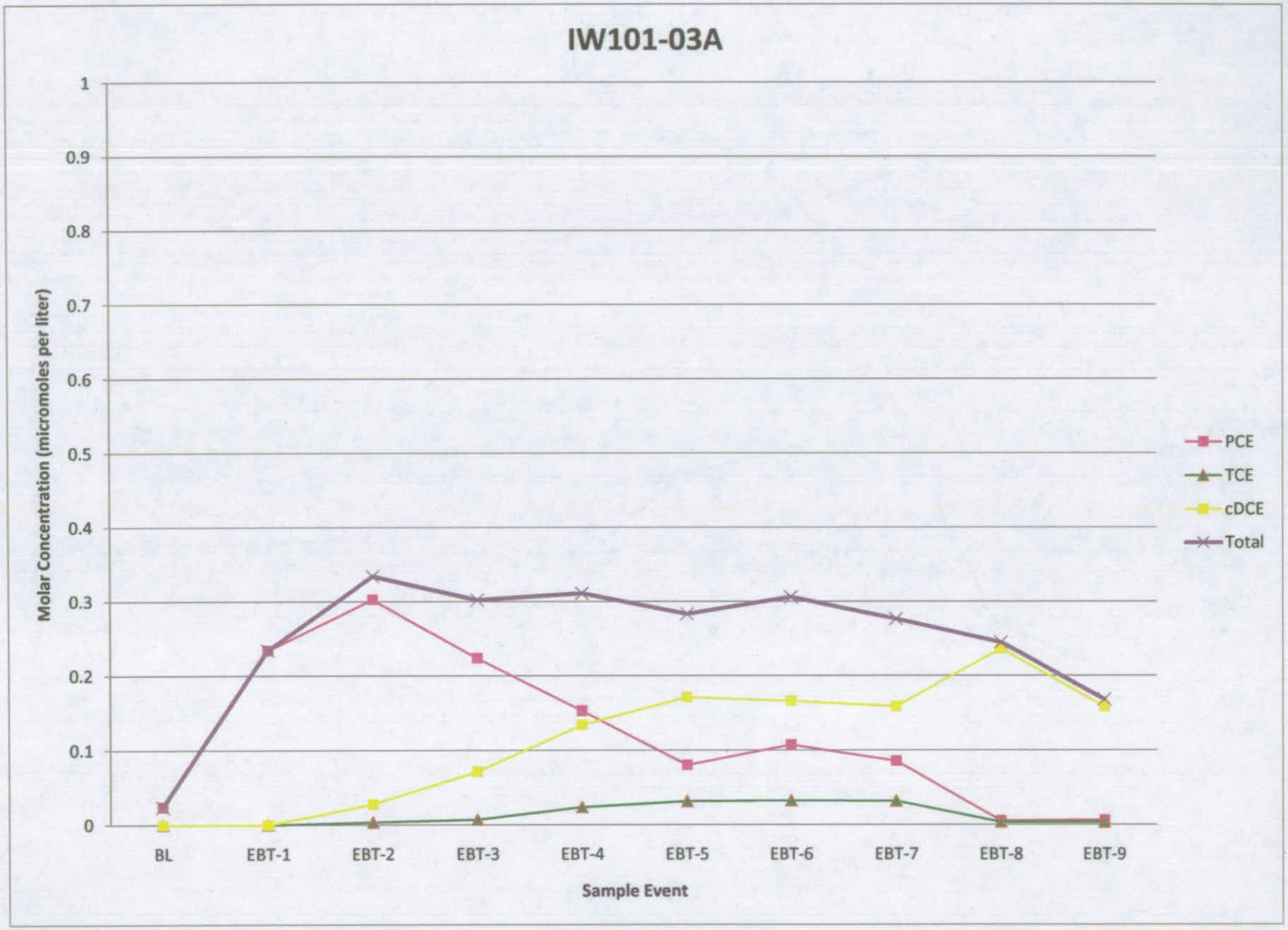

IW101-01B
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

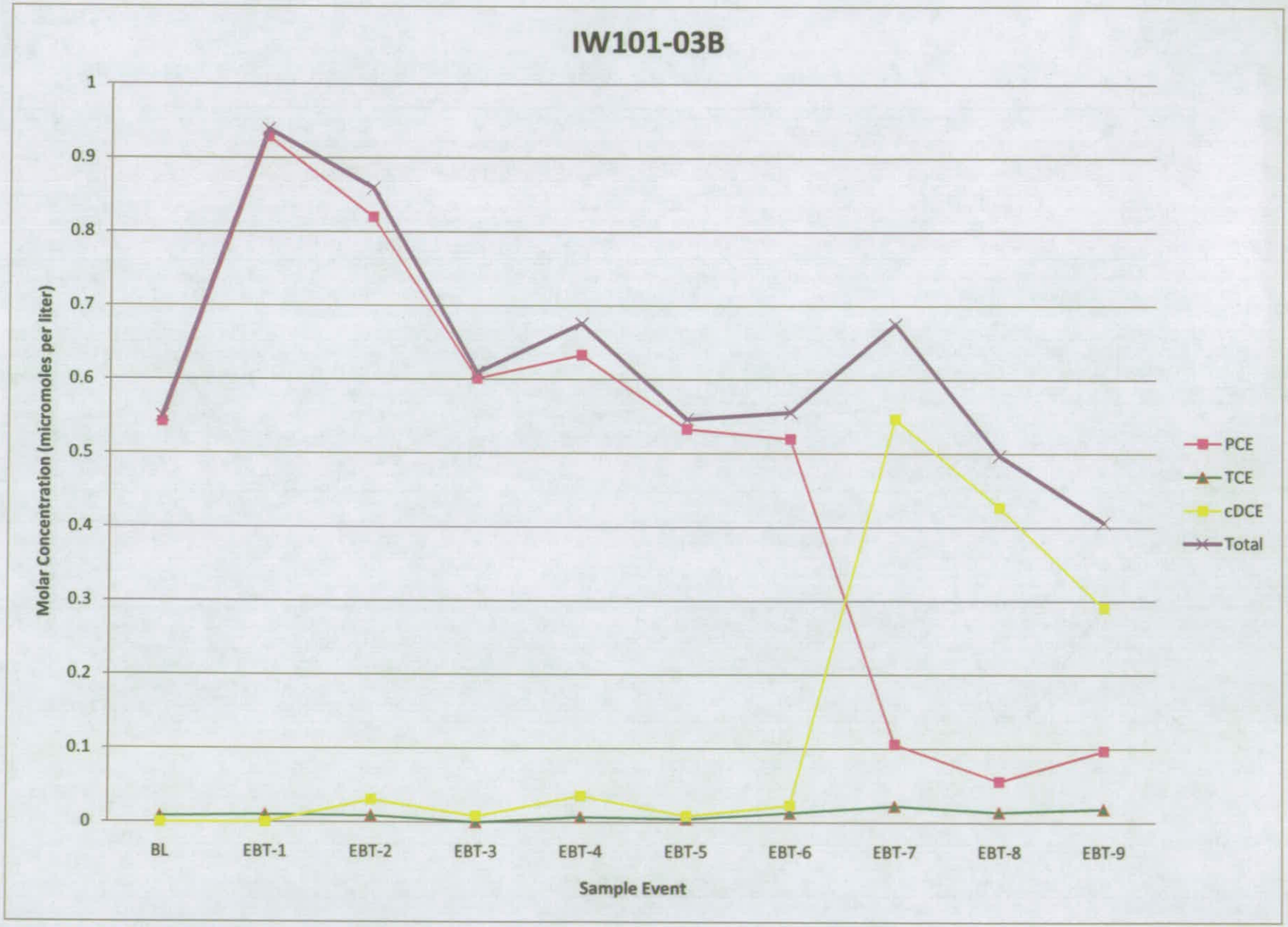

IW101-01C
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

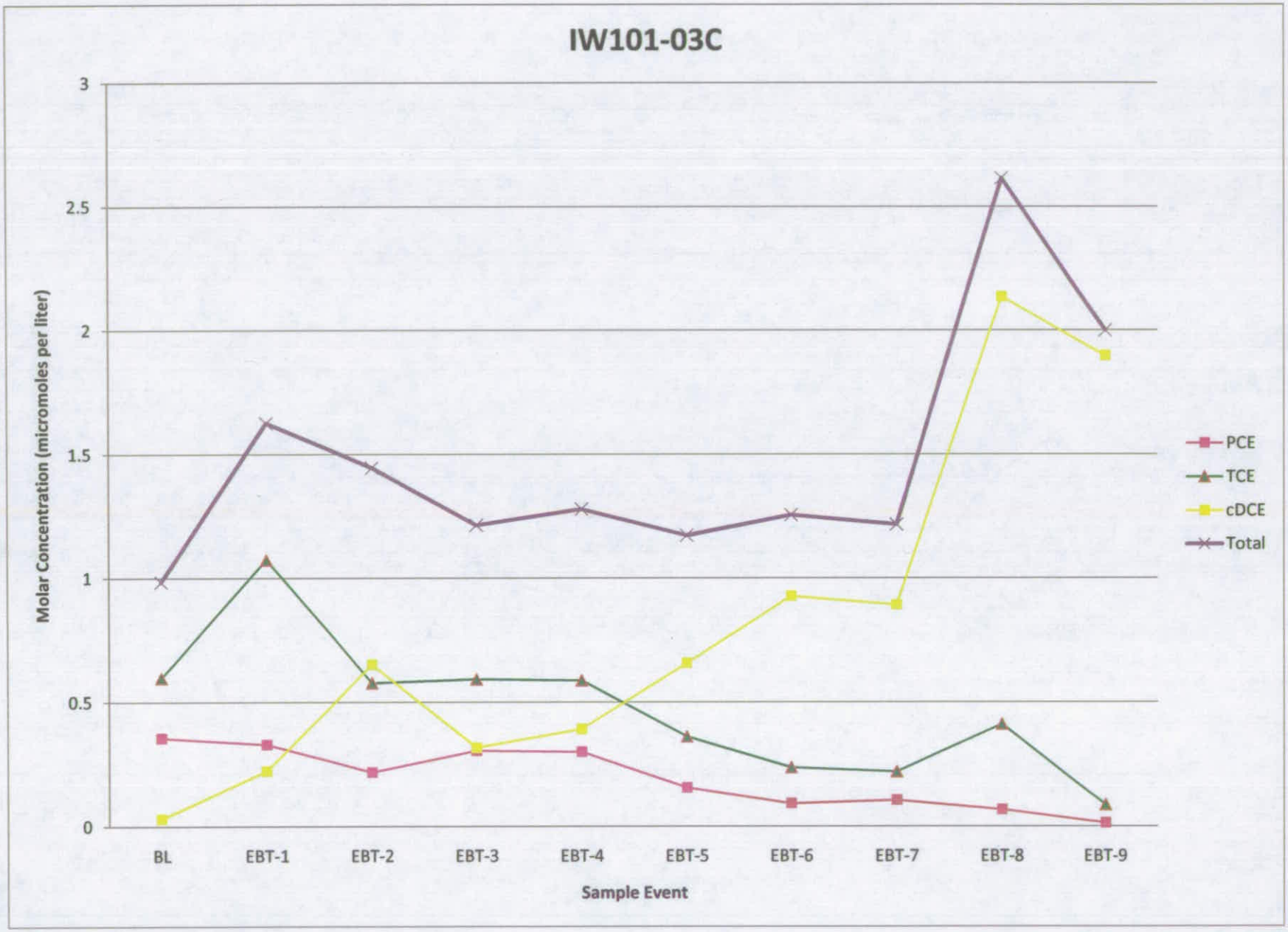

IW101-02A
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

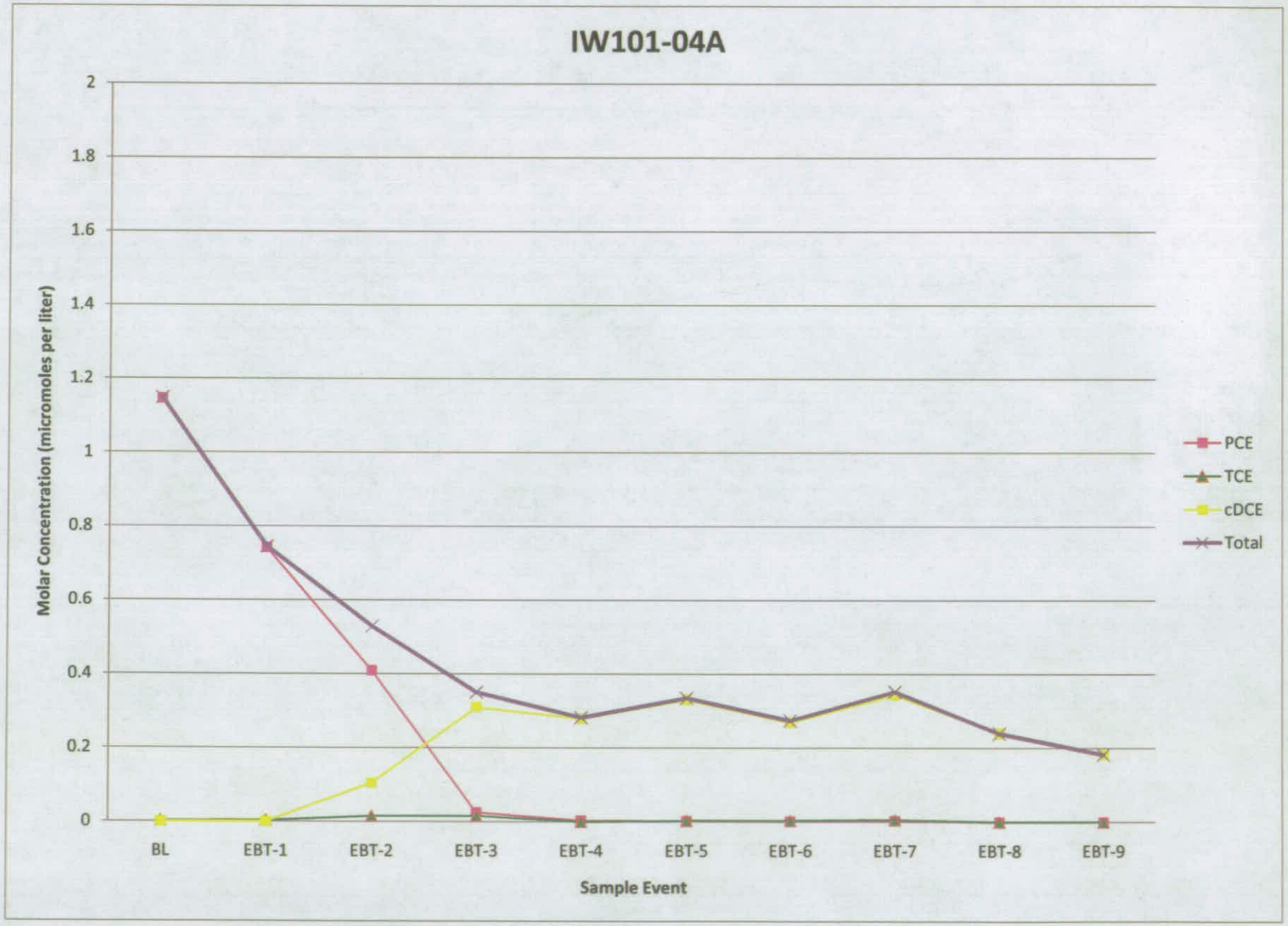

IW101-02B
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

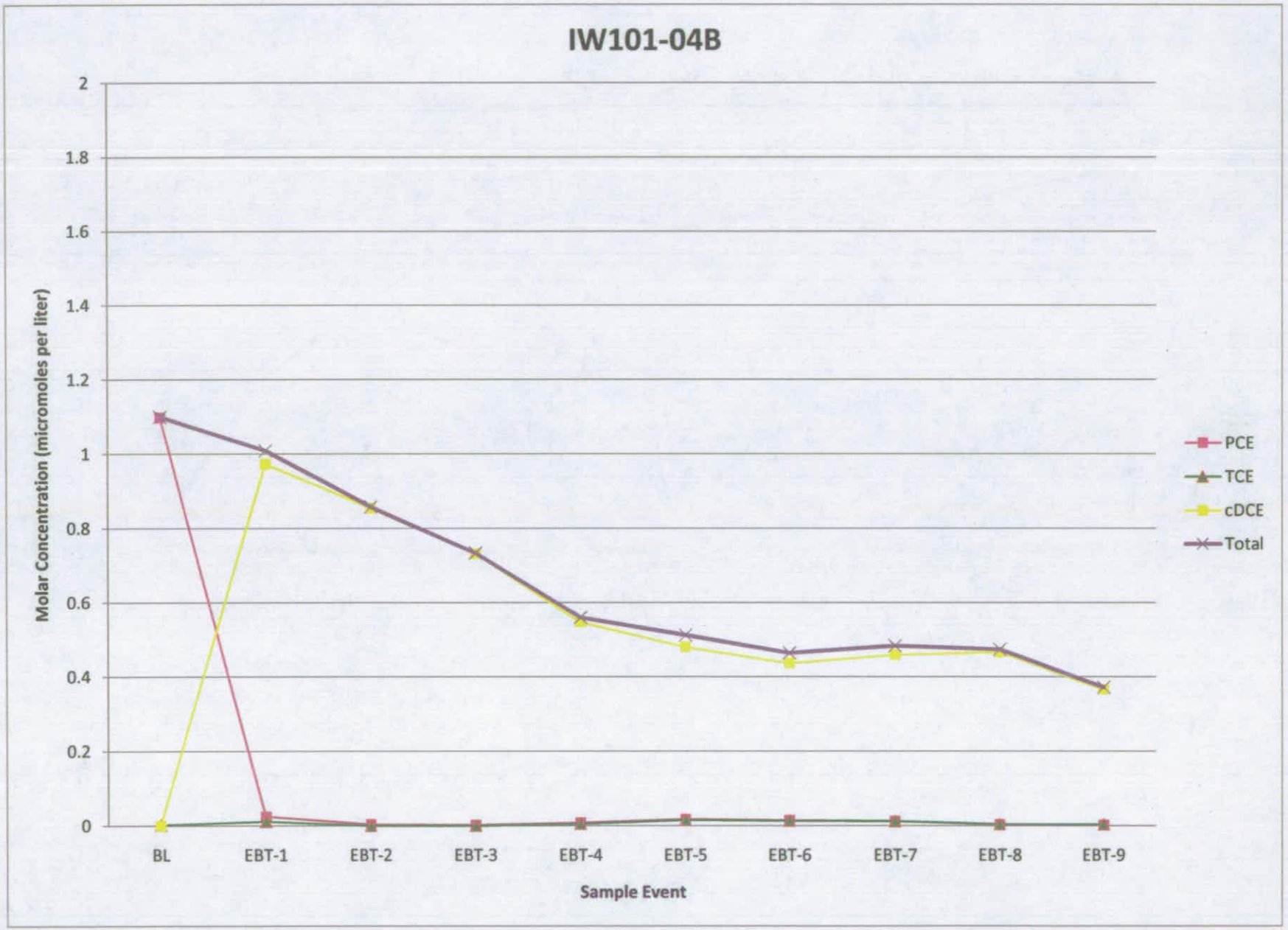

IW101-02C
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

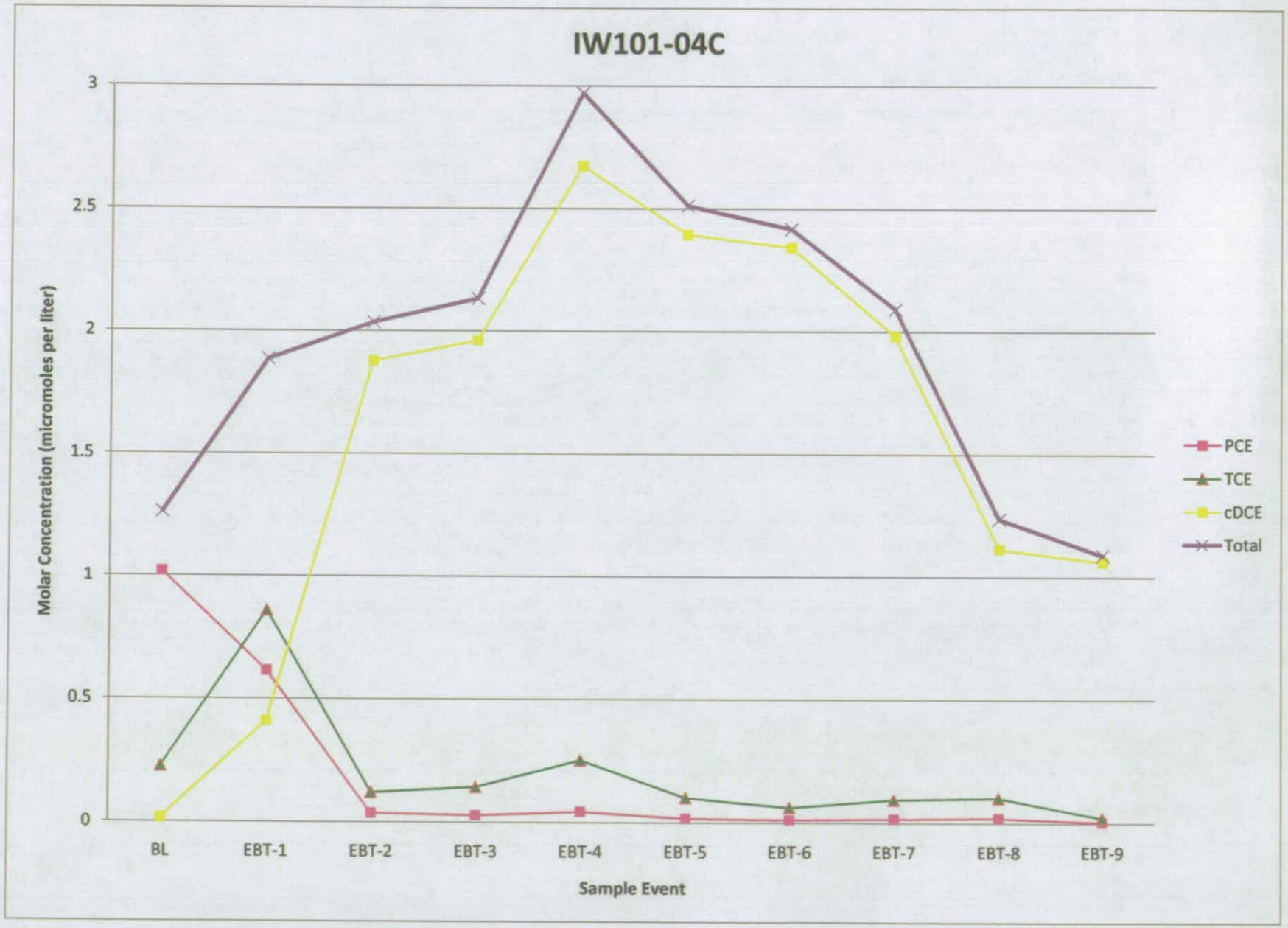

IW101-03A
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

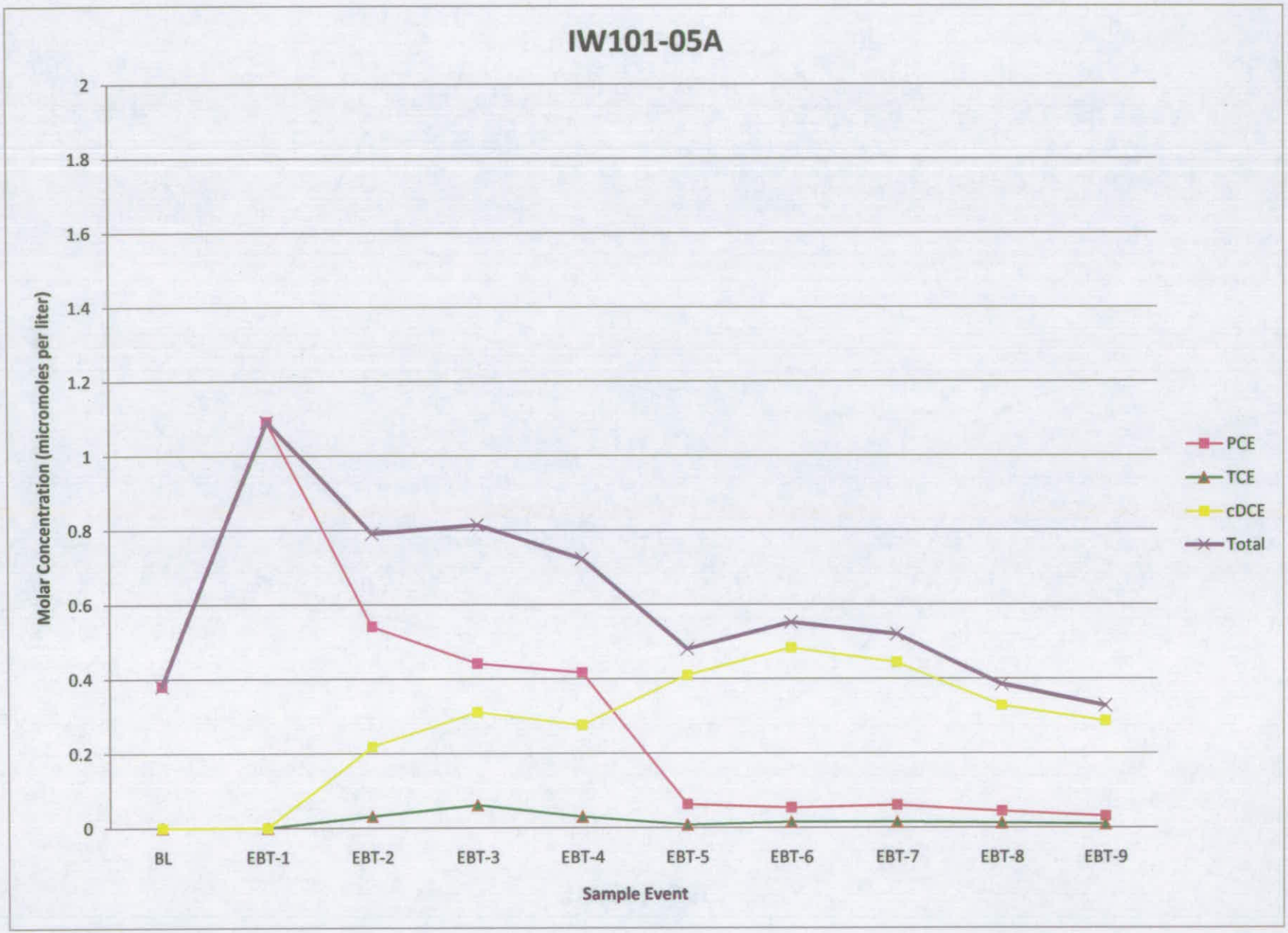

IW101-03B
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

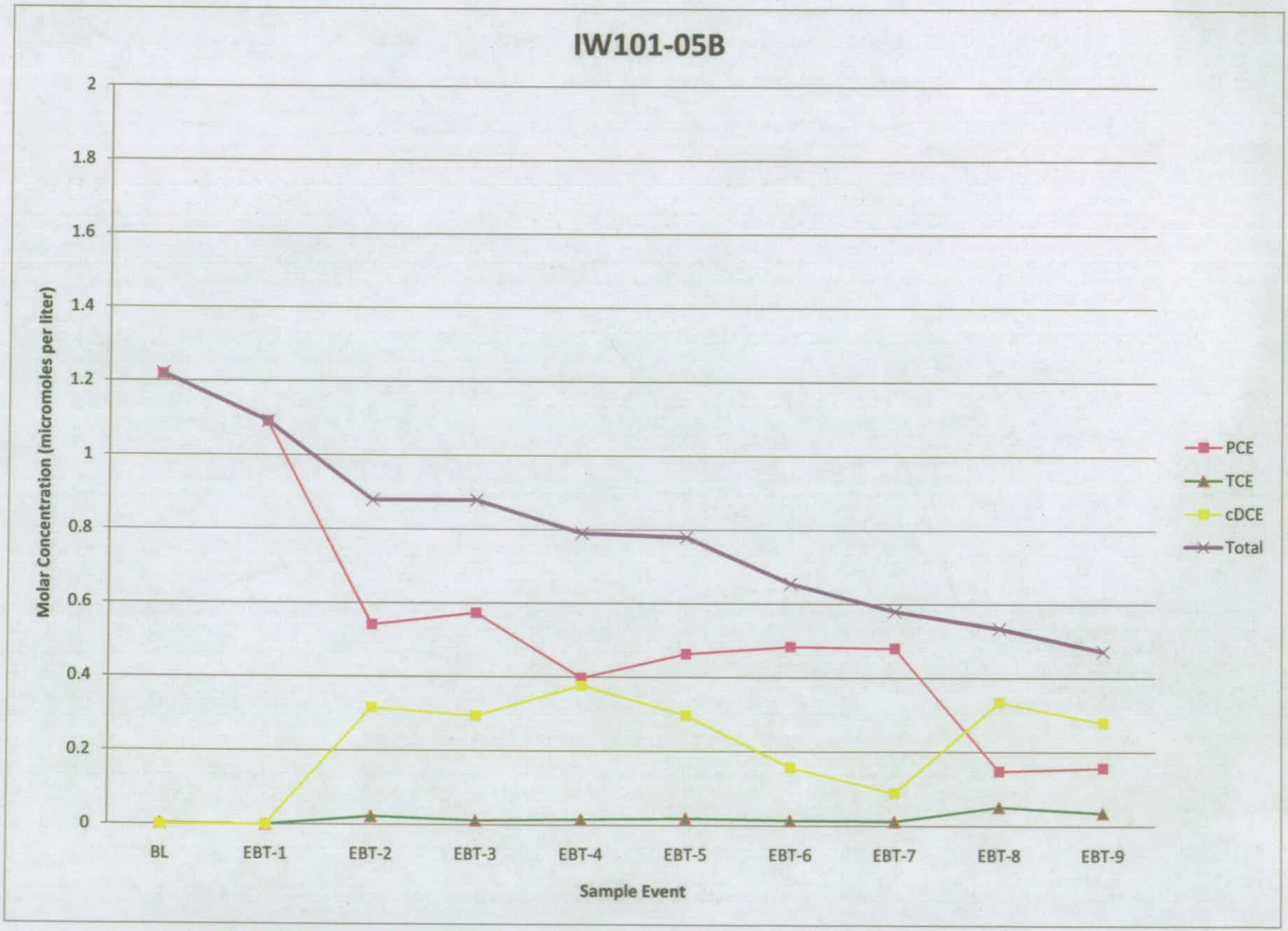

IW101-03C
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

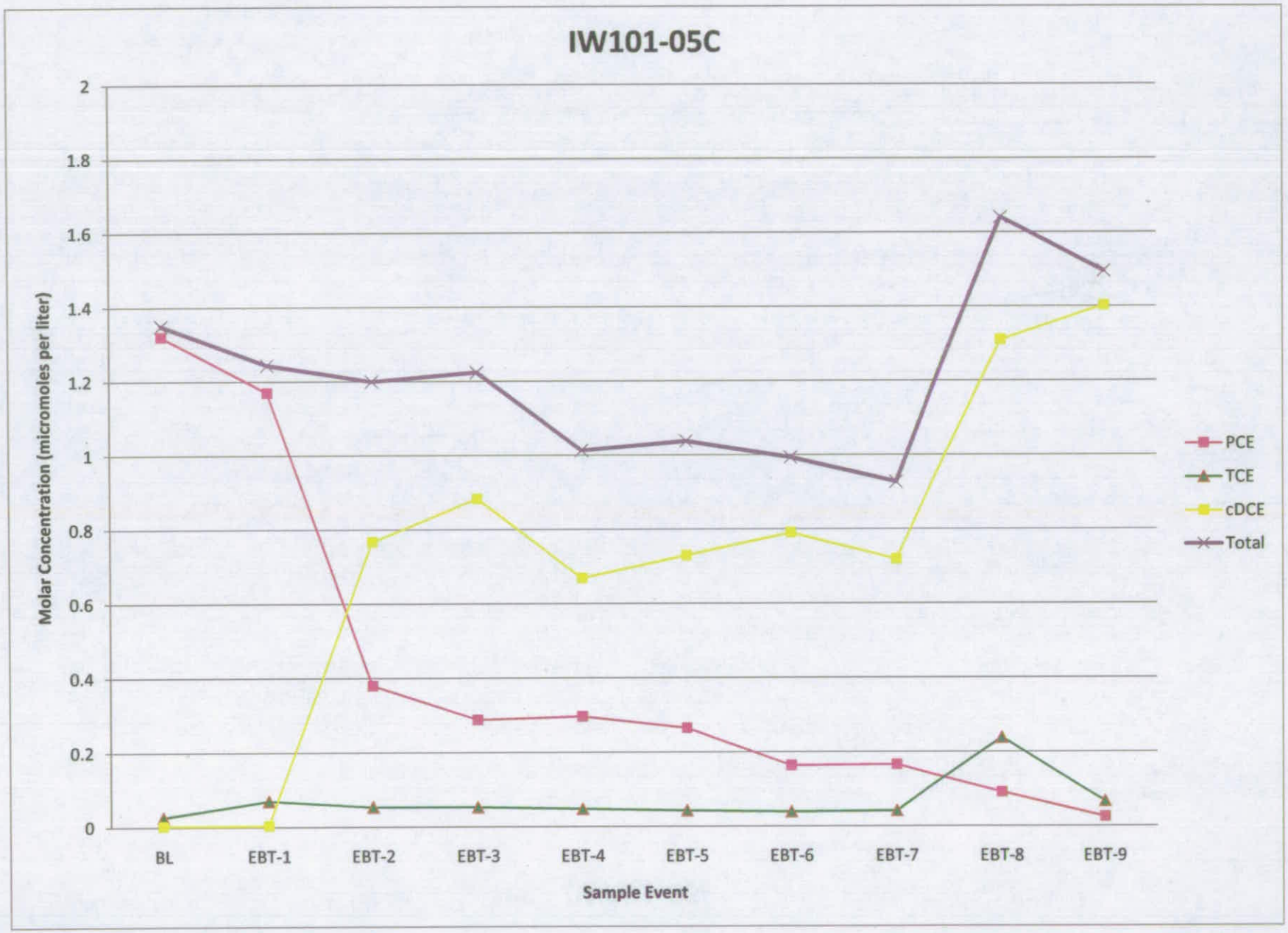

IW101-04A
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

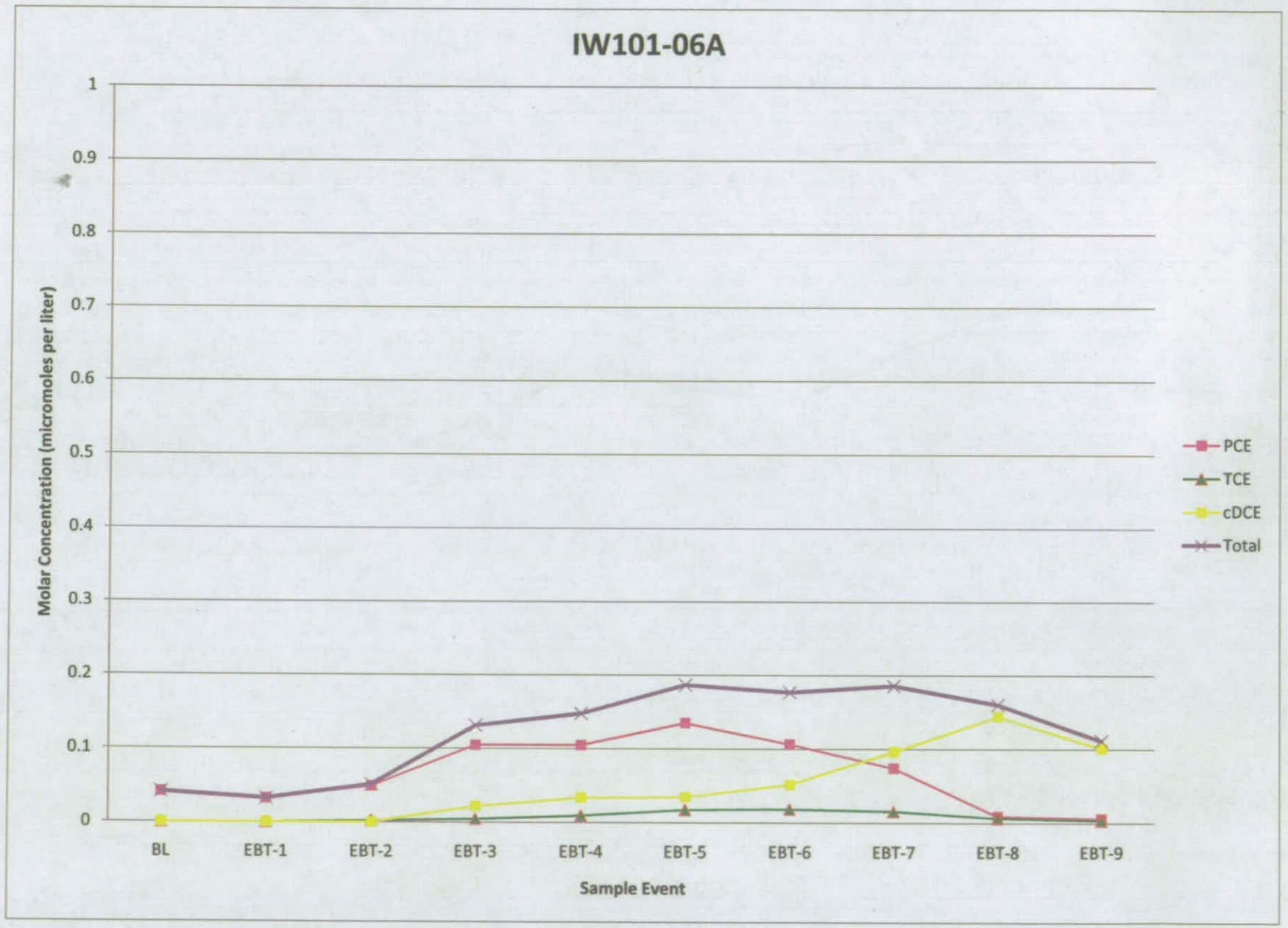

IW101-04B
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

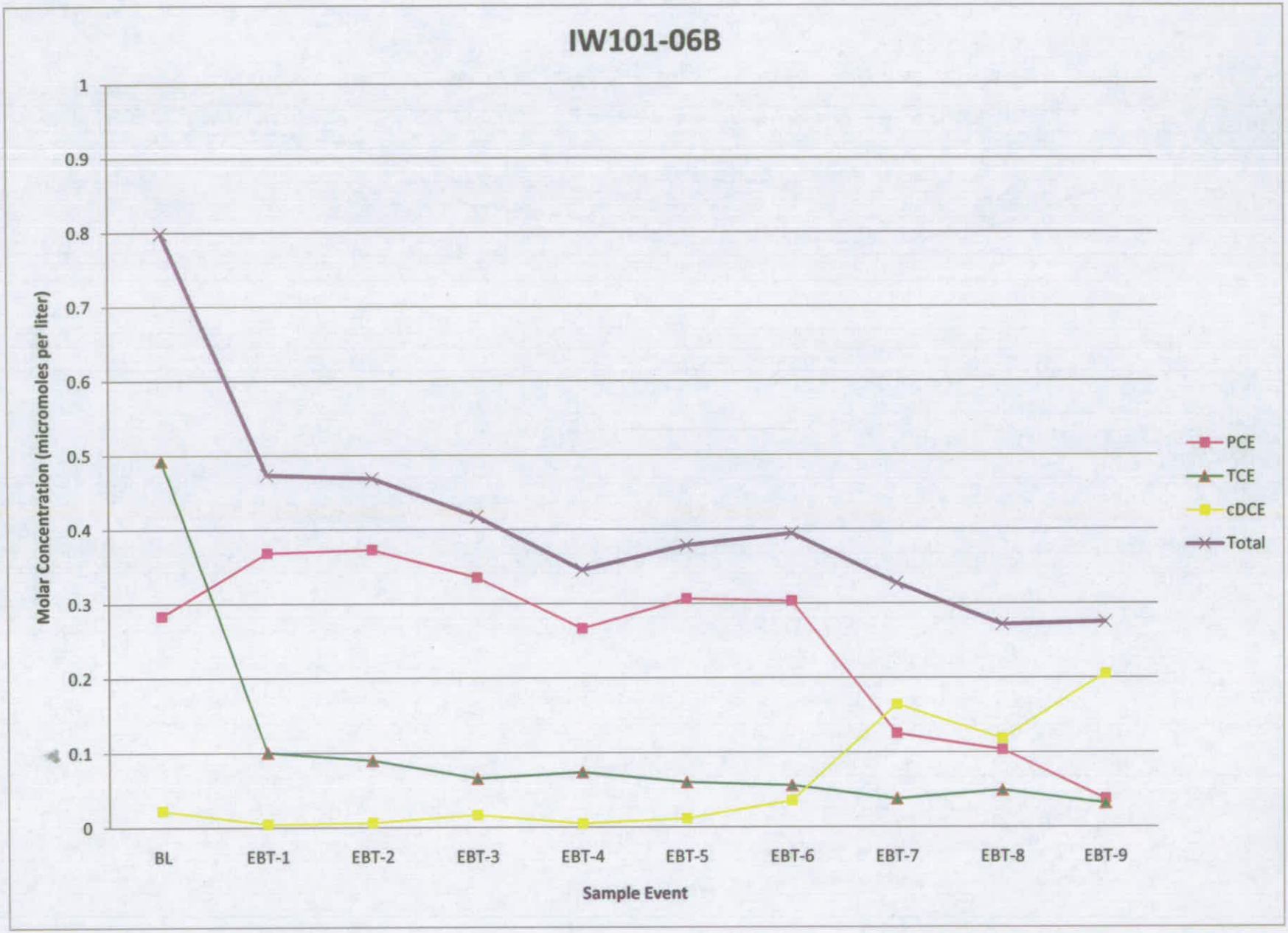

IW101-04C
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

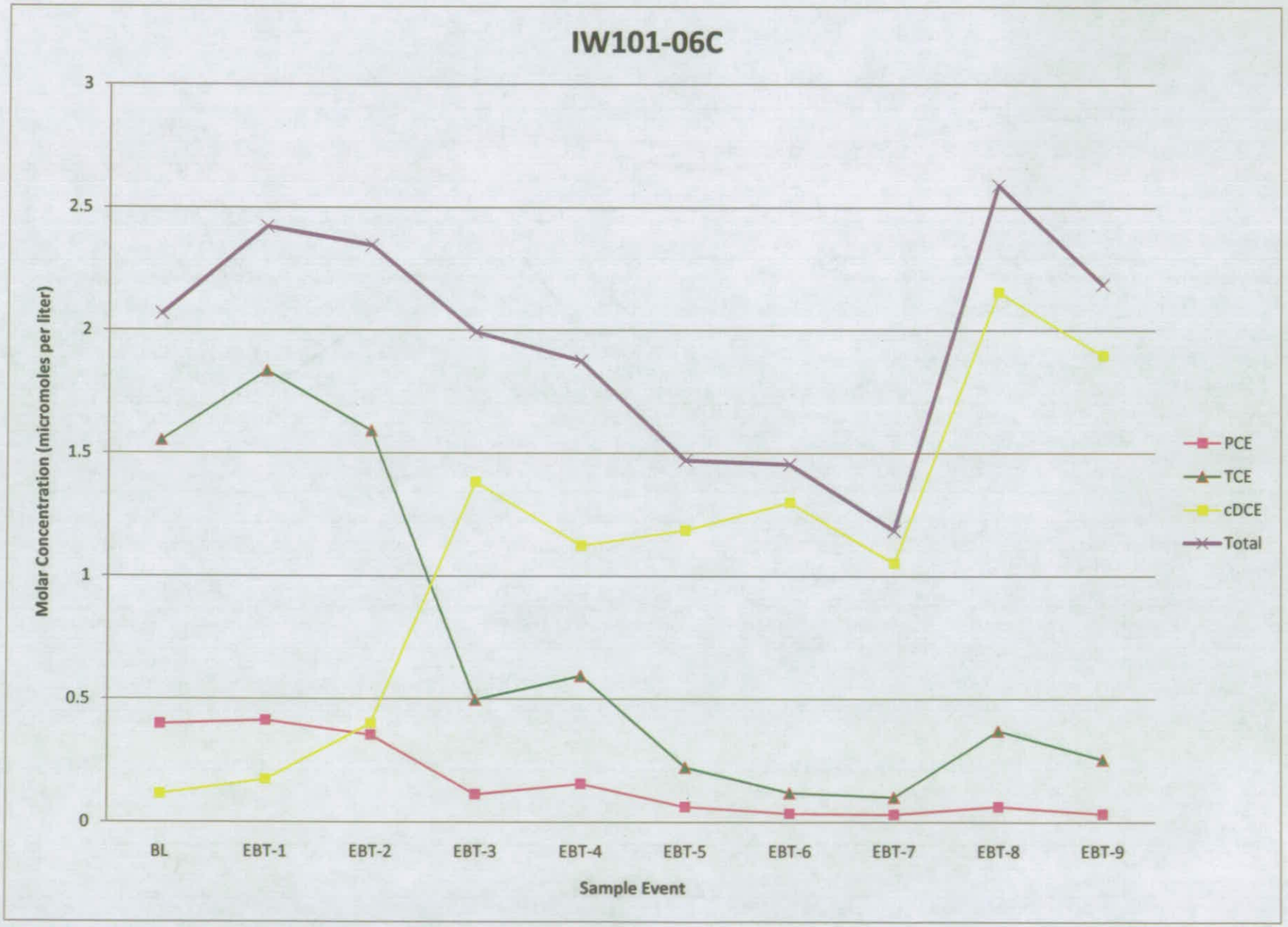

IW101-05A
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

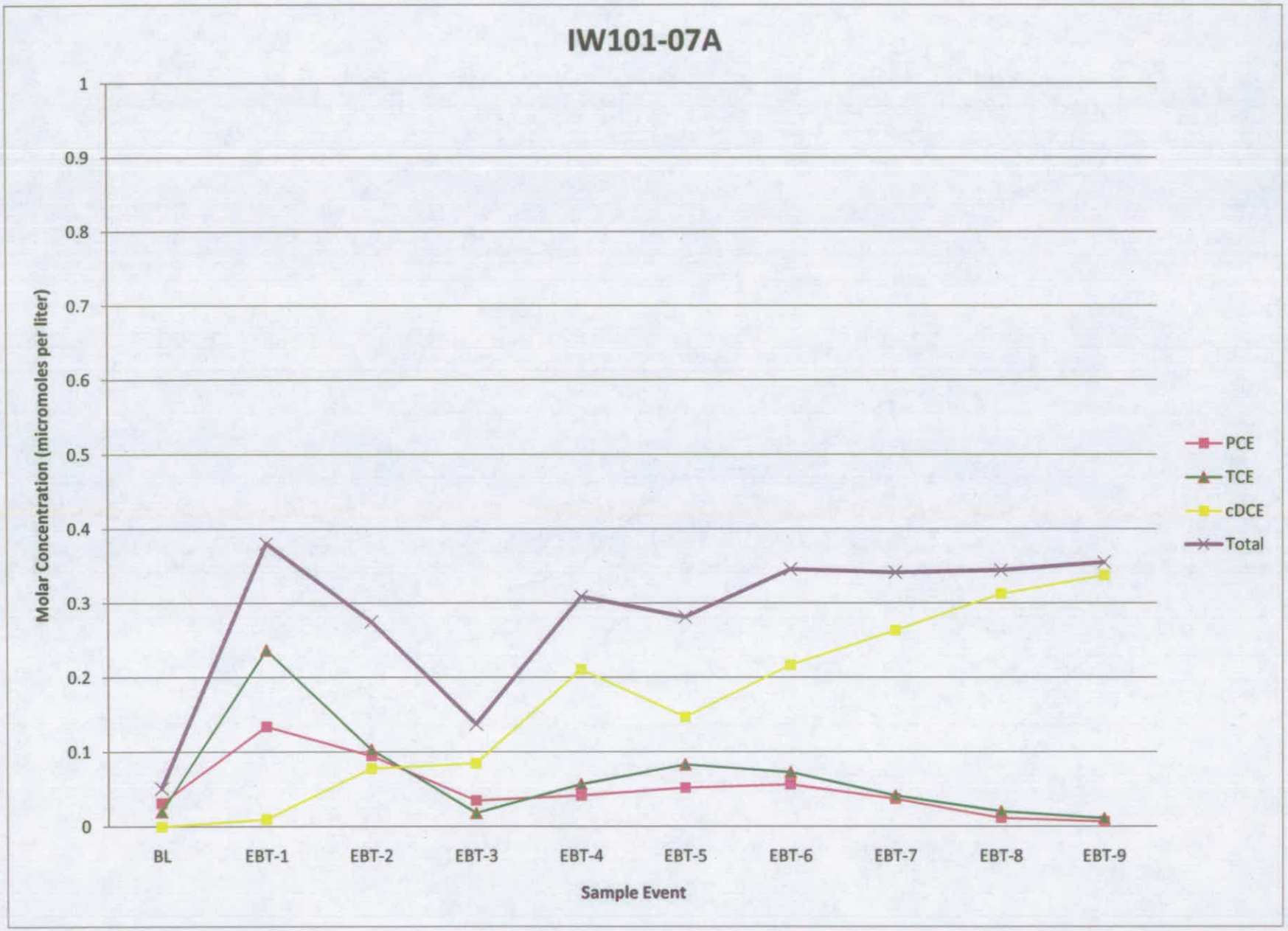

IW101-05B
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

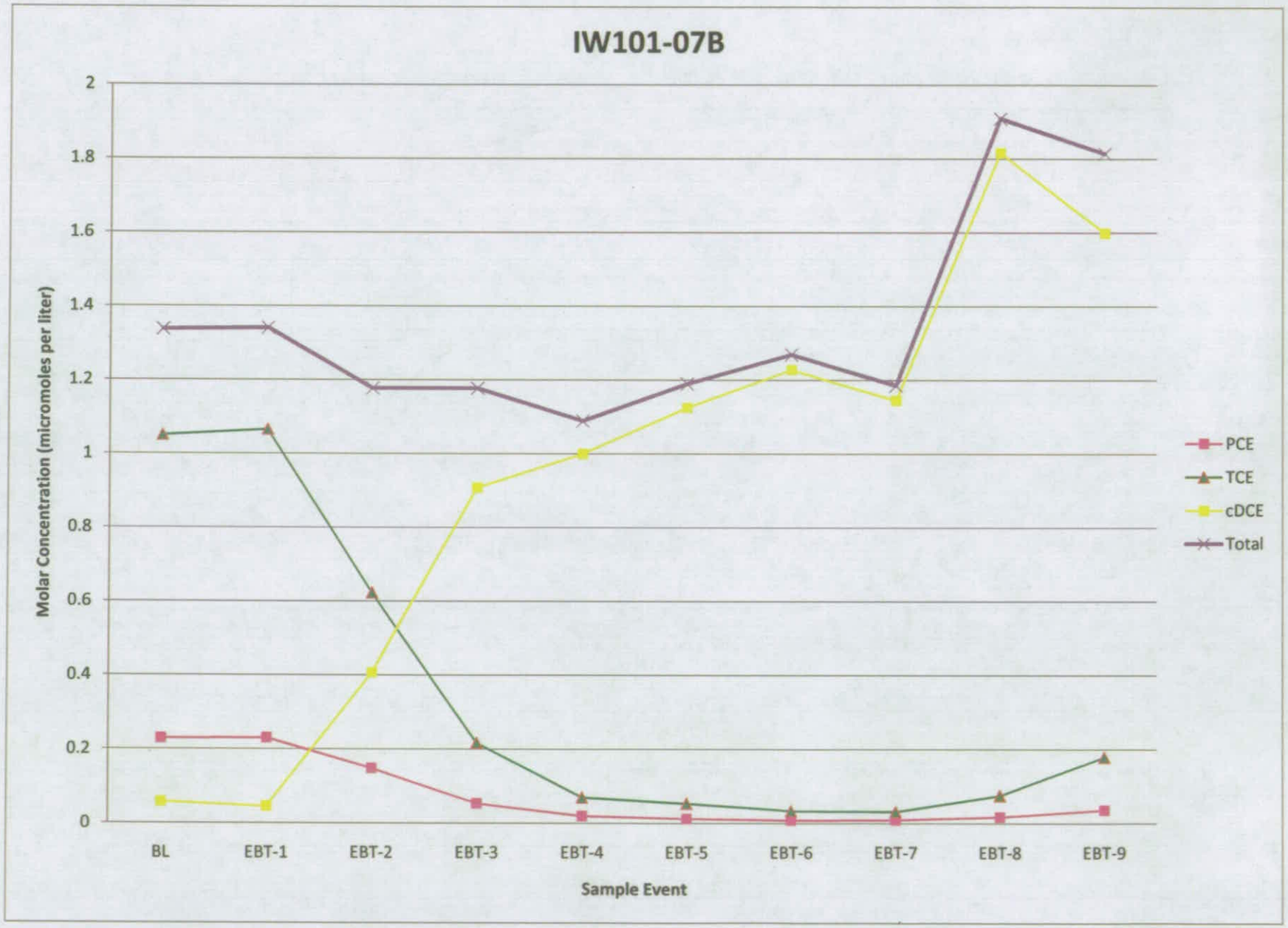

IW101-05C
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

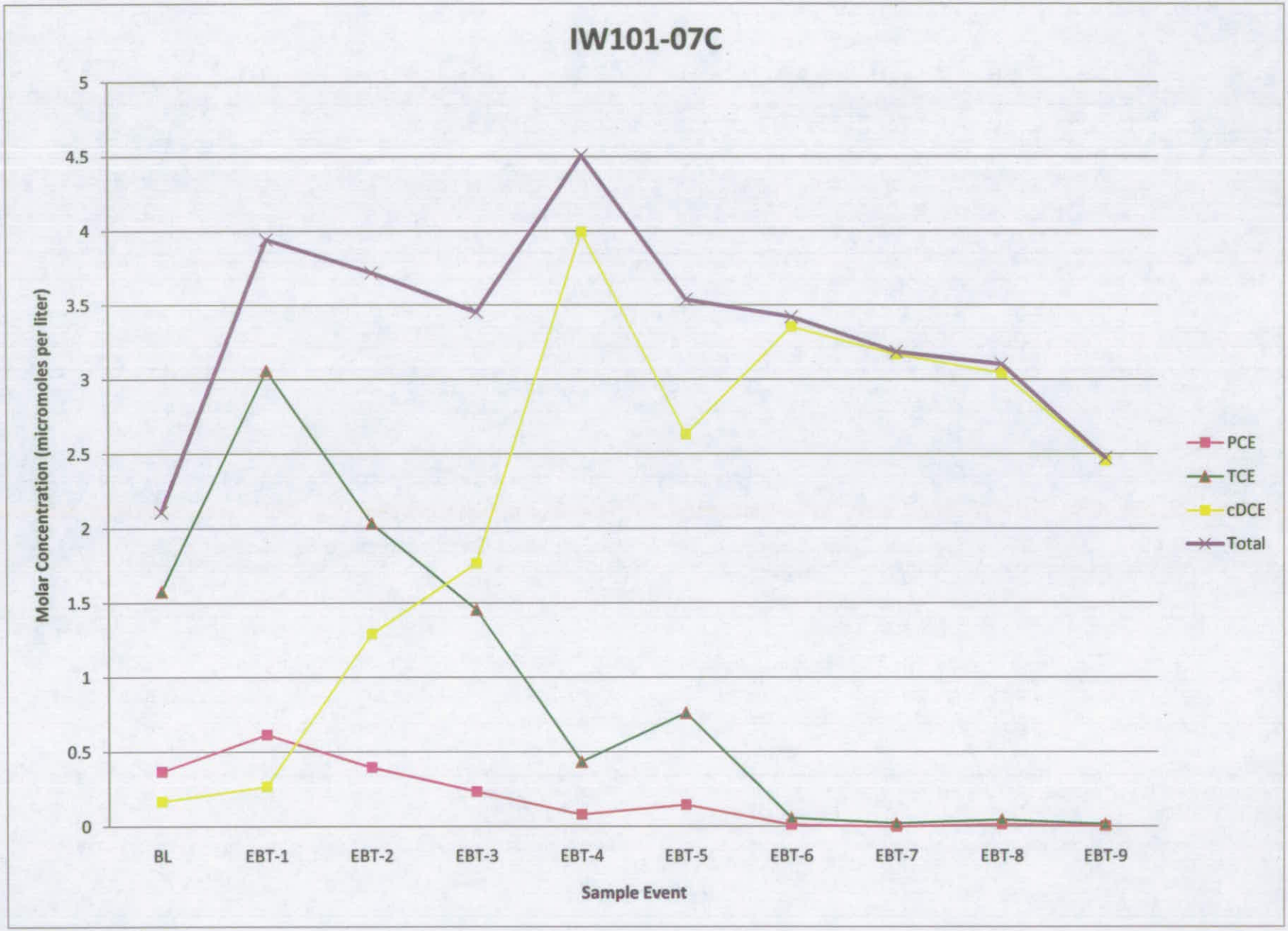

IW101-06A
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

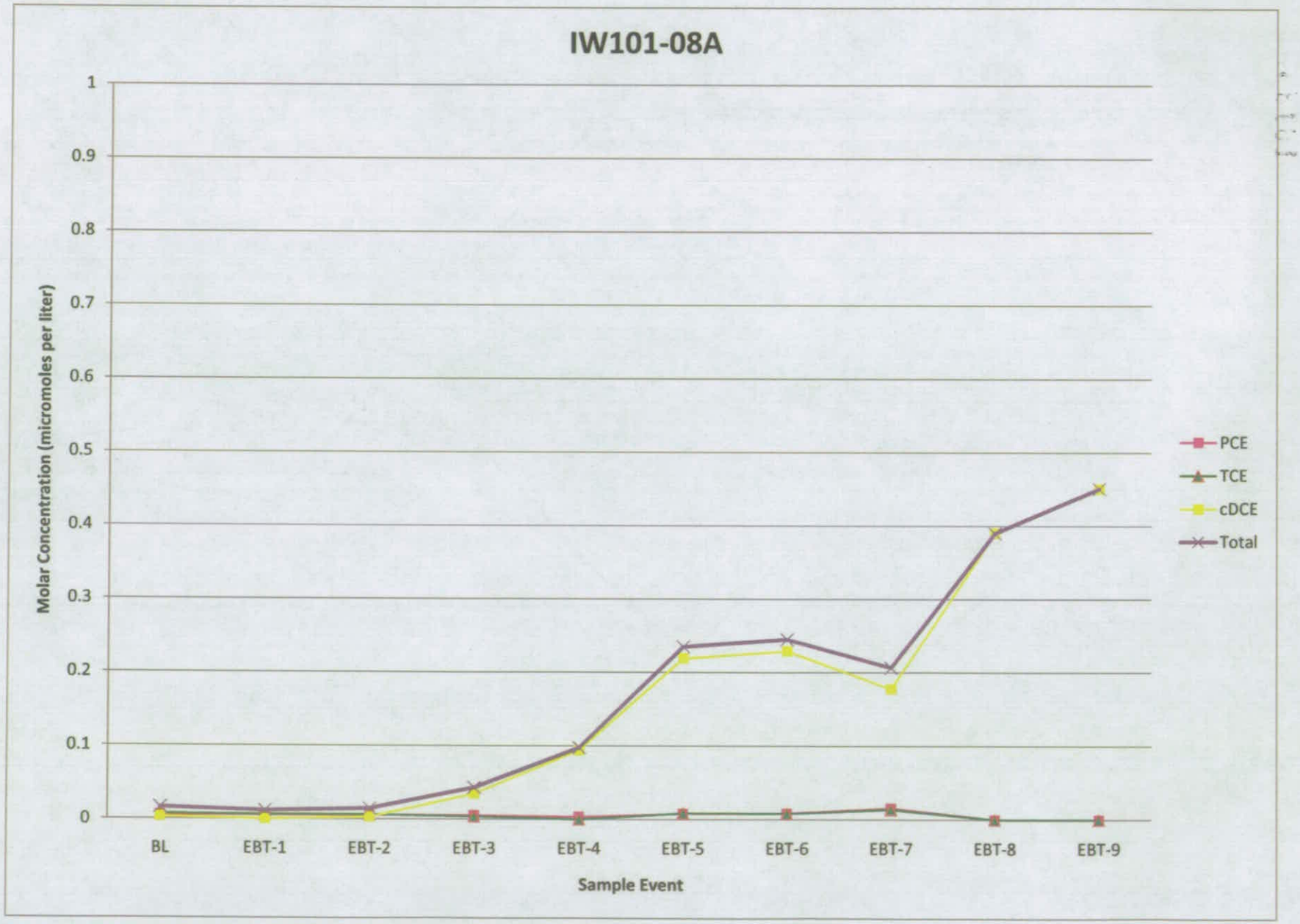

IW101-06B
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

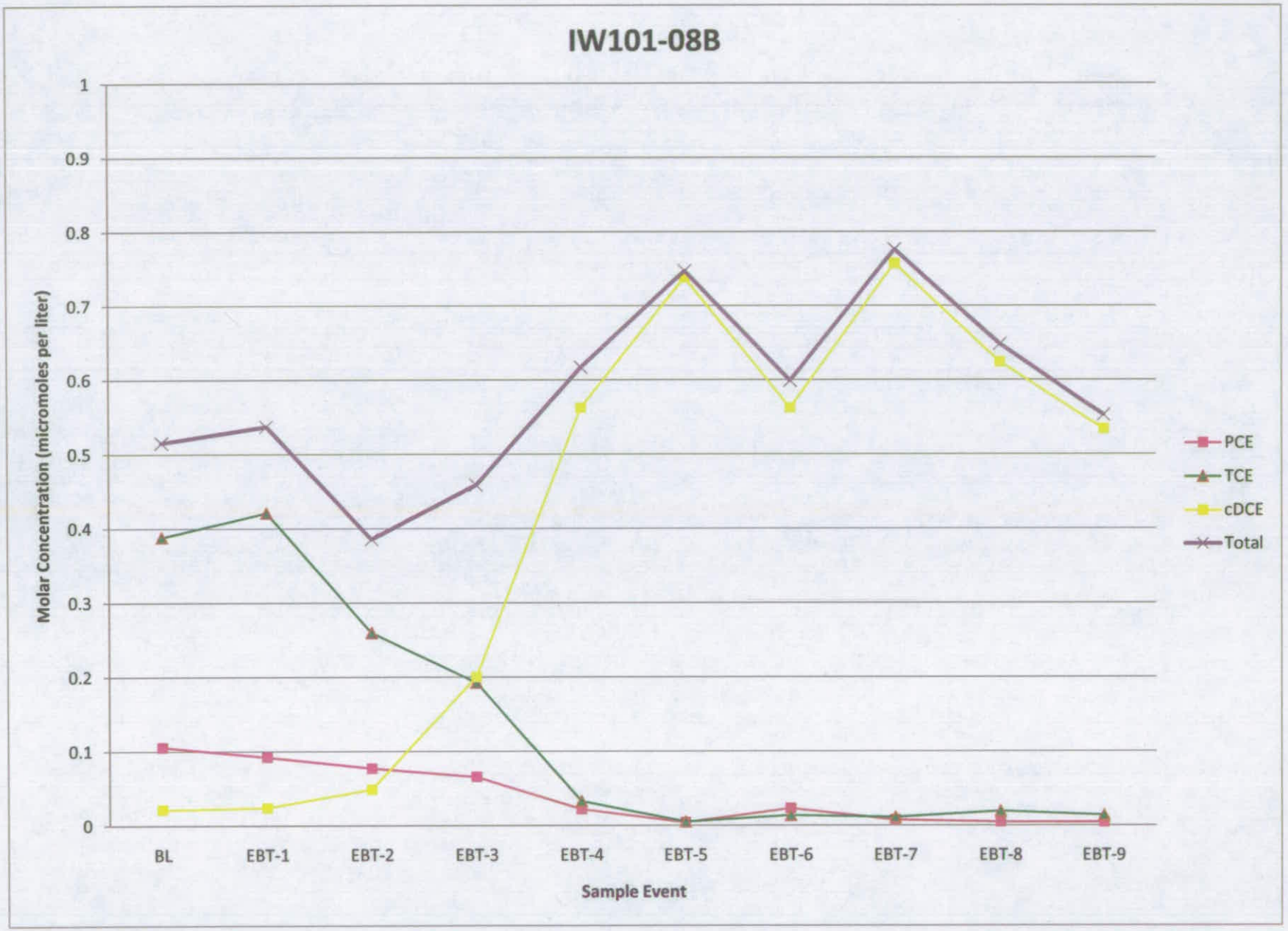

IW101-06C
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

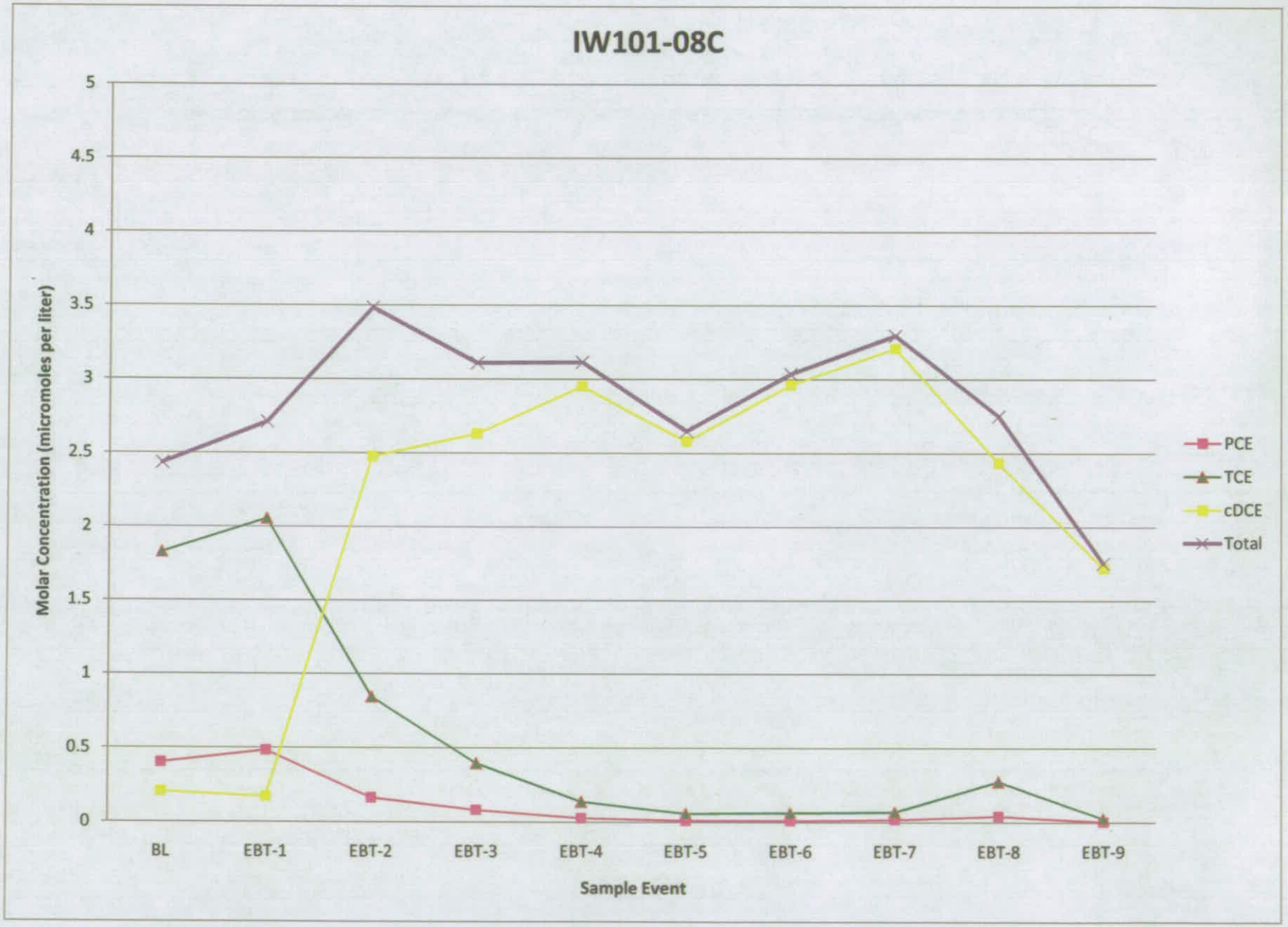

IW101-07A
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

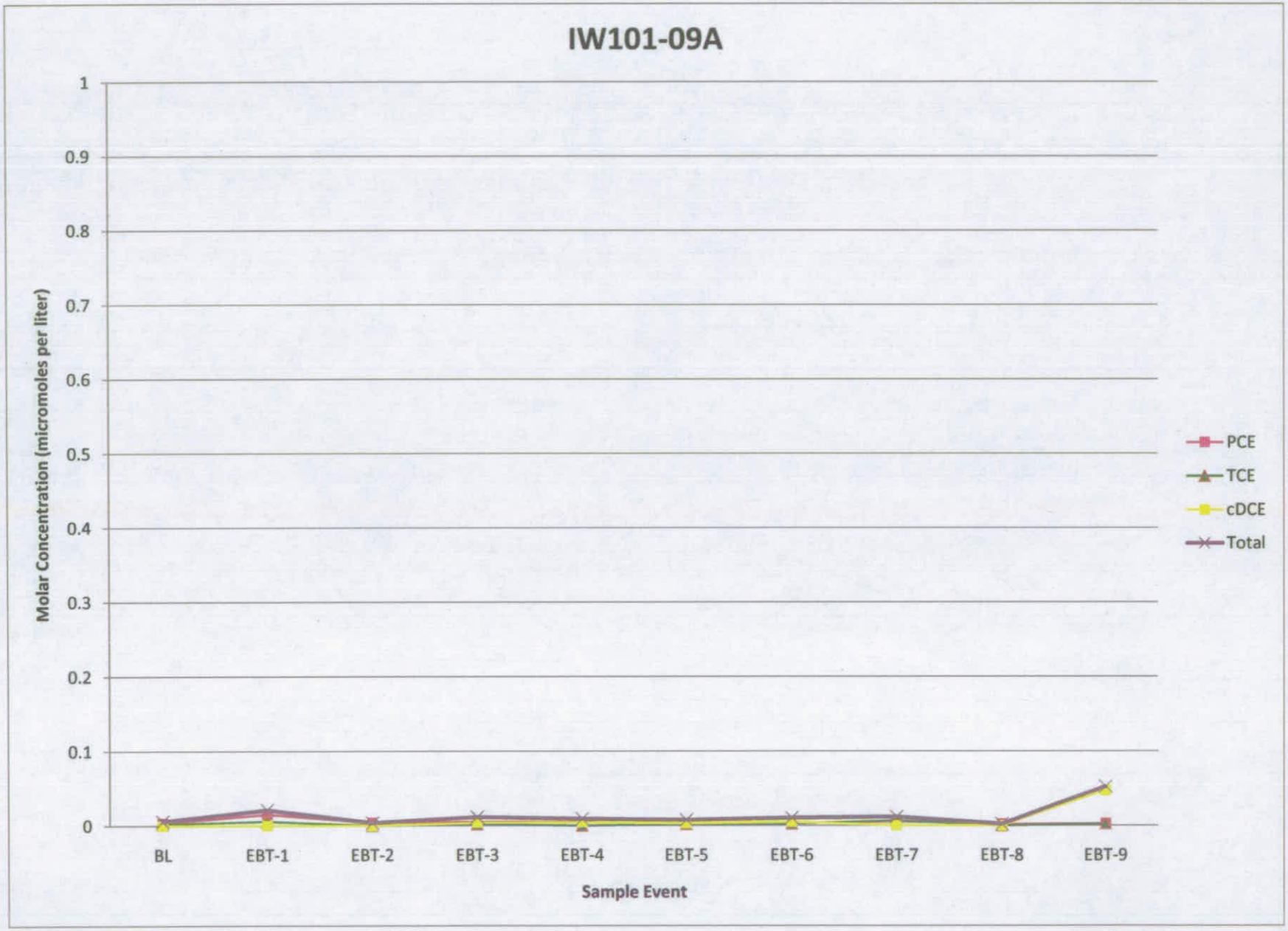

IW101-07B
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

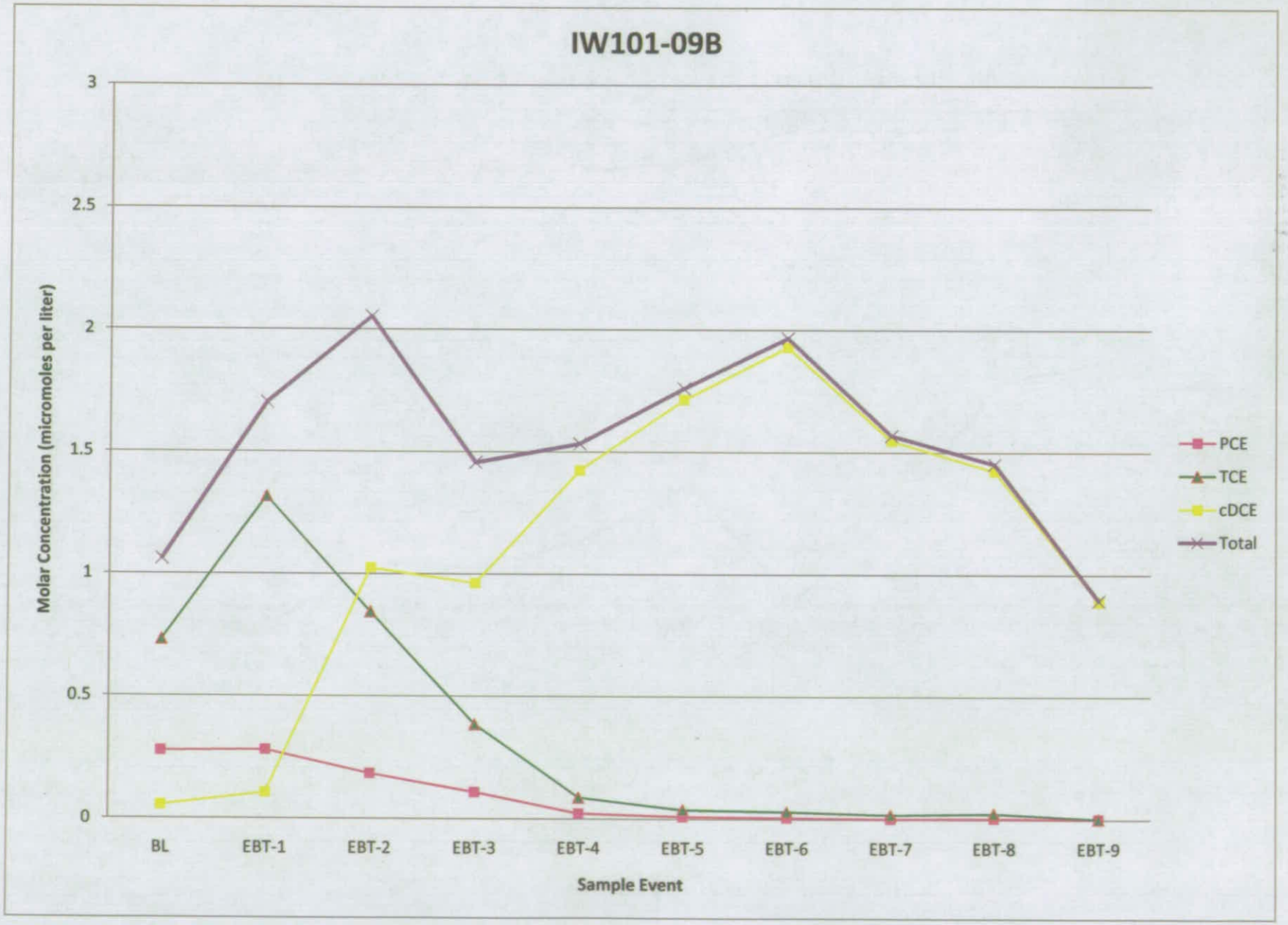

IW101-07C
Molar Concentration (micromoles per liter)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

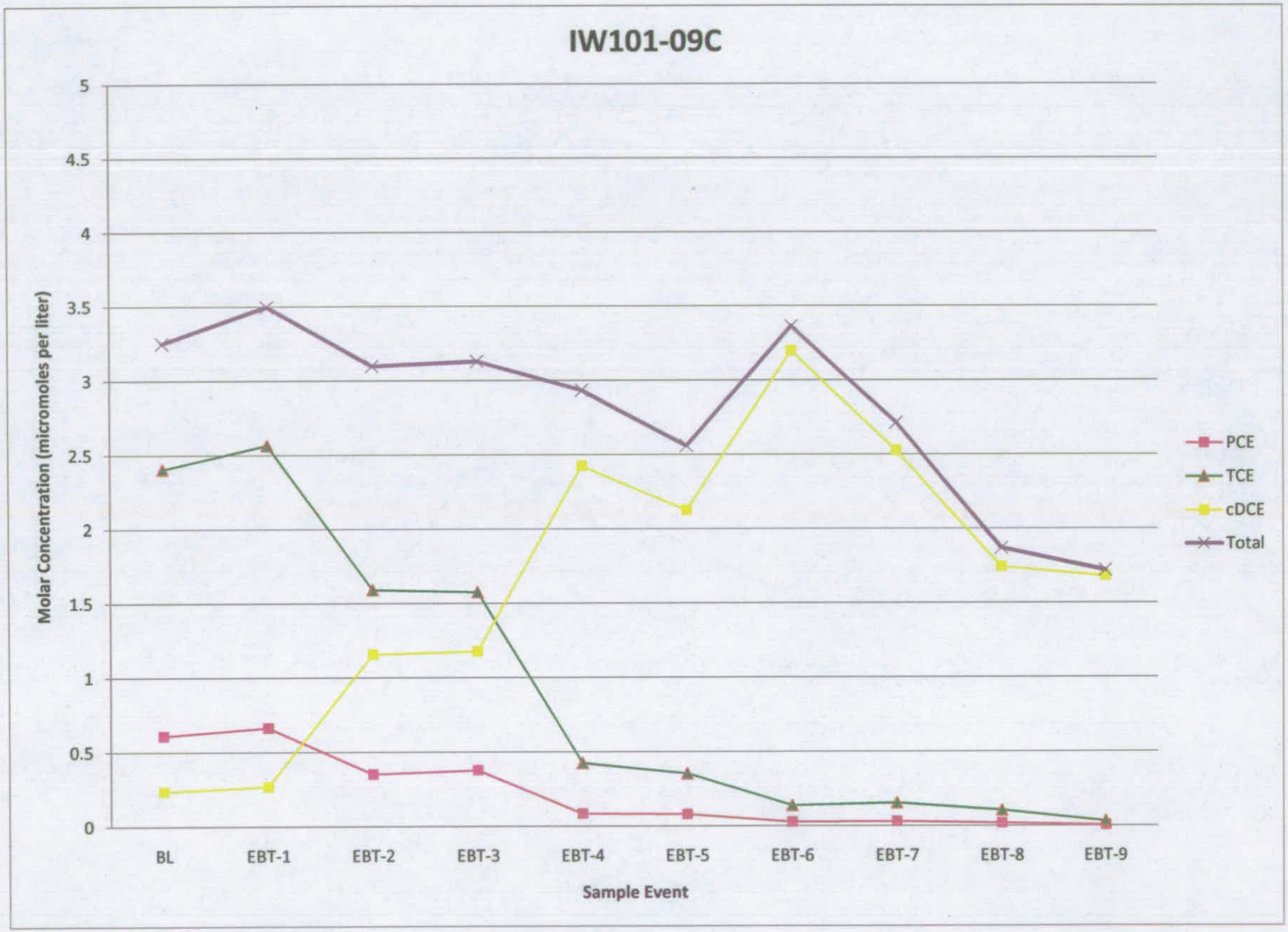

IW101-08A
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

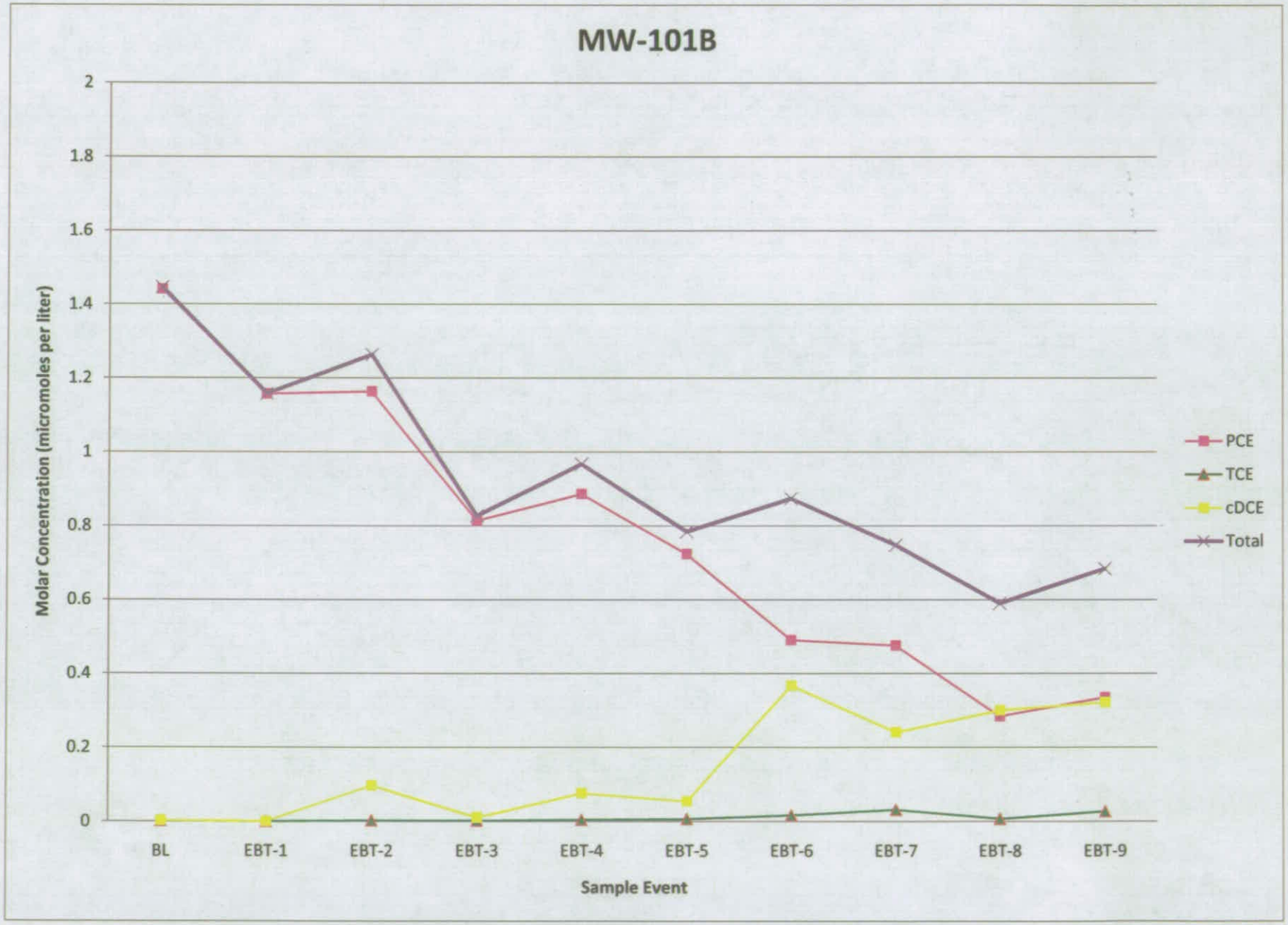

IW101-08B
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

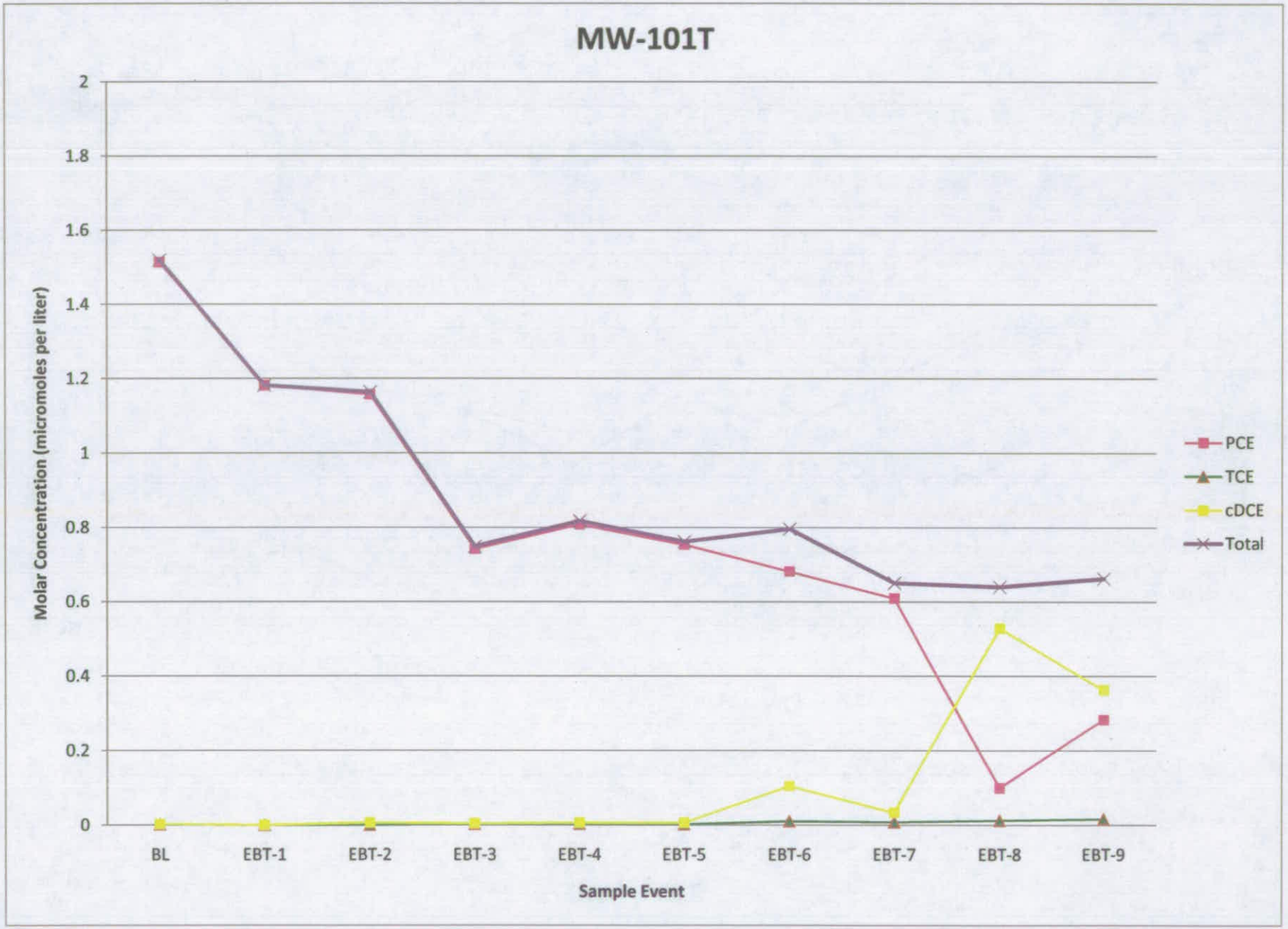

IW101-08C
Molar Concentration (micromoles per liter)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

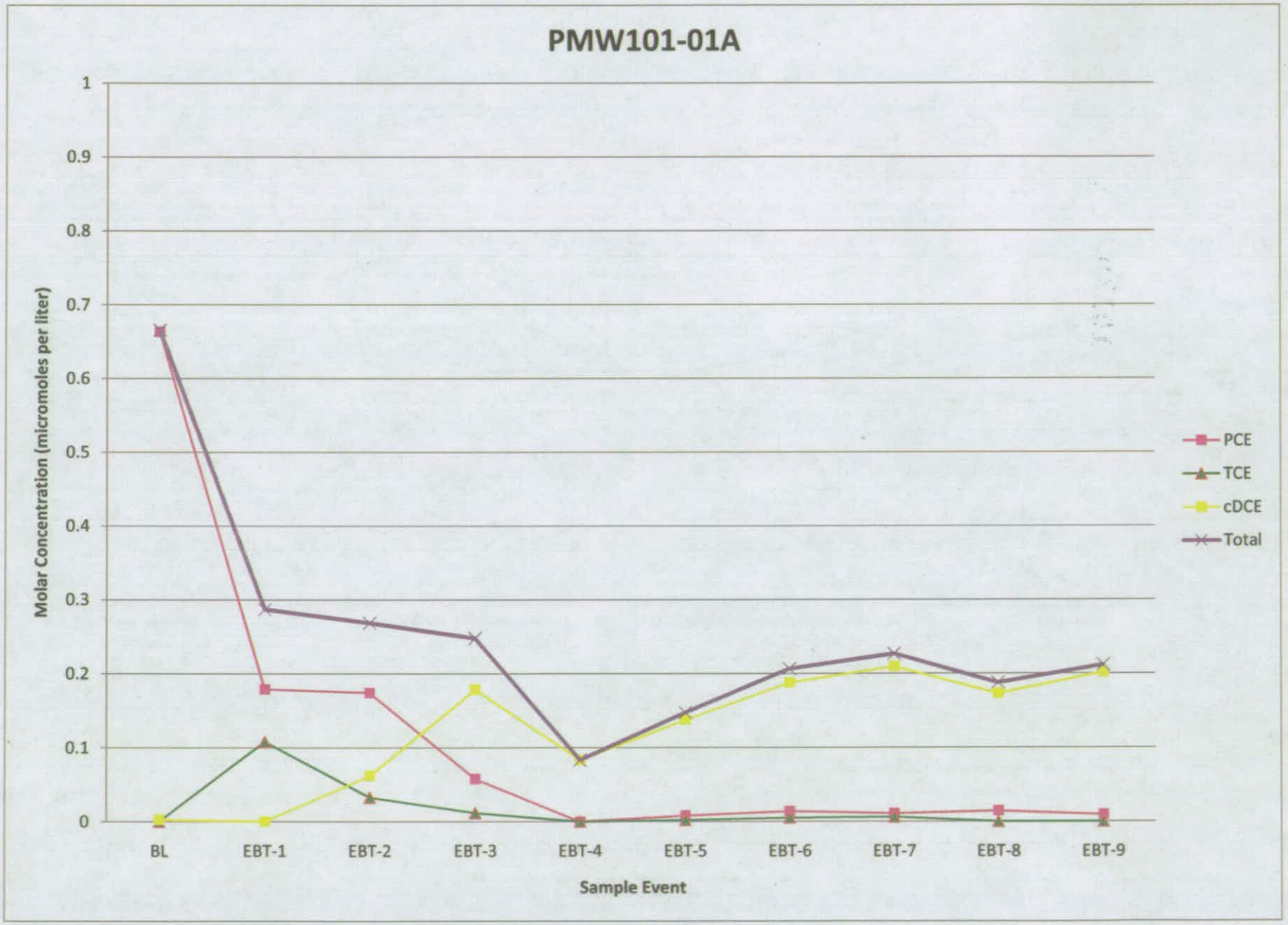

IW101-09A
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

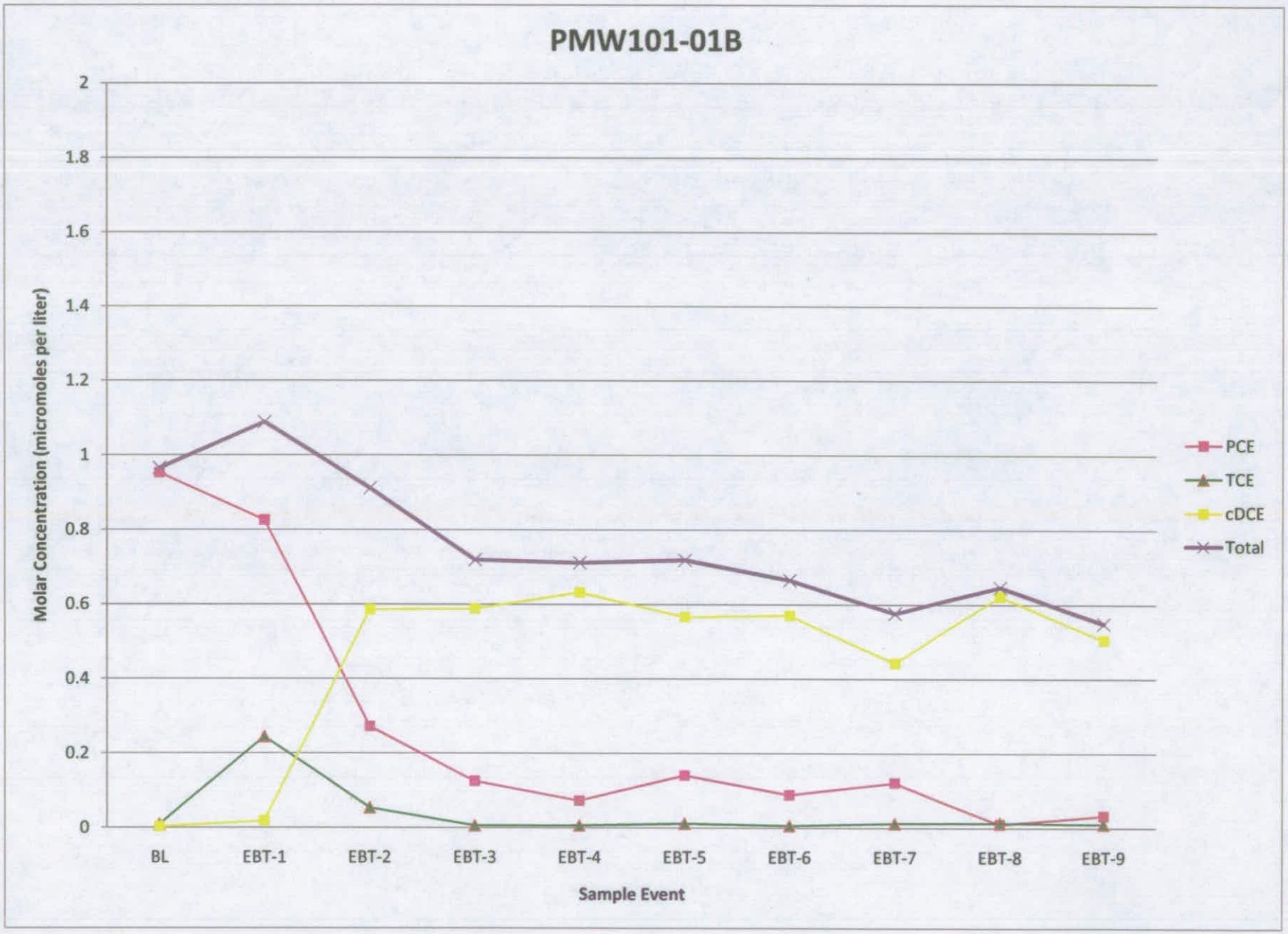

IW101-09B
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

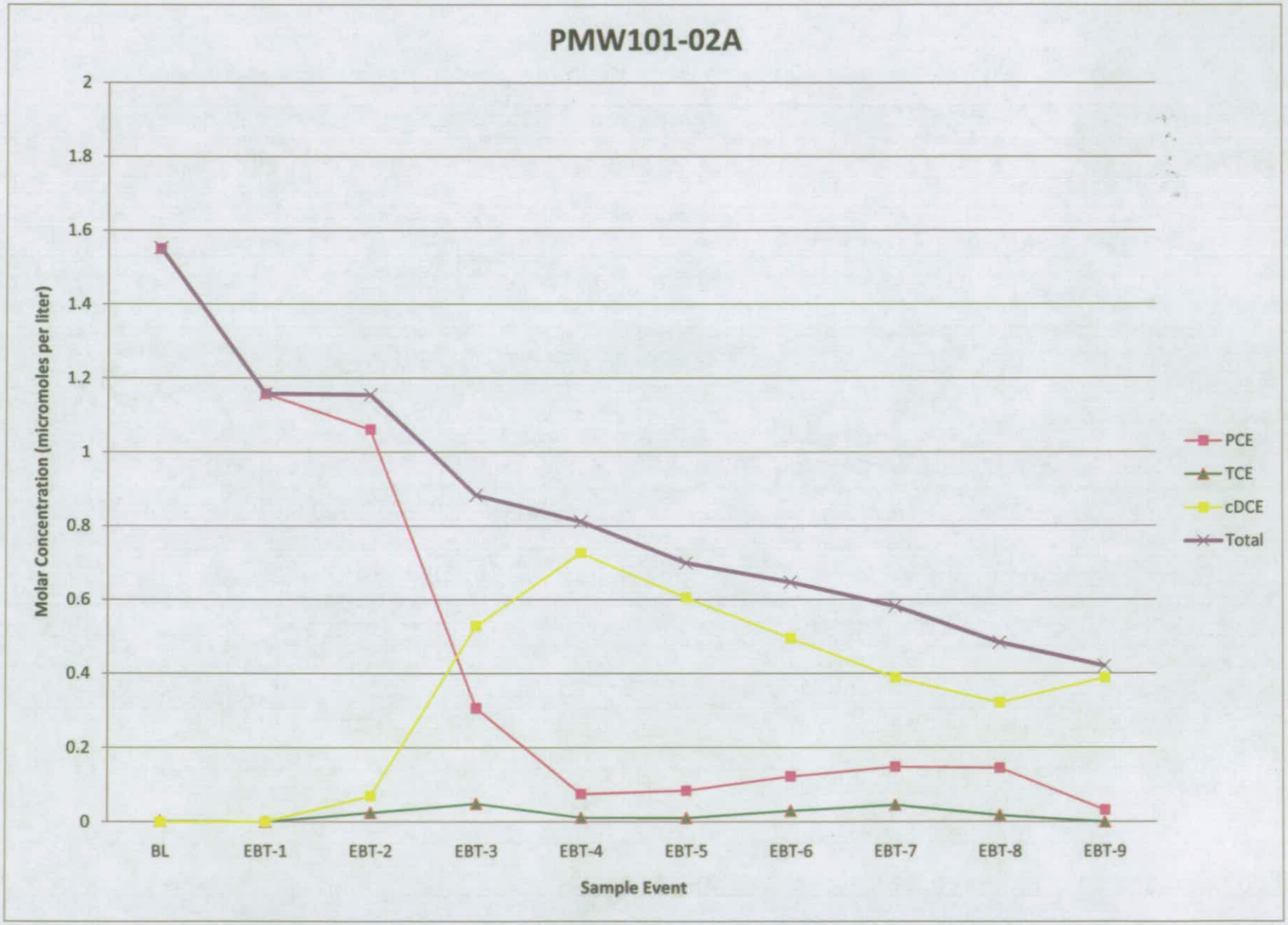

IW101-09C
Molar Concentration (micromoles per liter)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

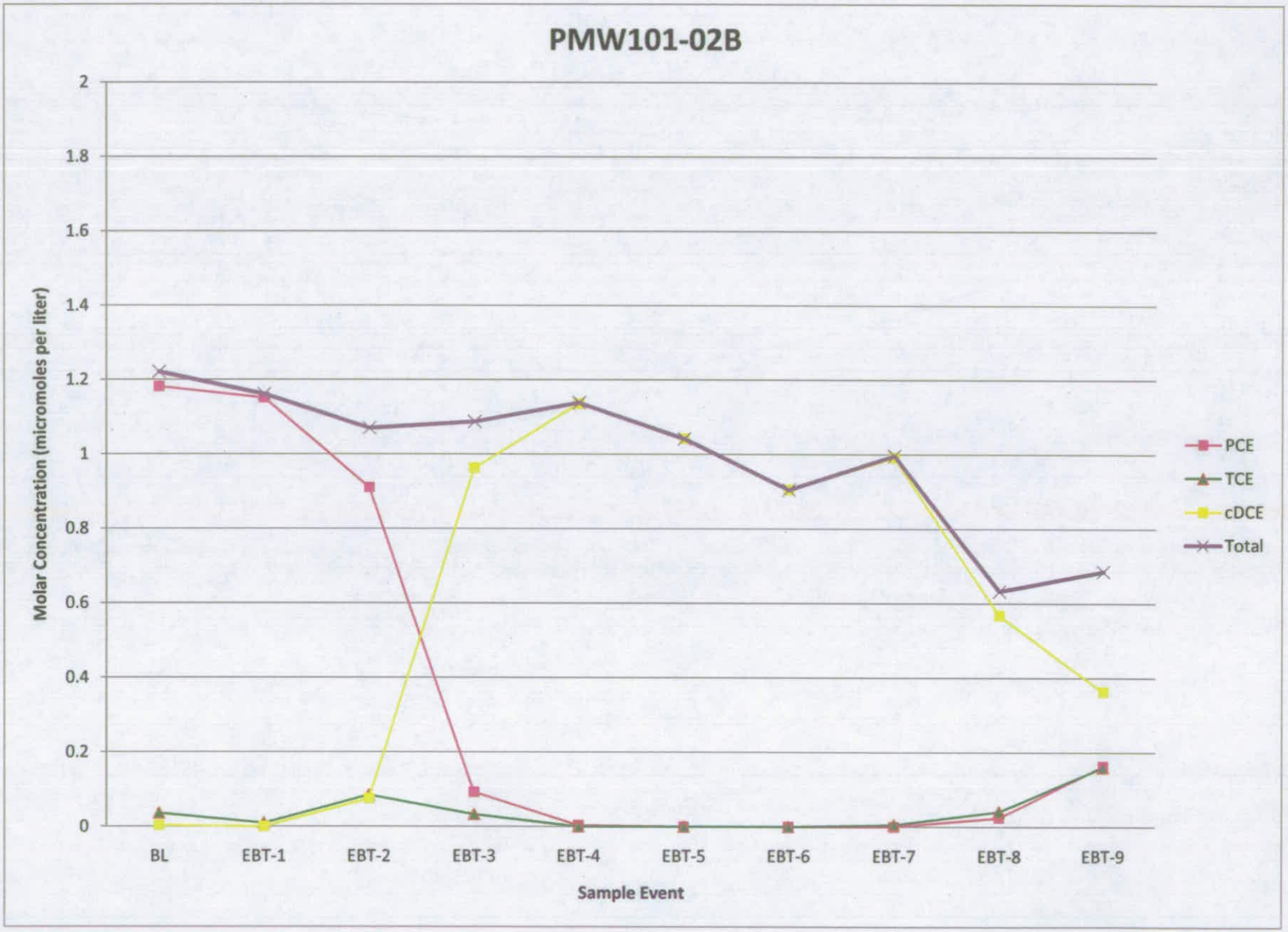

MW-101B
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

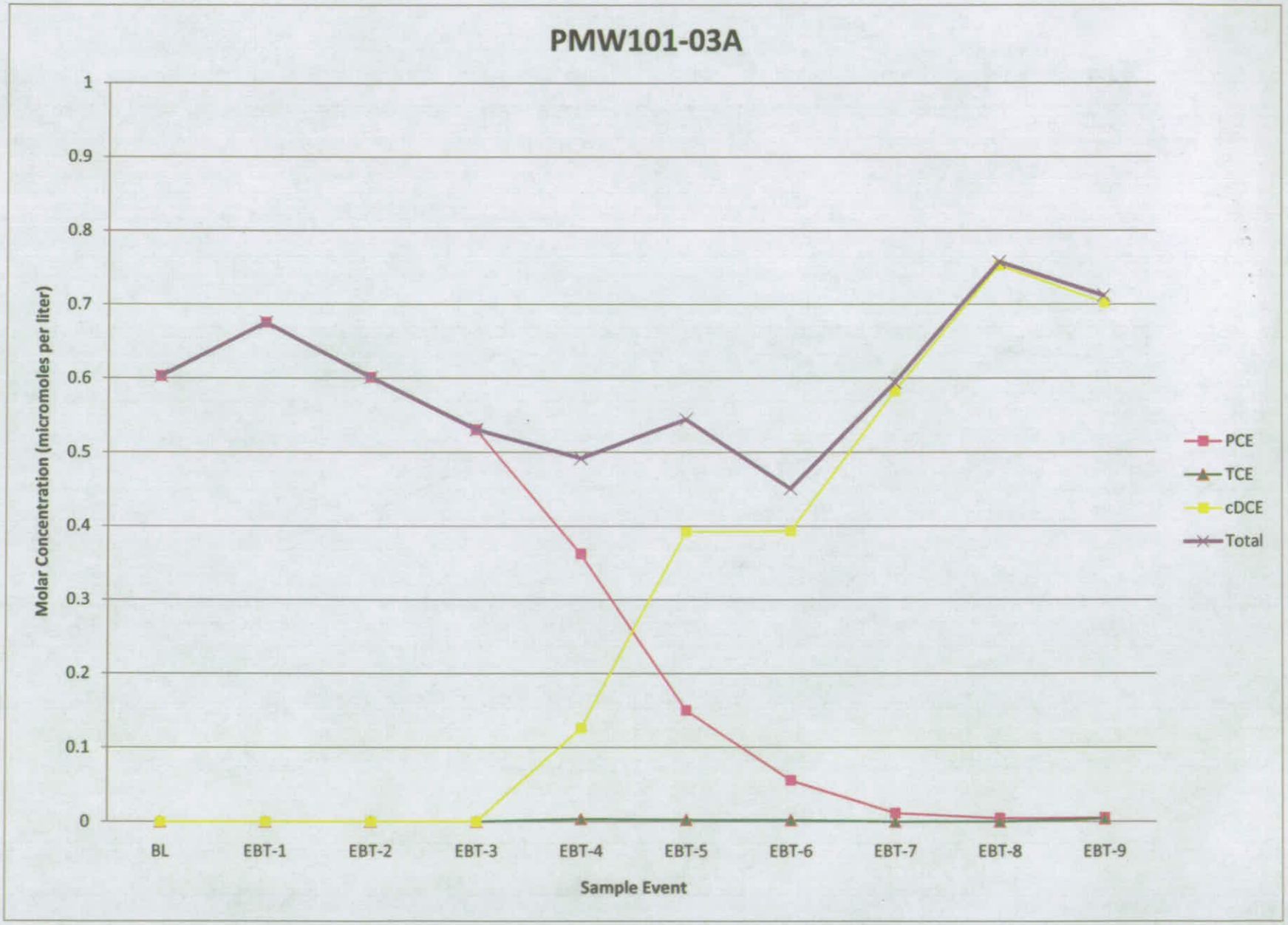

MW-101T
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

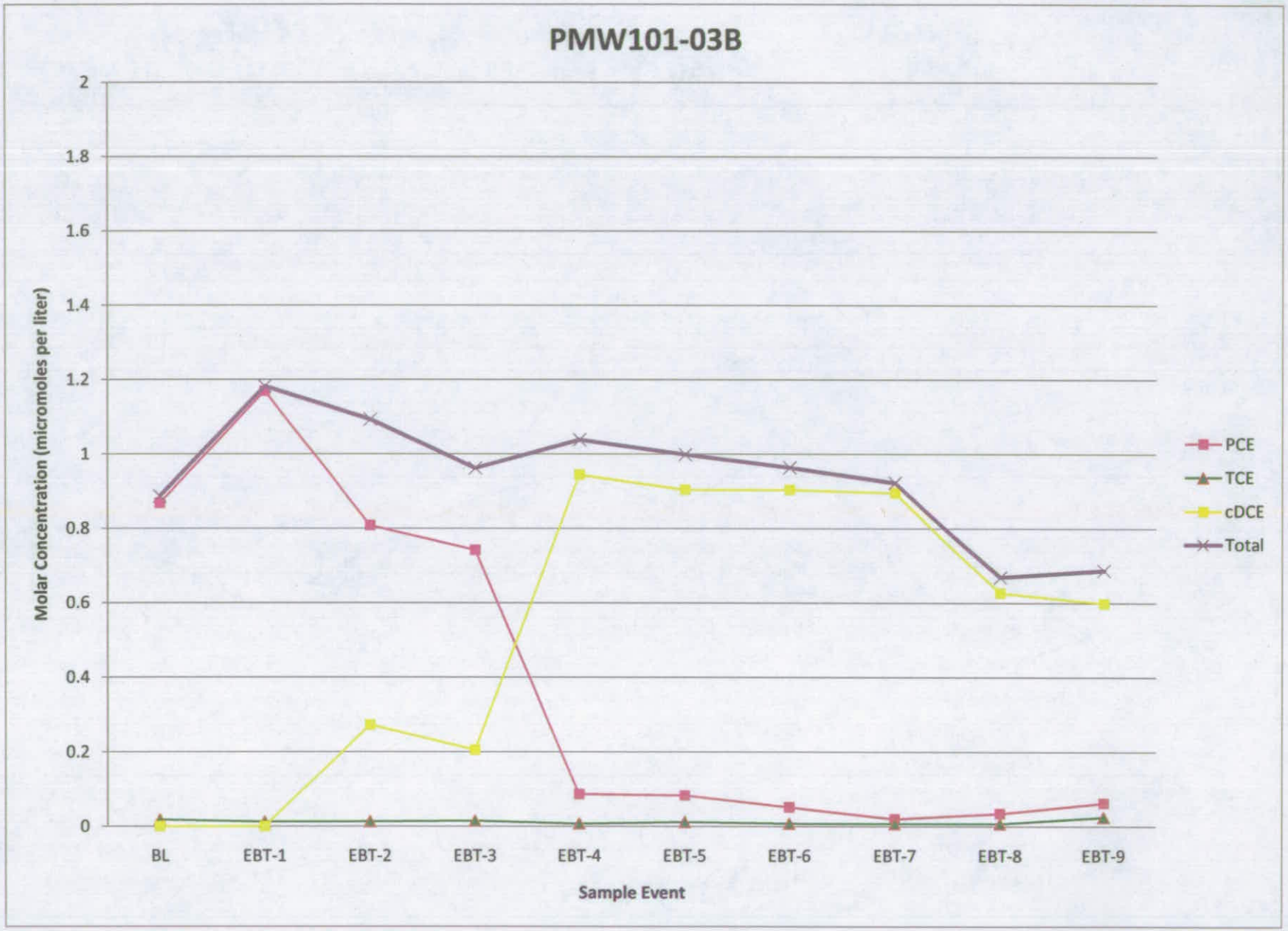

PMW101-01A
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

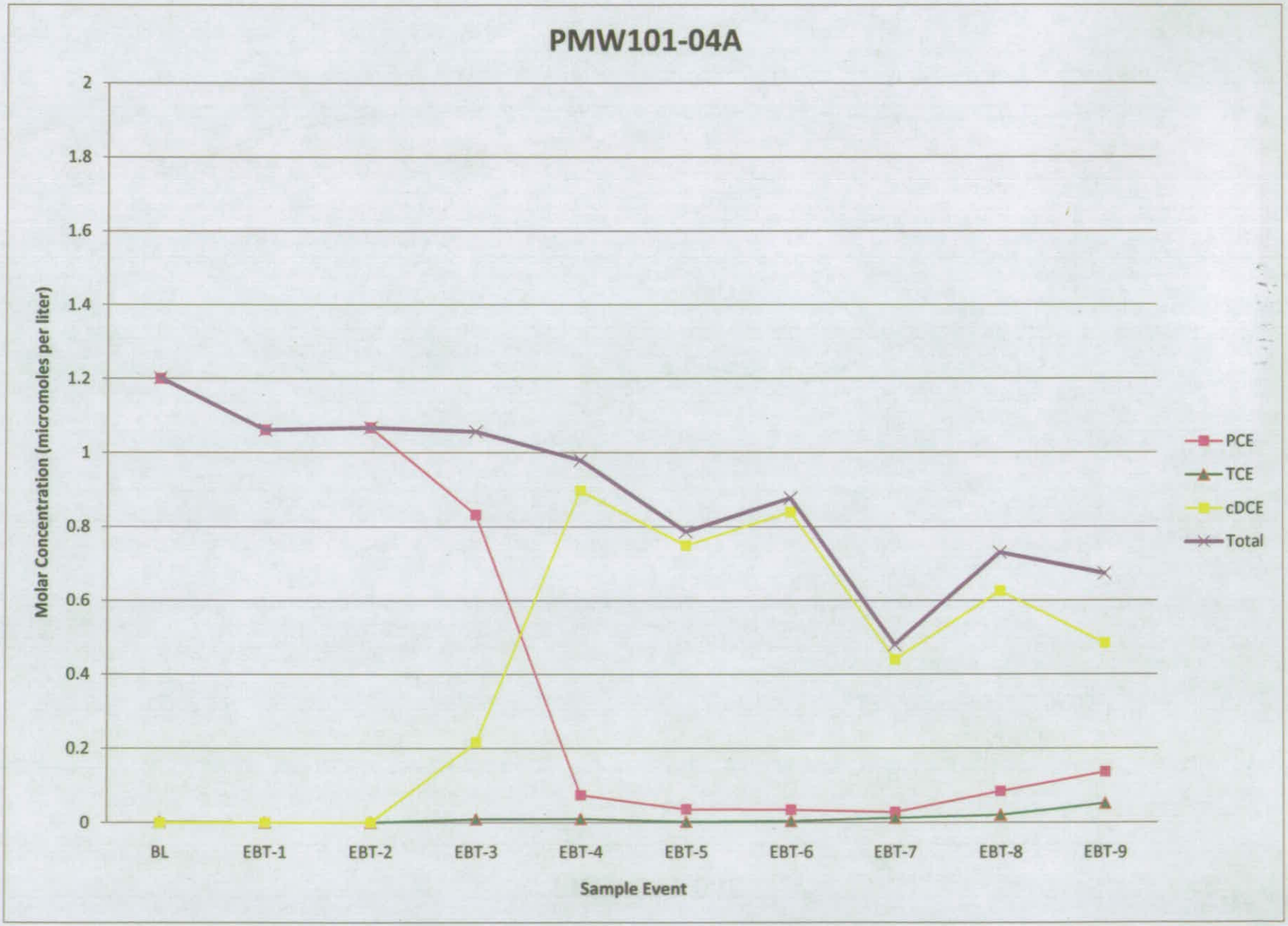

PMW101-01B
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

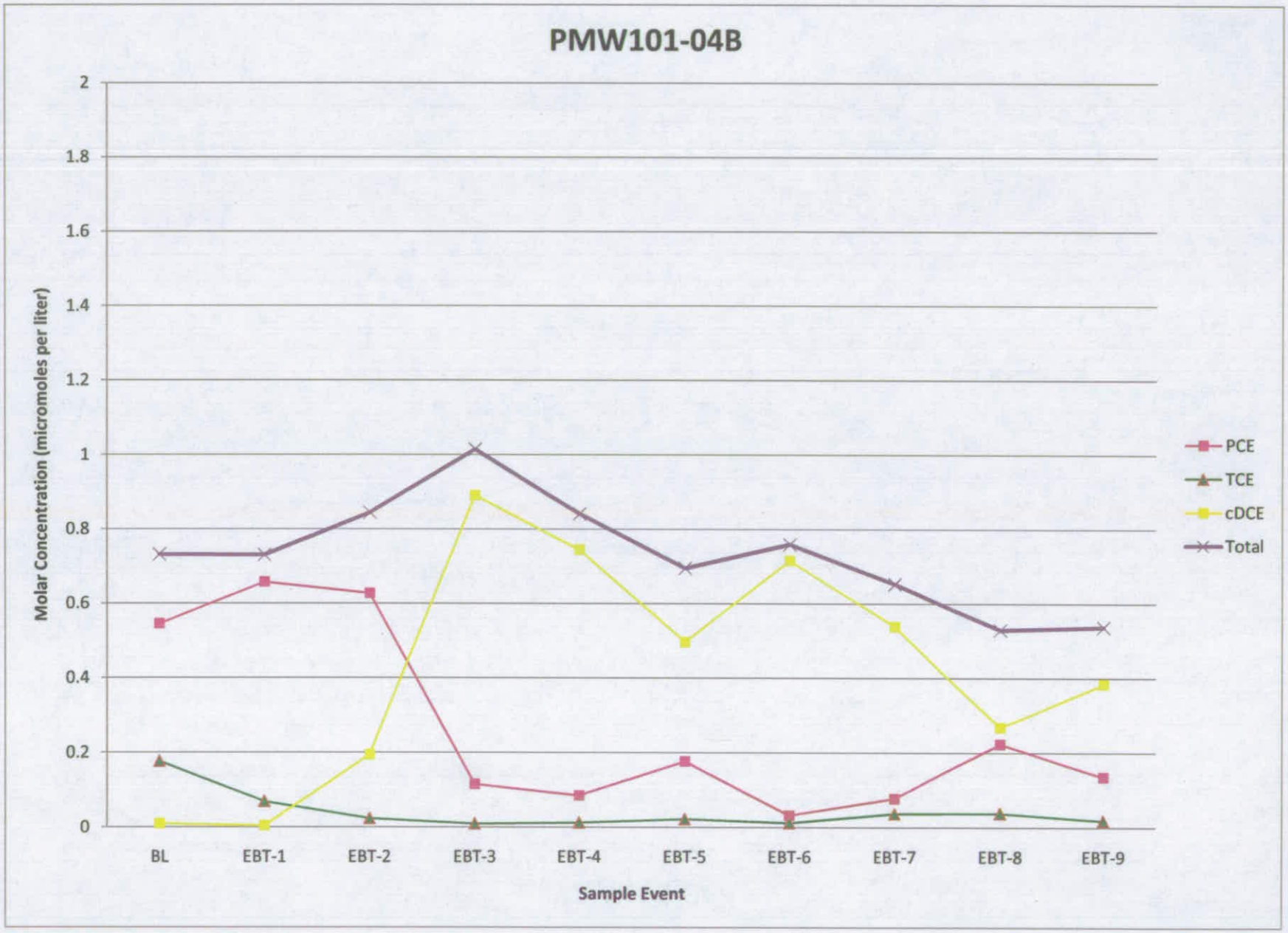

PMW101-02A
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

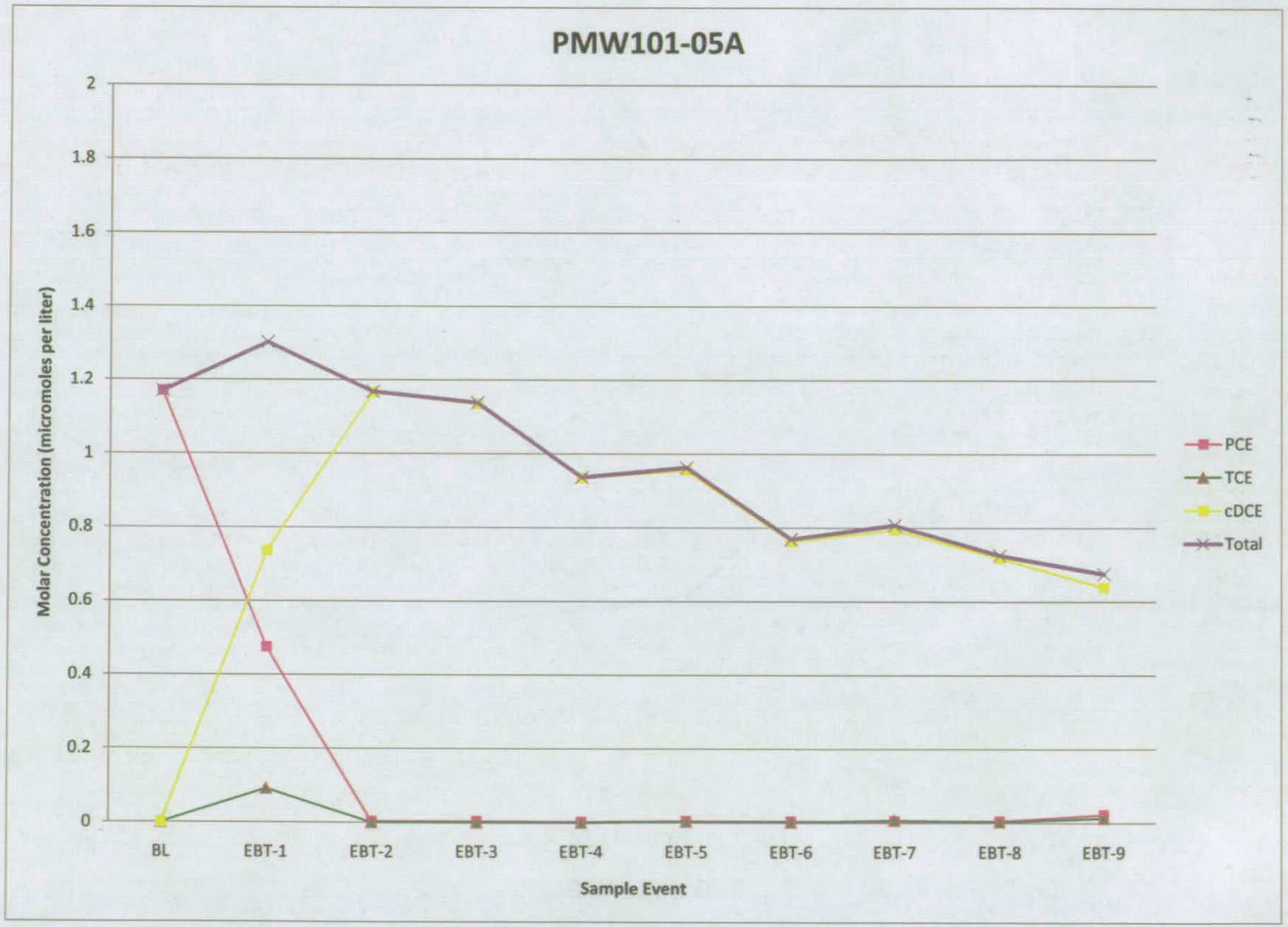

PMW101-02B
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

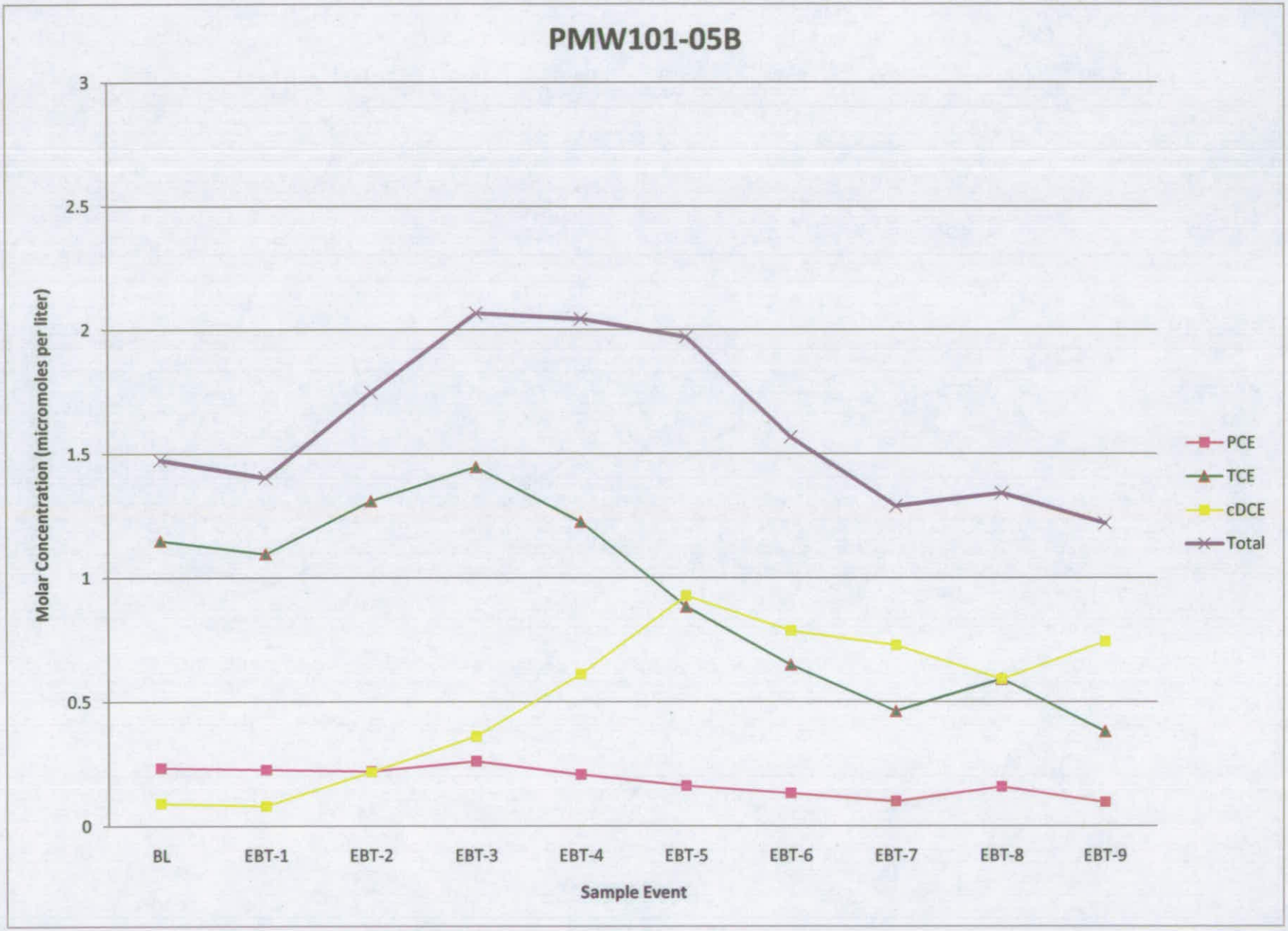

PMW101-03A
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

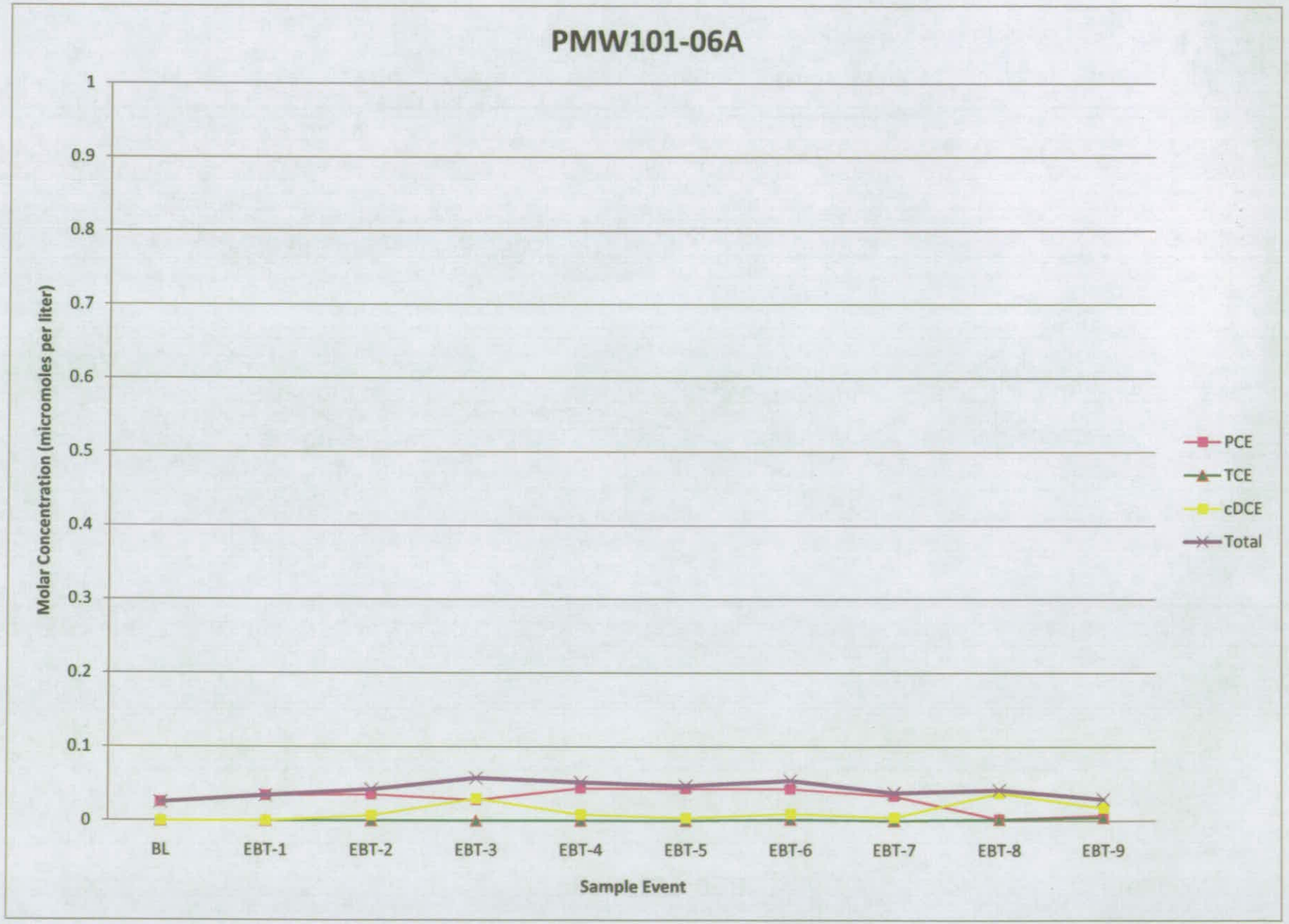

PMW101-03B
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

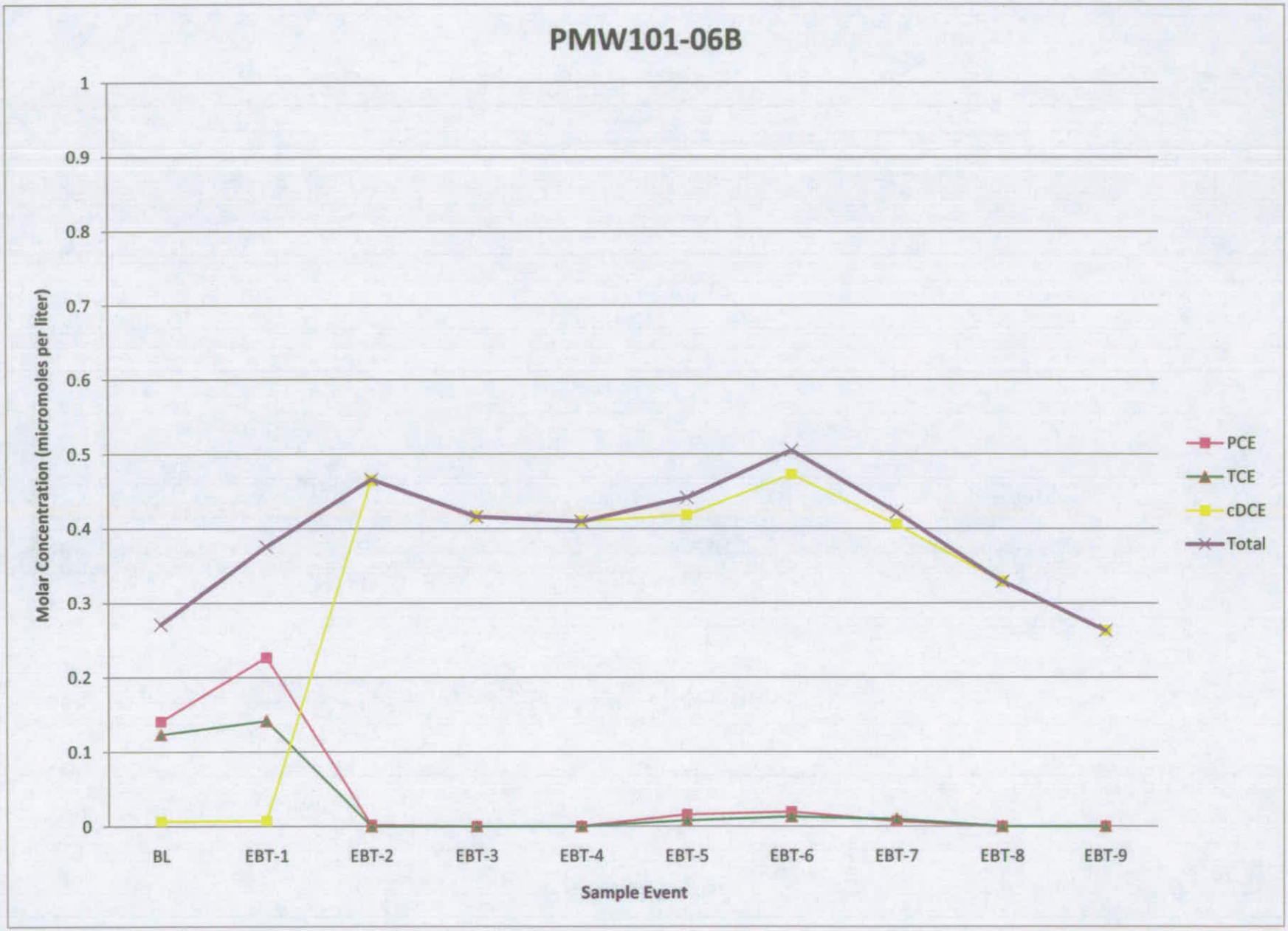

PMW101-04A
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

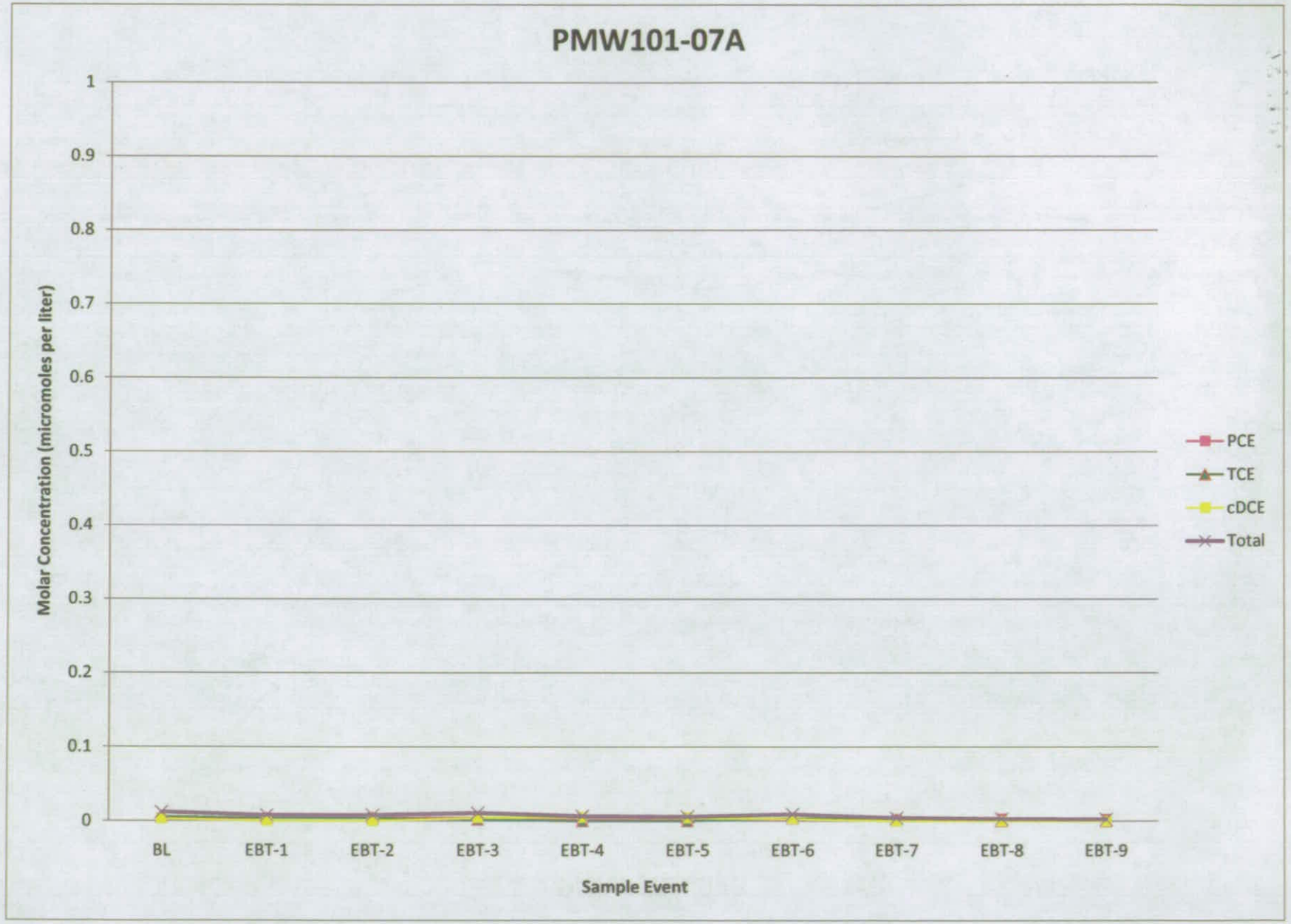

PMW101-04B
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

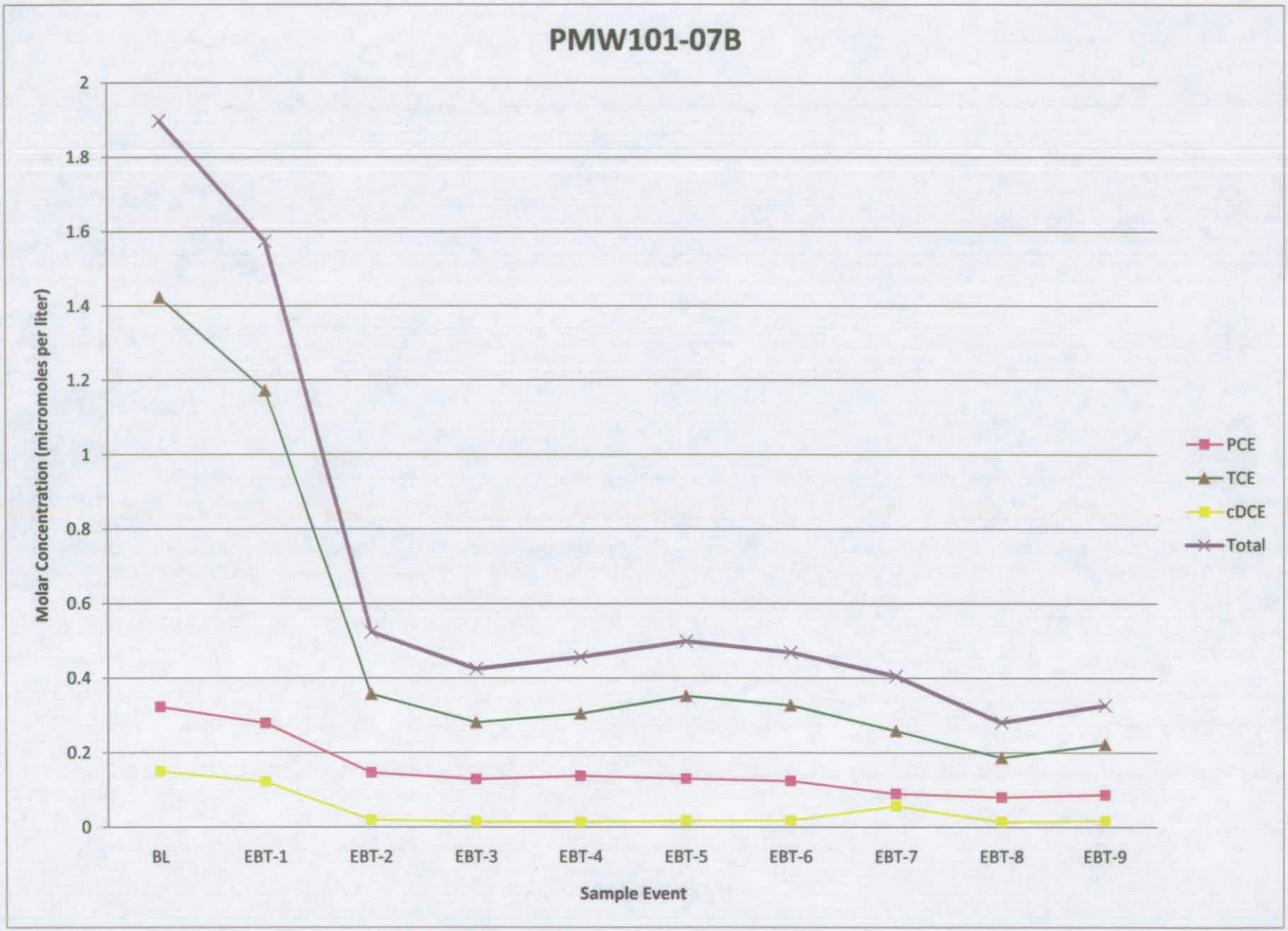

PMW101-05A
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

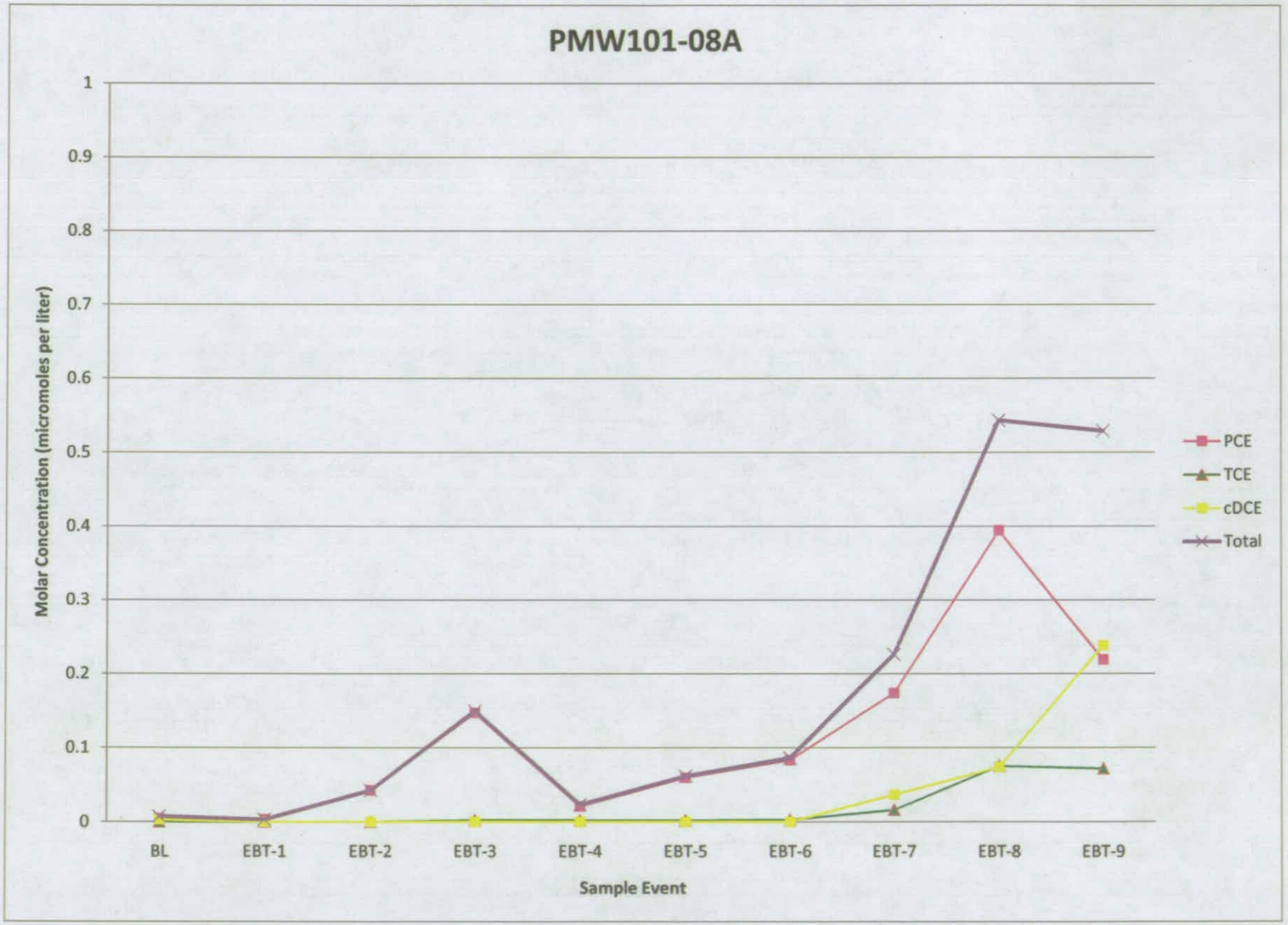

PMW101-05B
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

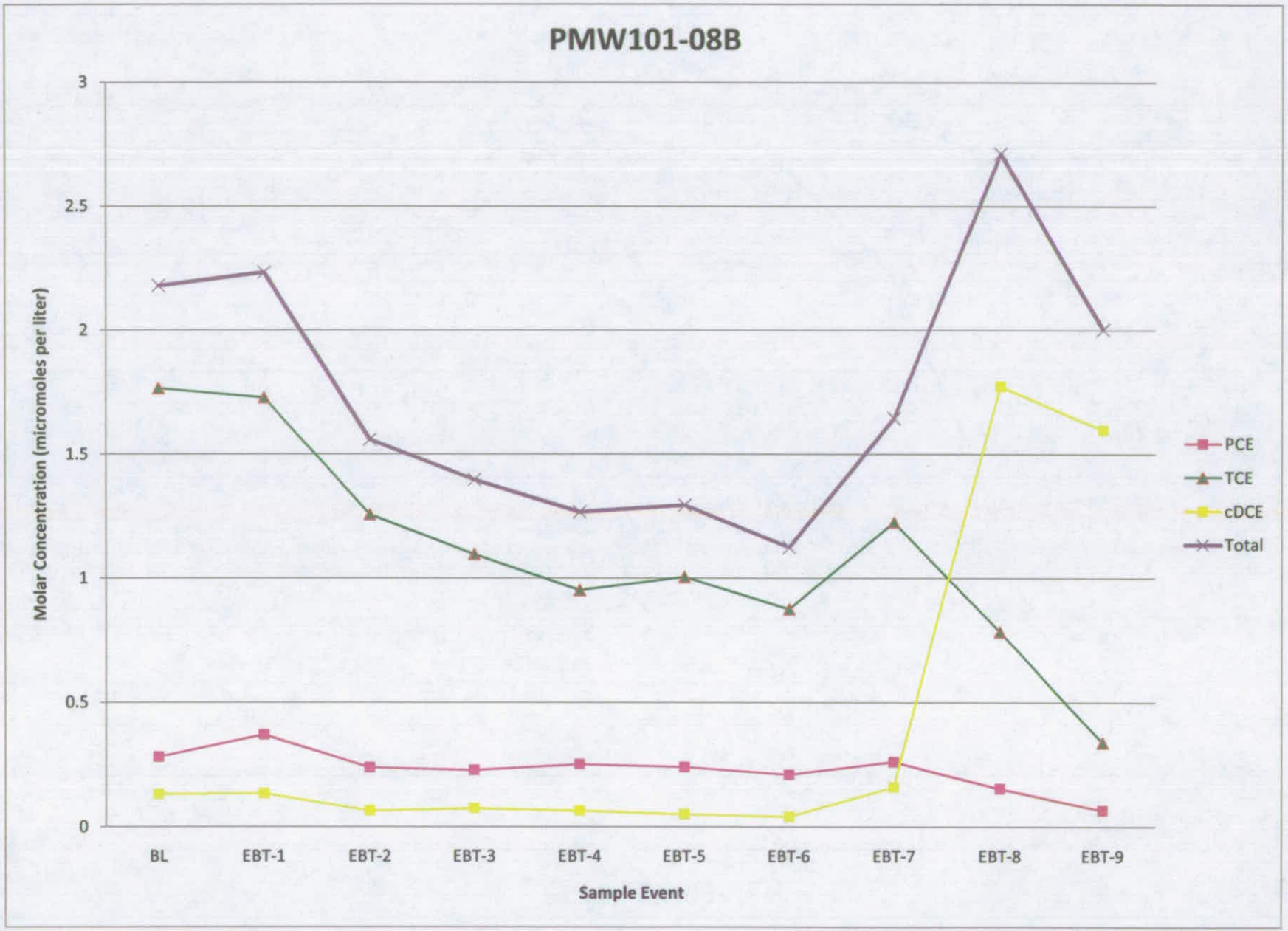

PMW101-06A
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total


PMW101-06B
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

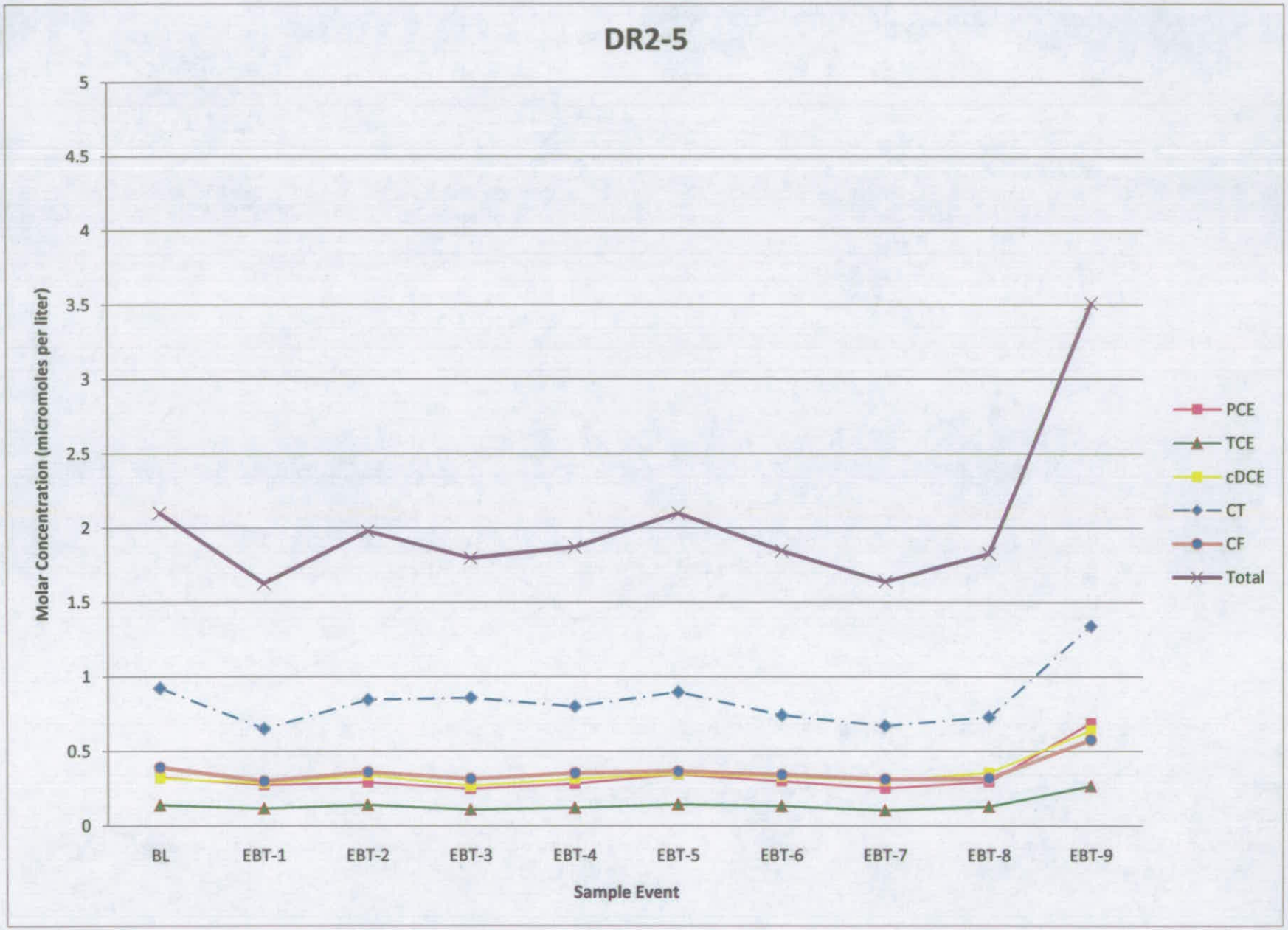

PMW101-07A
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

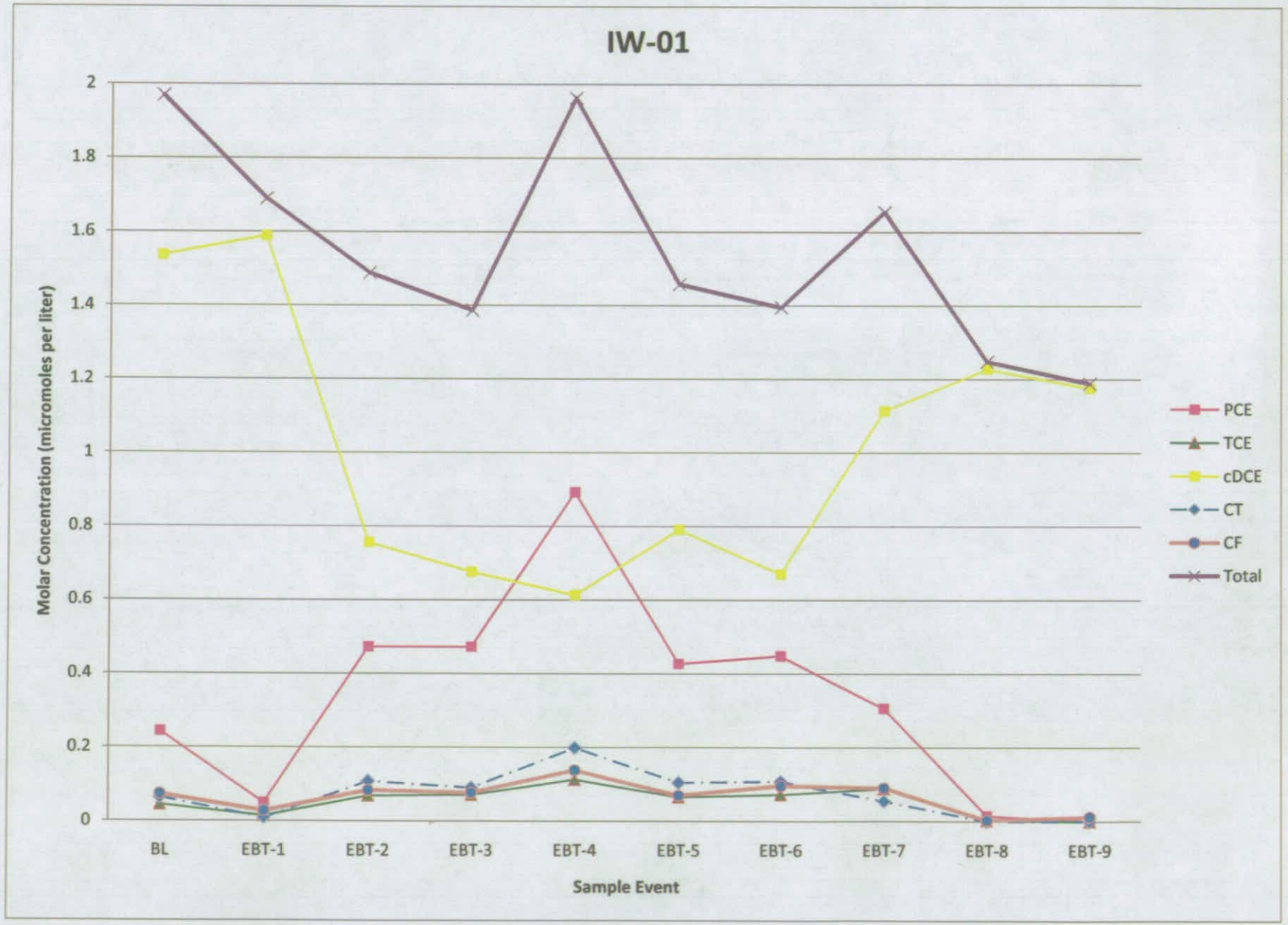

PMW101-07B
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

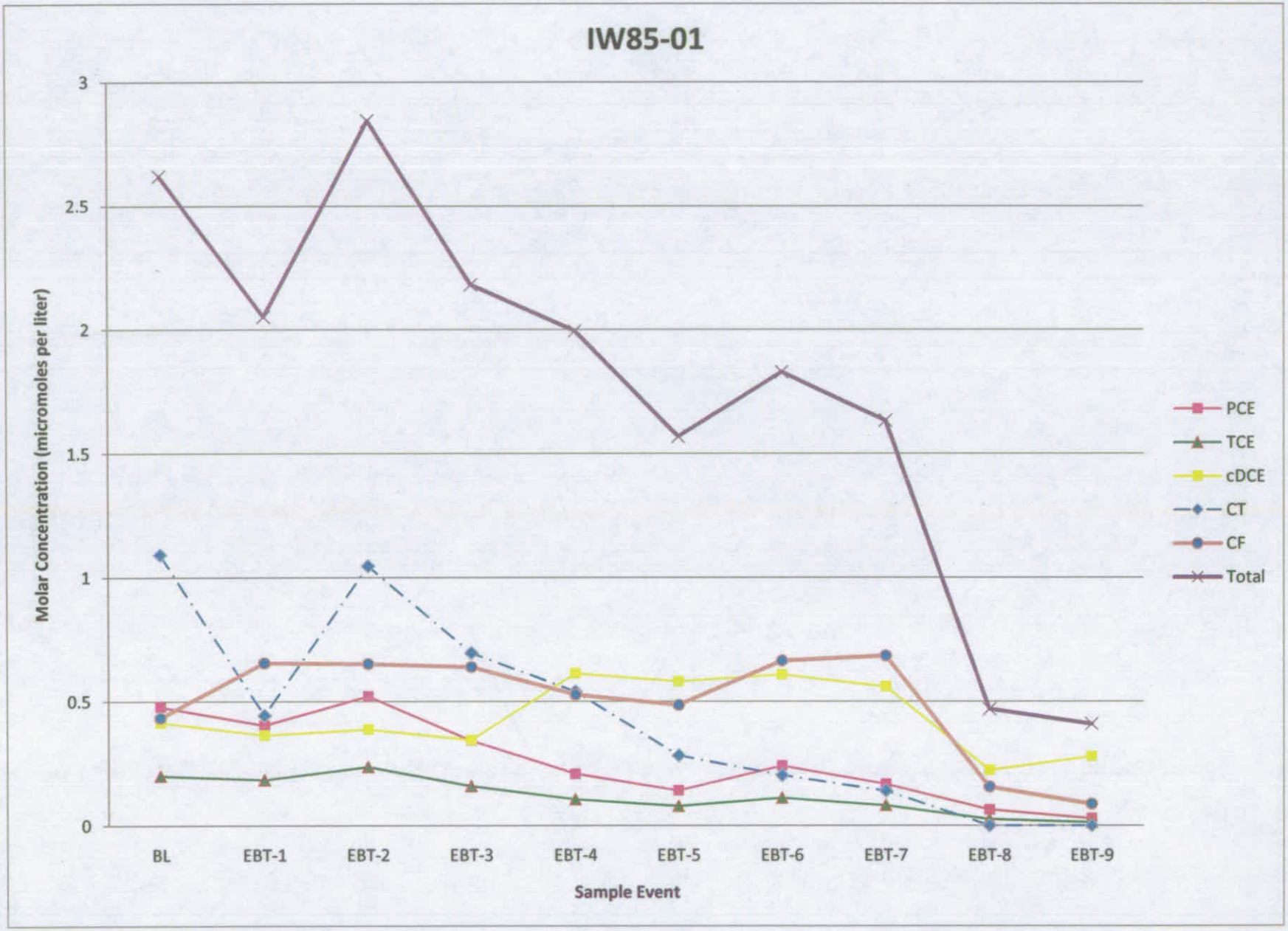

PMW101-08A
Molar Concentration (micromoles per liter)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total

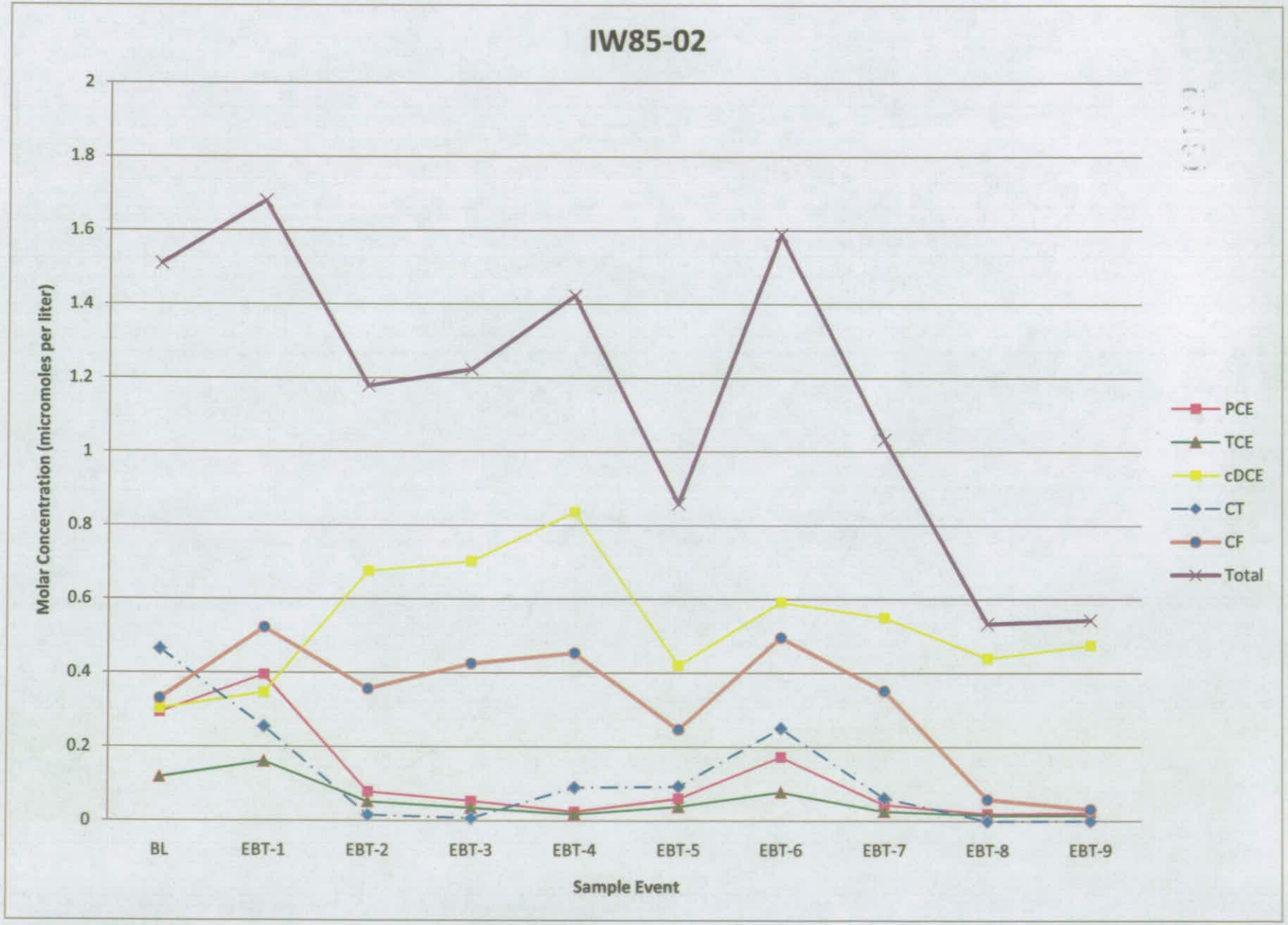

PMW101-08B
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
Total


DR2-1
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
Cdce
Total

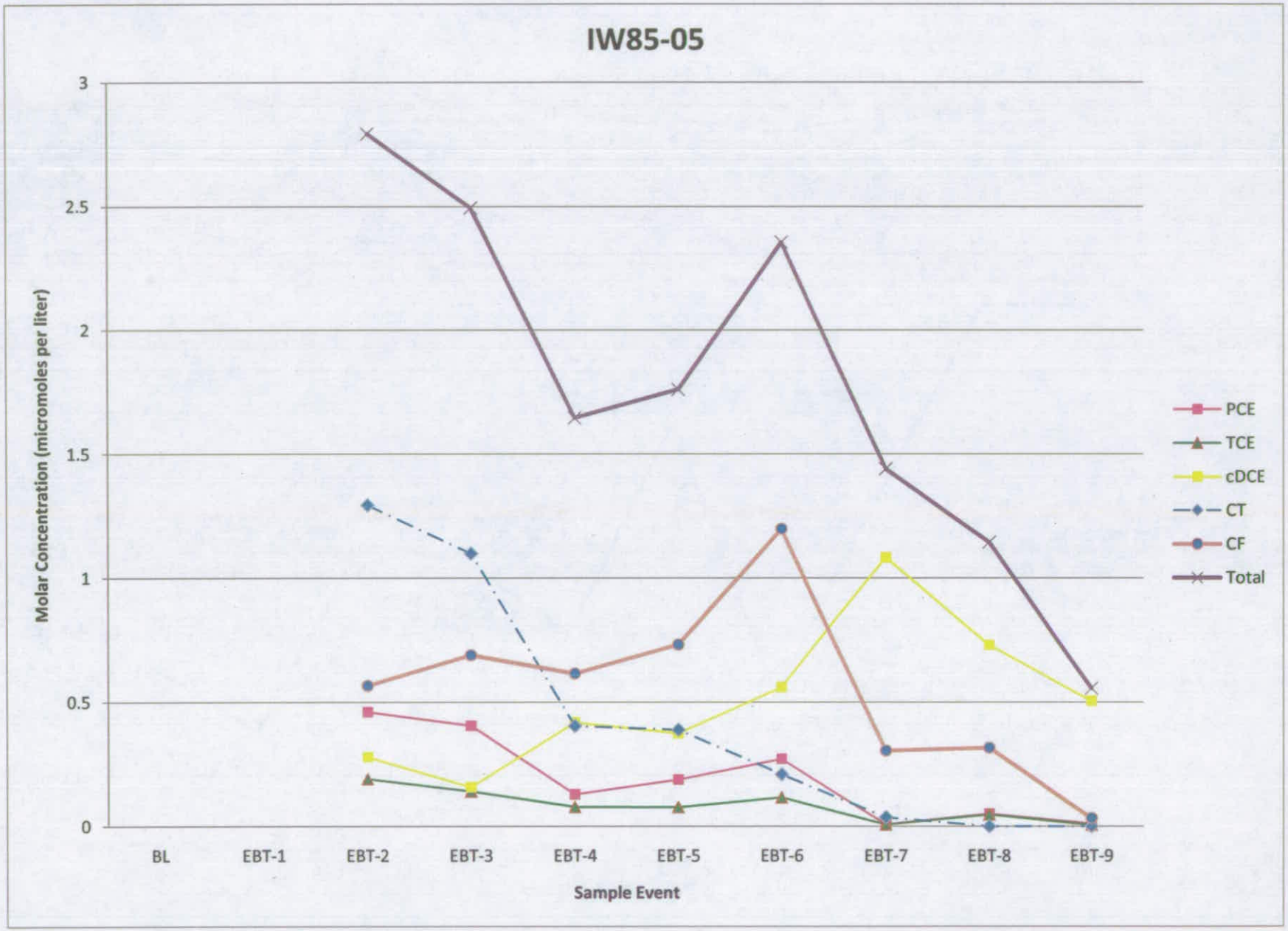

DR2-5
Molar Concentration (micromoles per liter)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

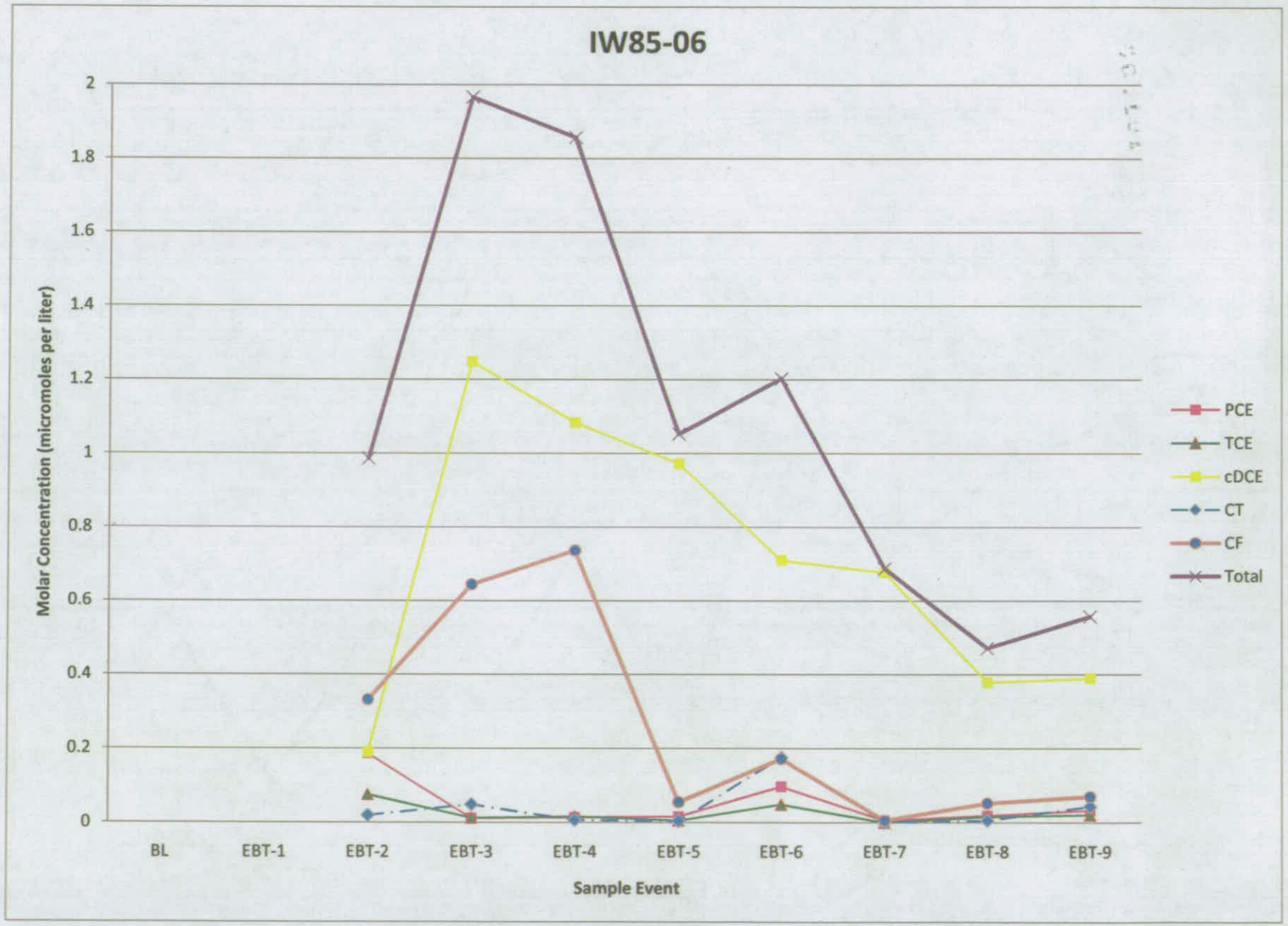

IW-01
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

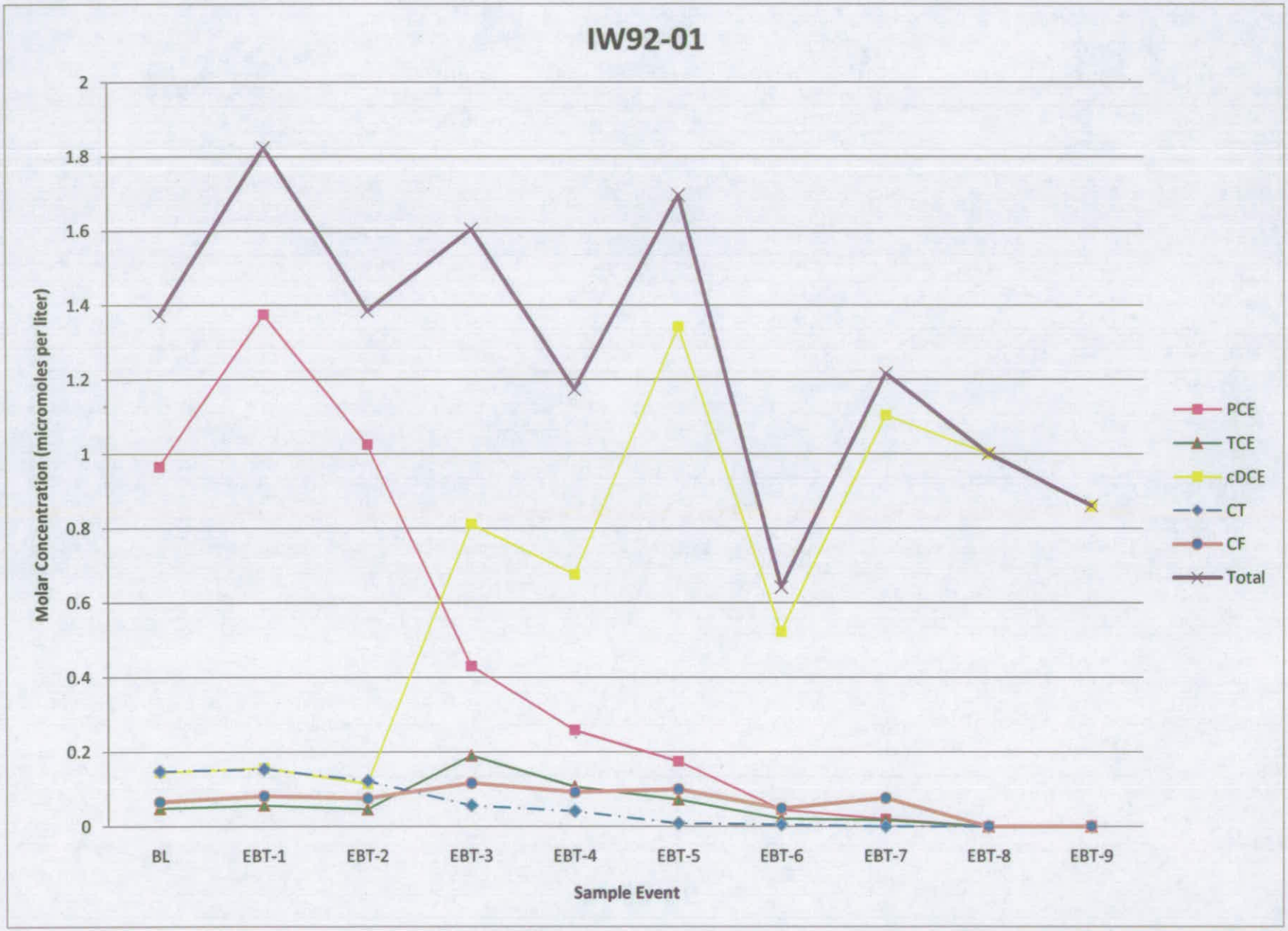

IW85-01
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

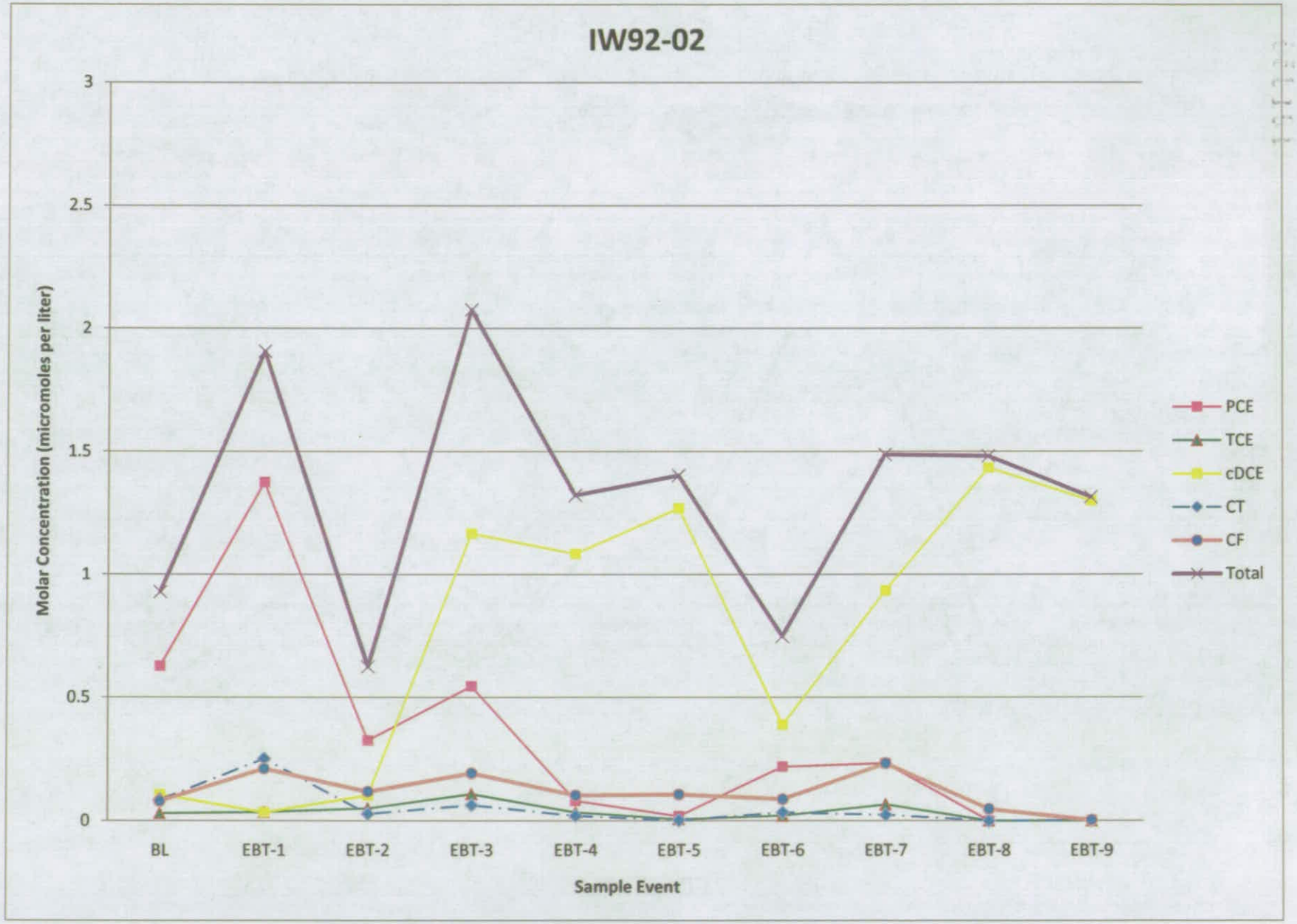

IW85-02
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

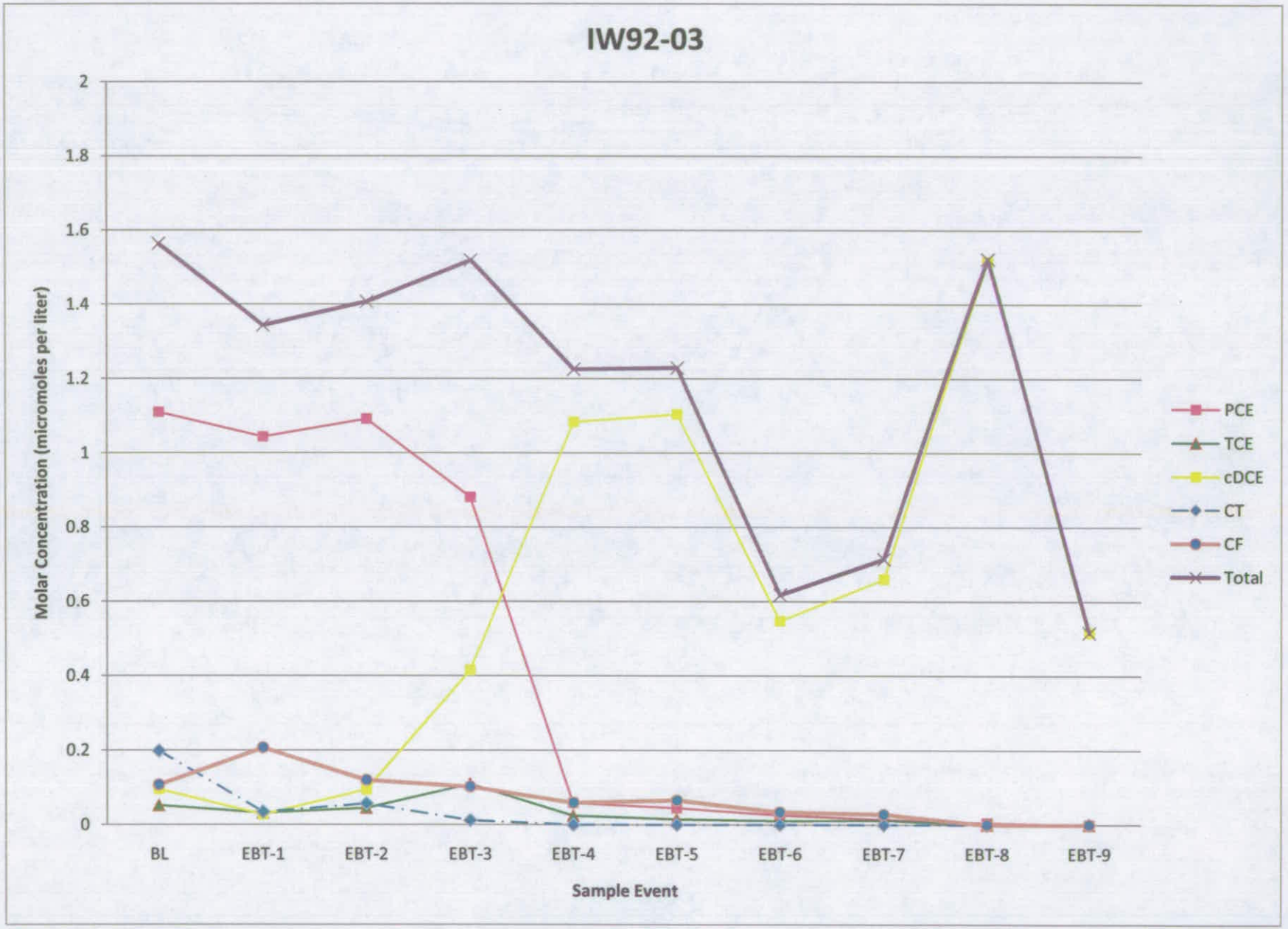
1013557

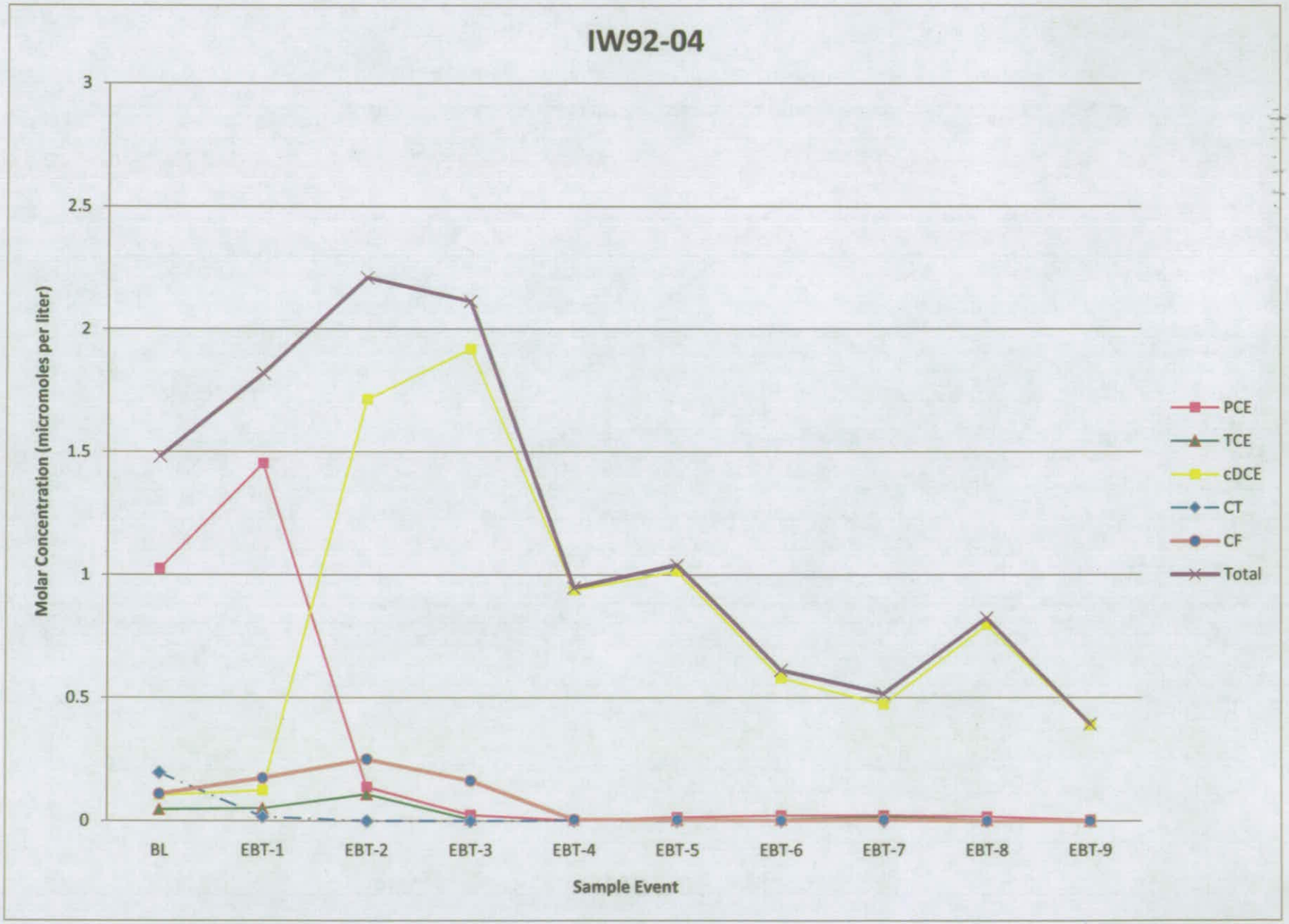

IW85-05
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

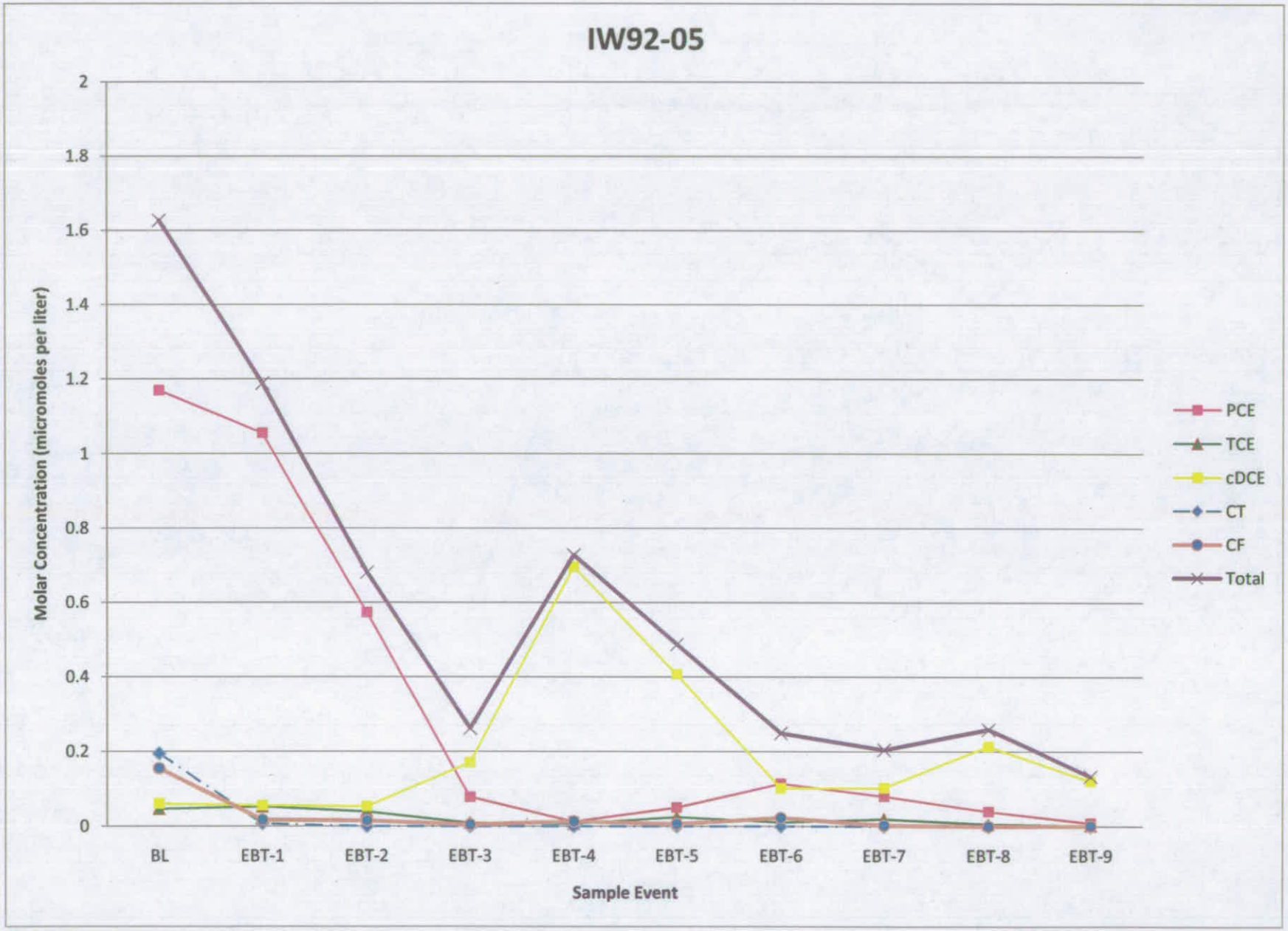

IW85-06
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

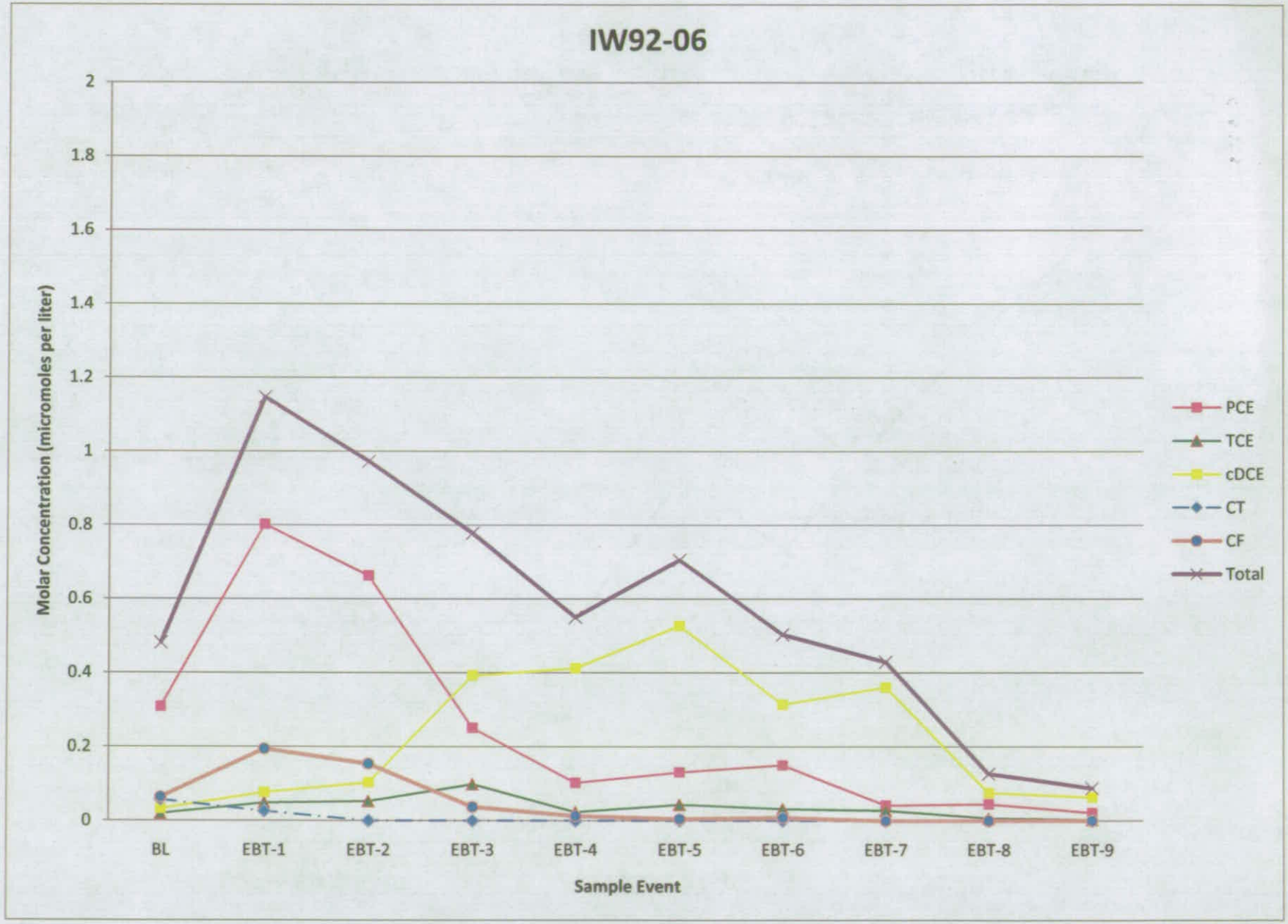

IW92-01
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

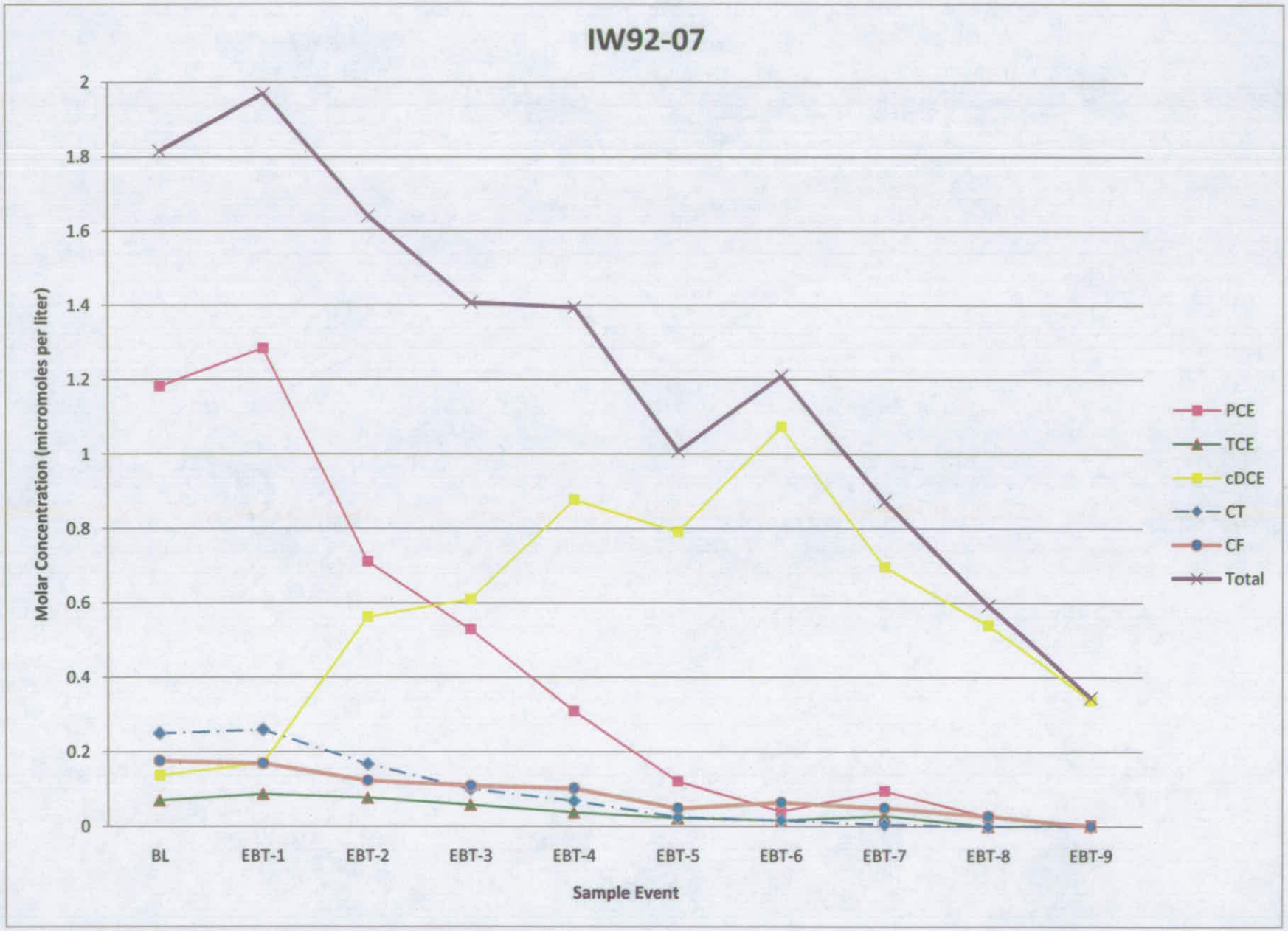

IW92-02
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

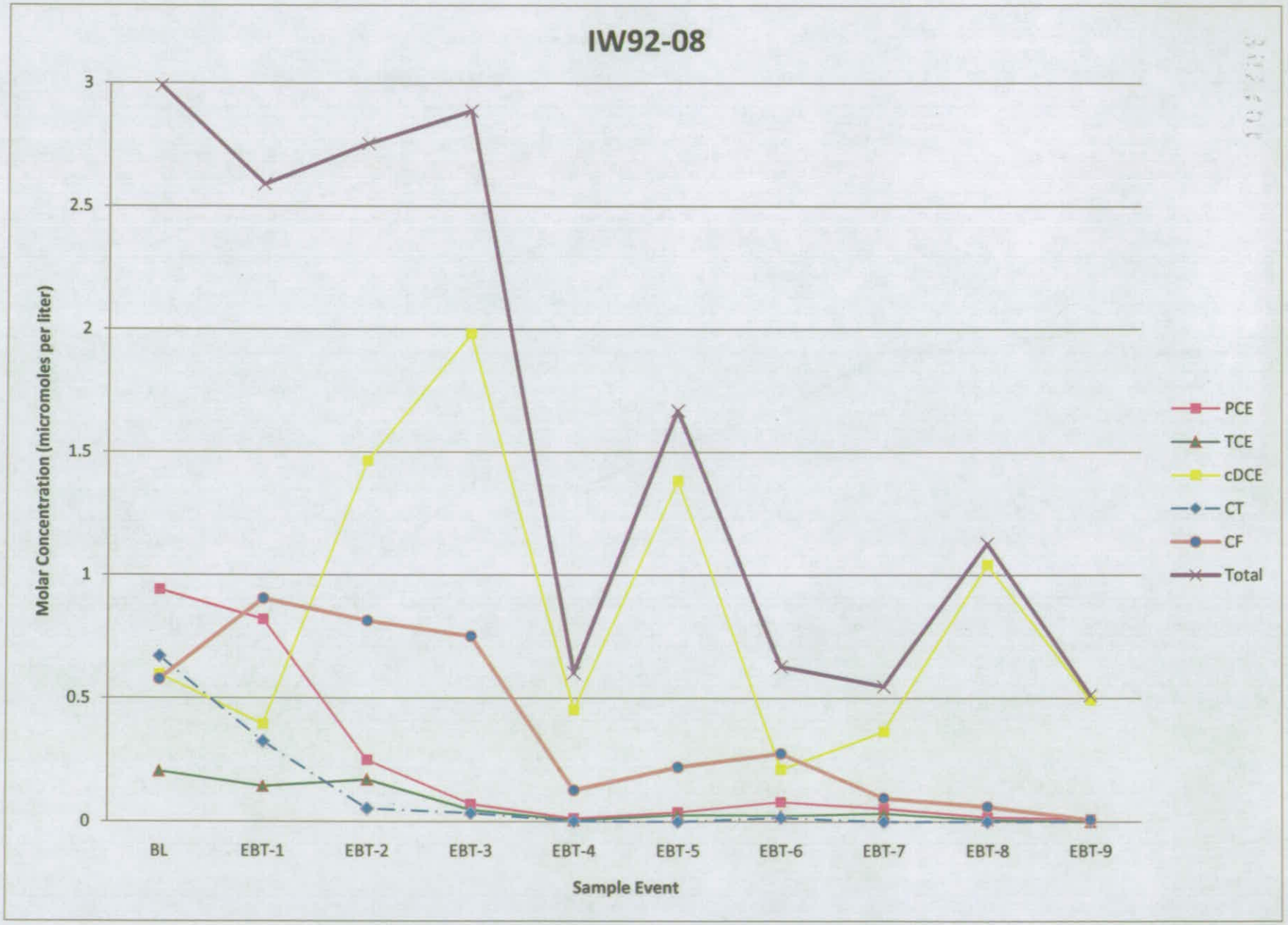

IW92-03
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

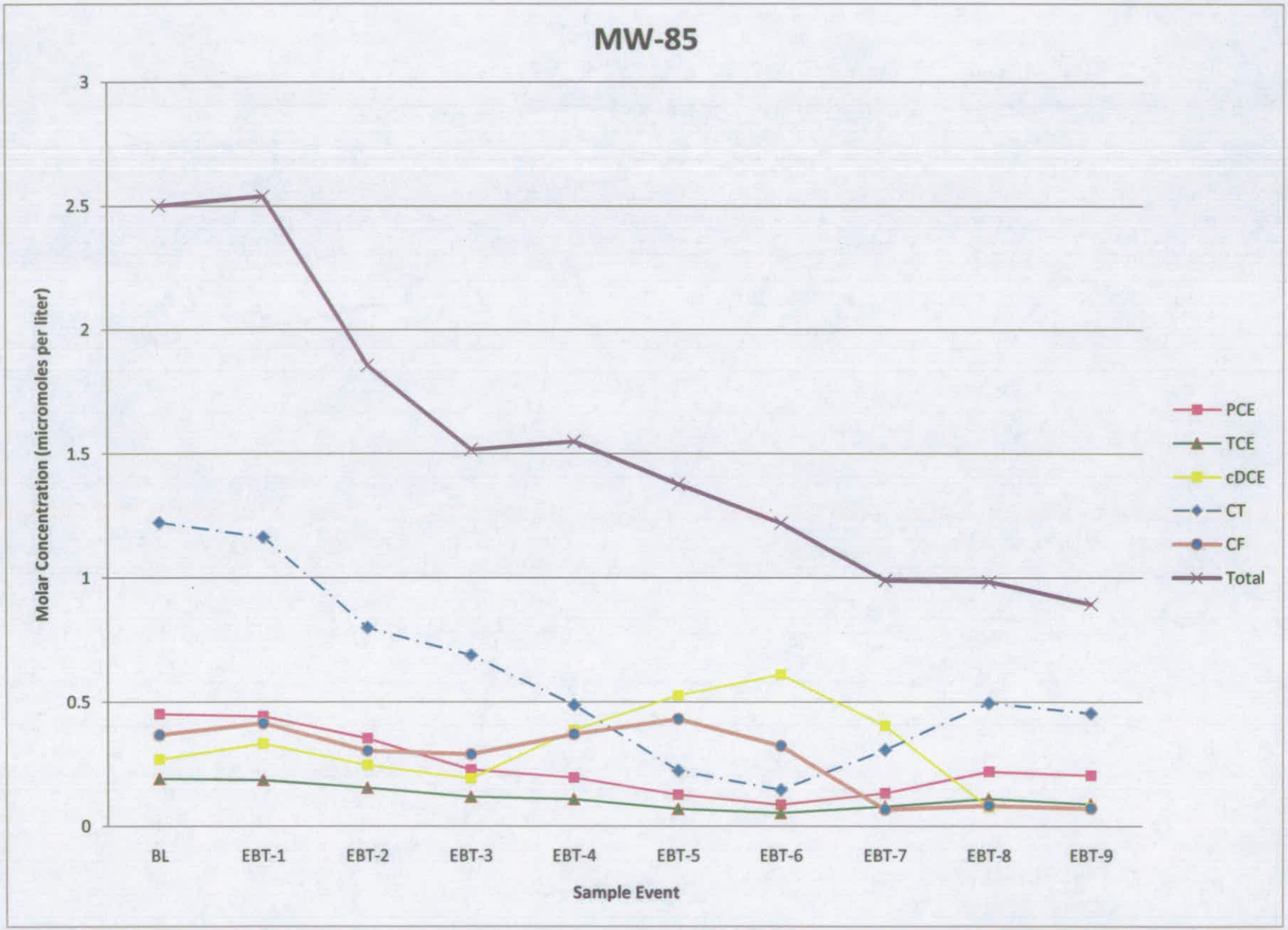

IW92-04
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

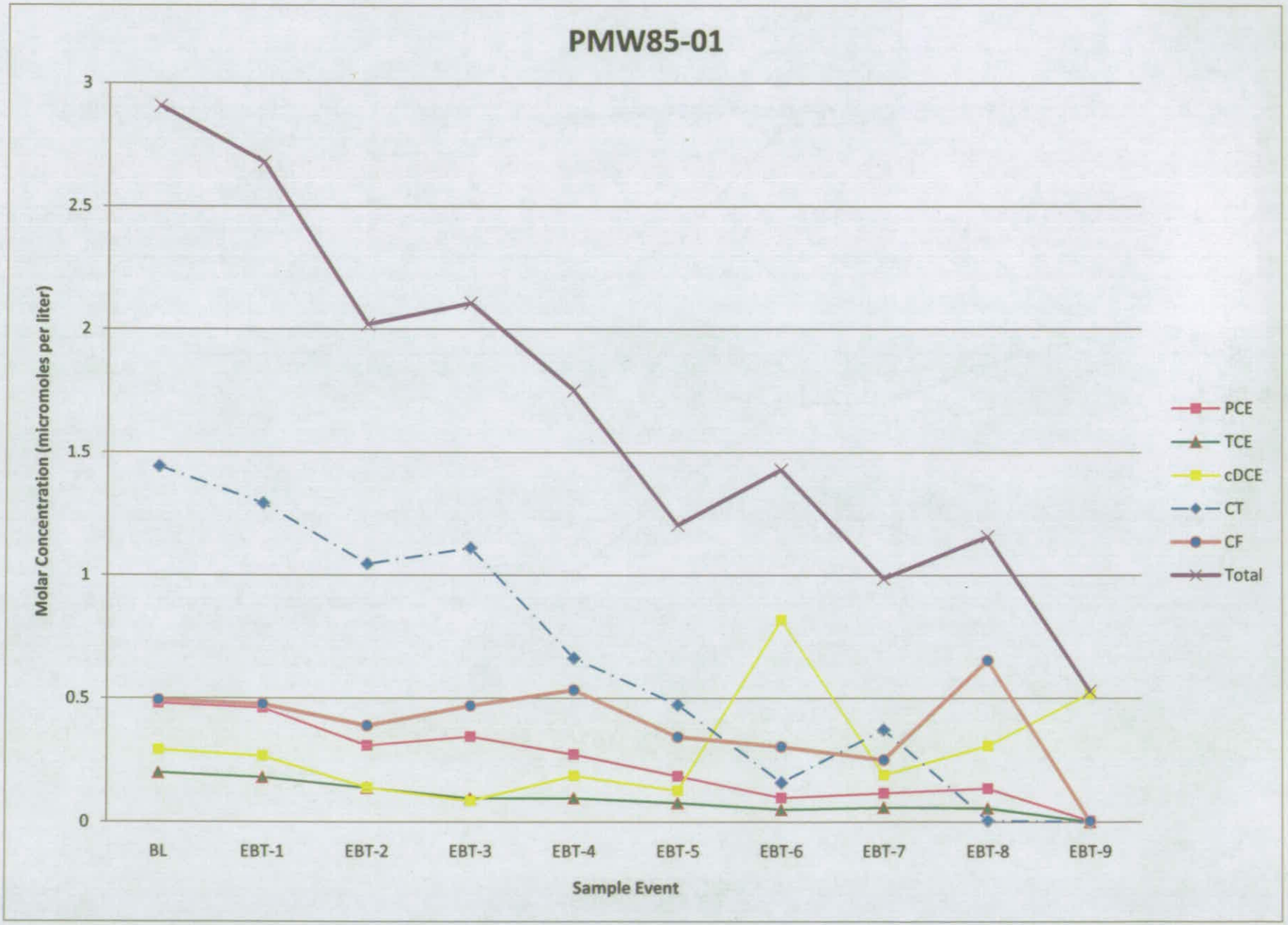

IW92-05
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

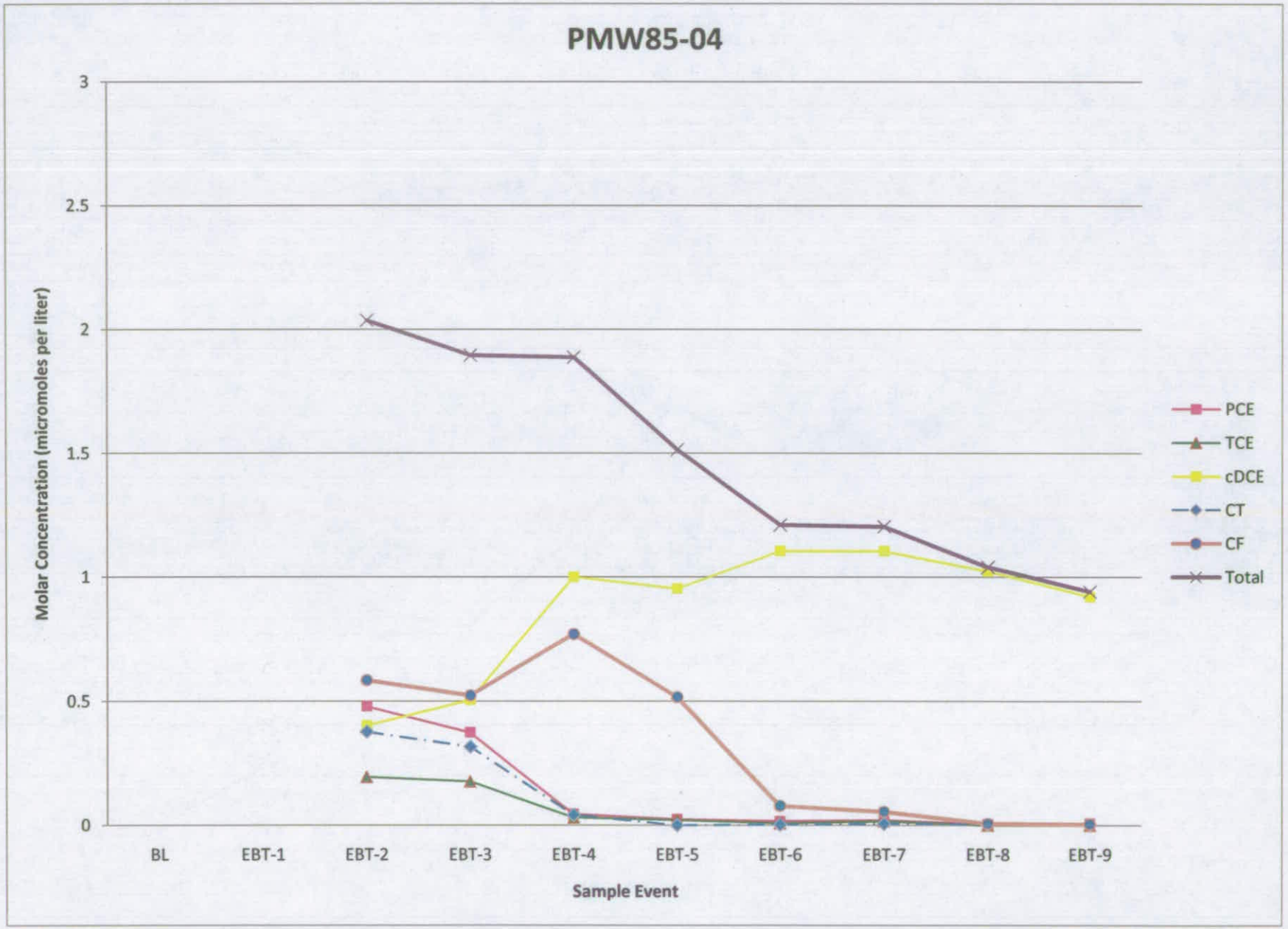

IW92-06
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

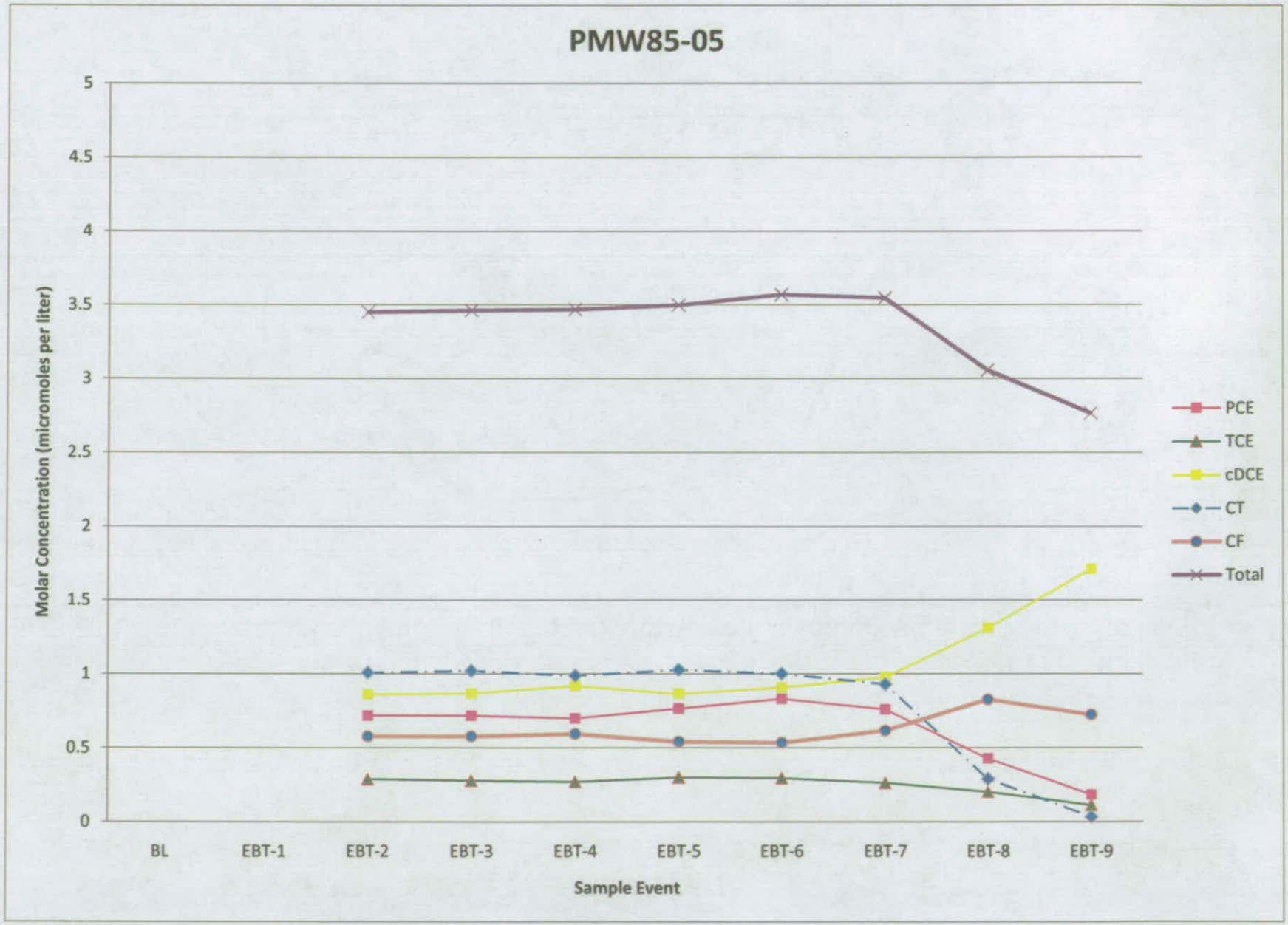

IW92-07
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

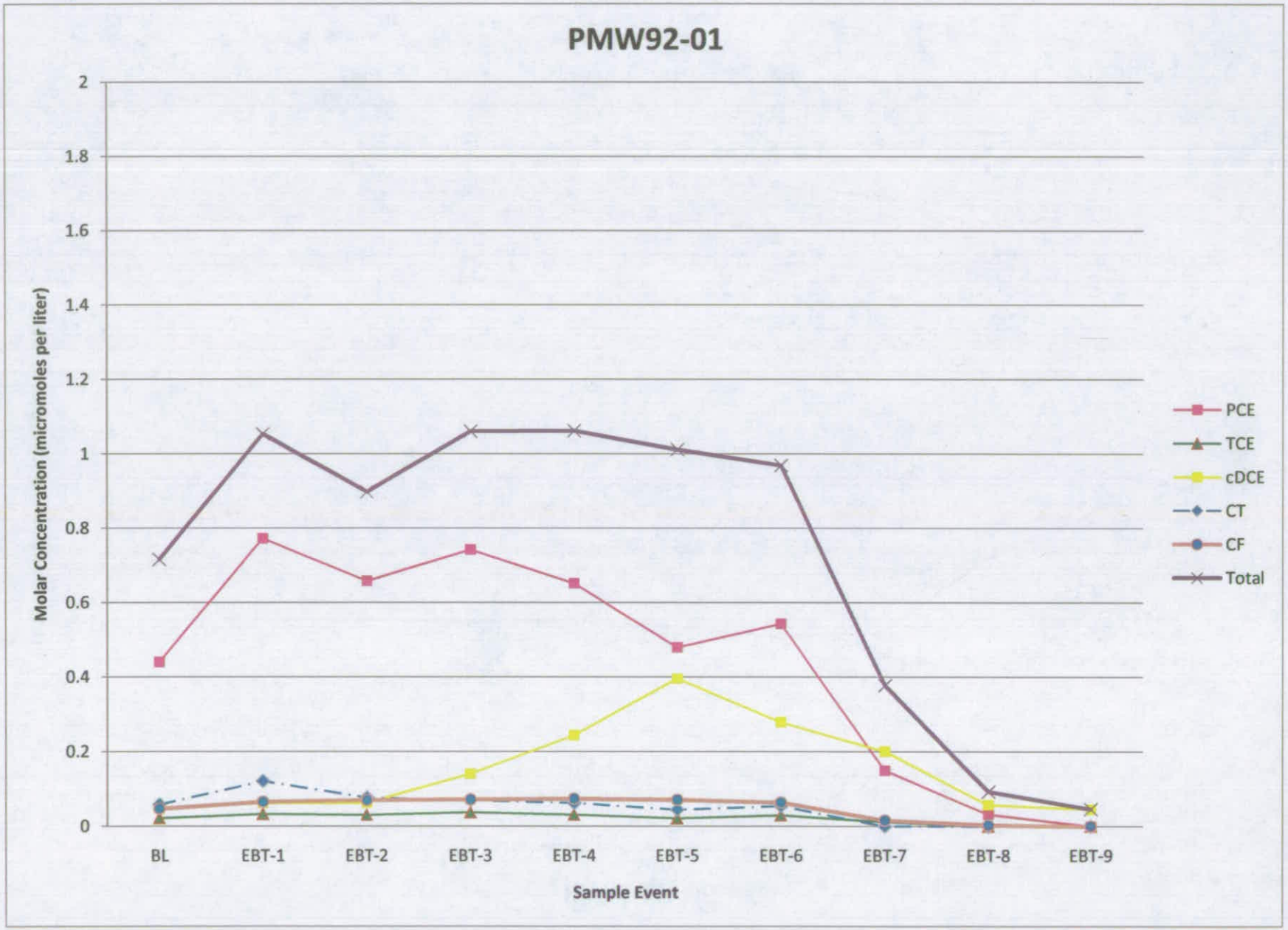

IW92-08
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

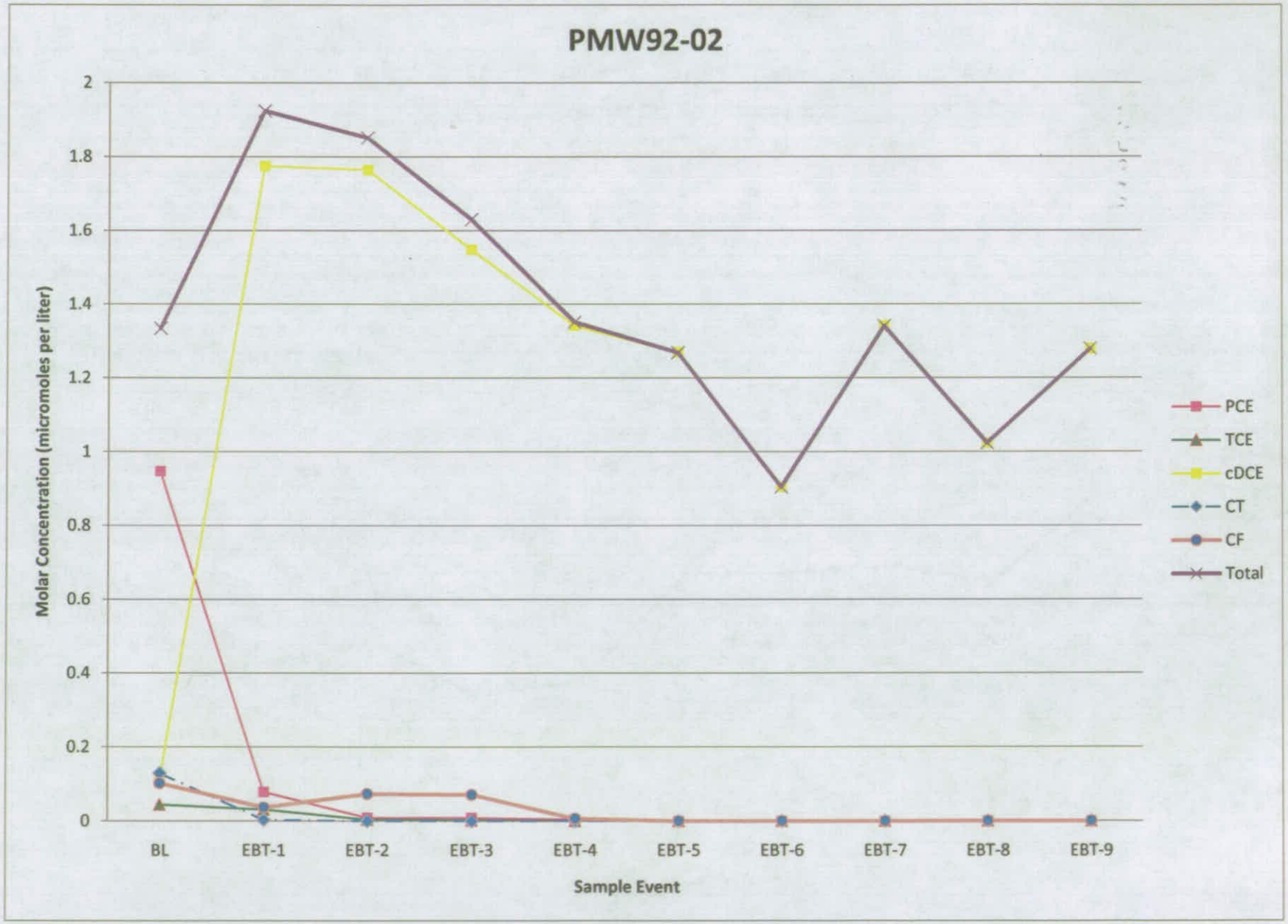

MW-85
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

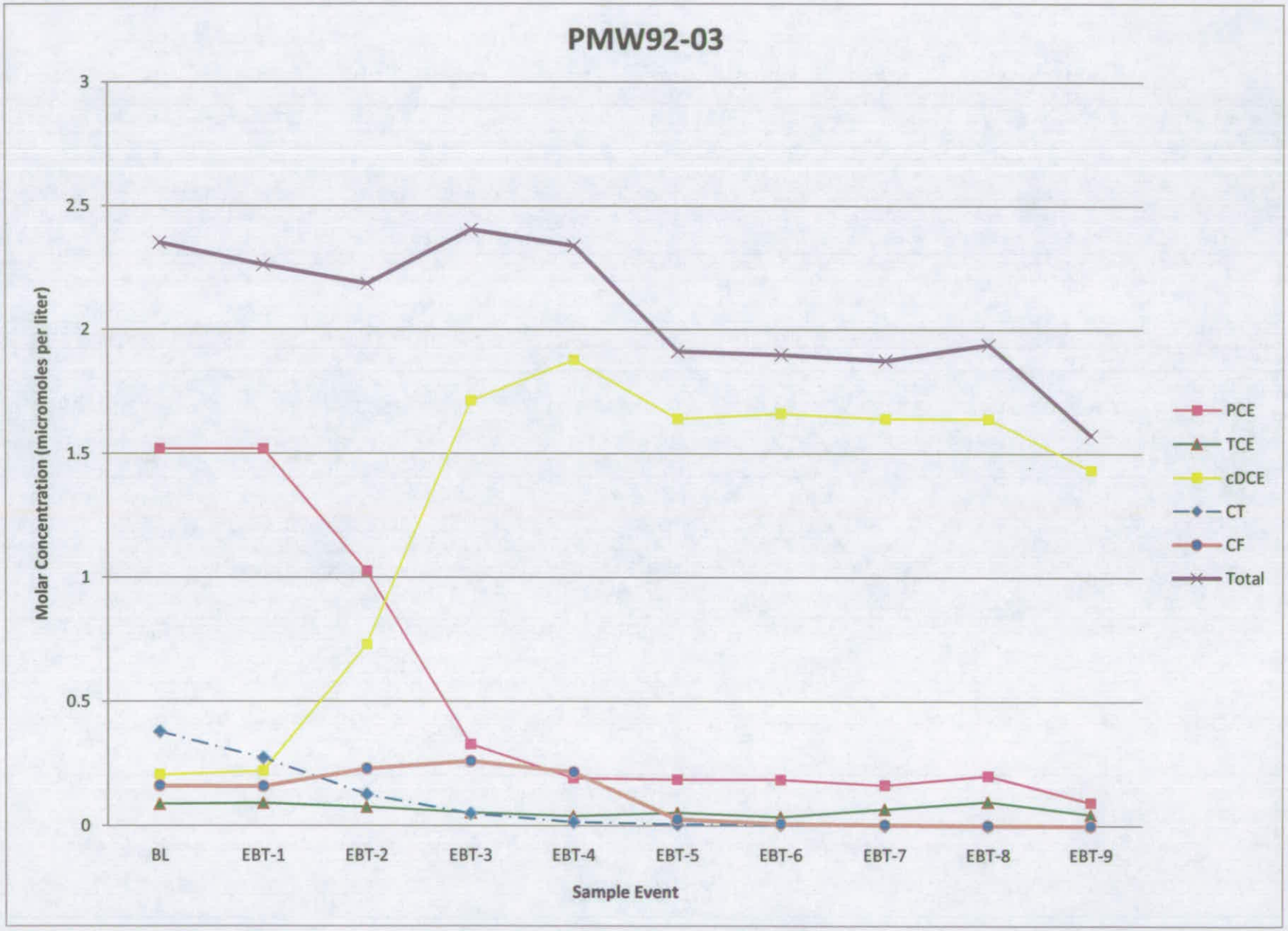

PMW85-01
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

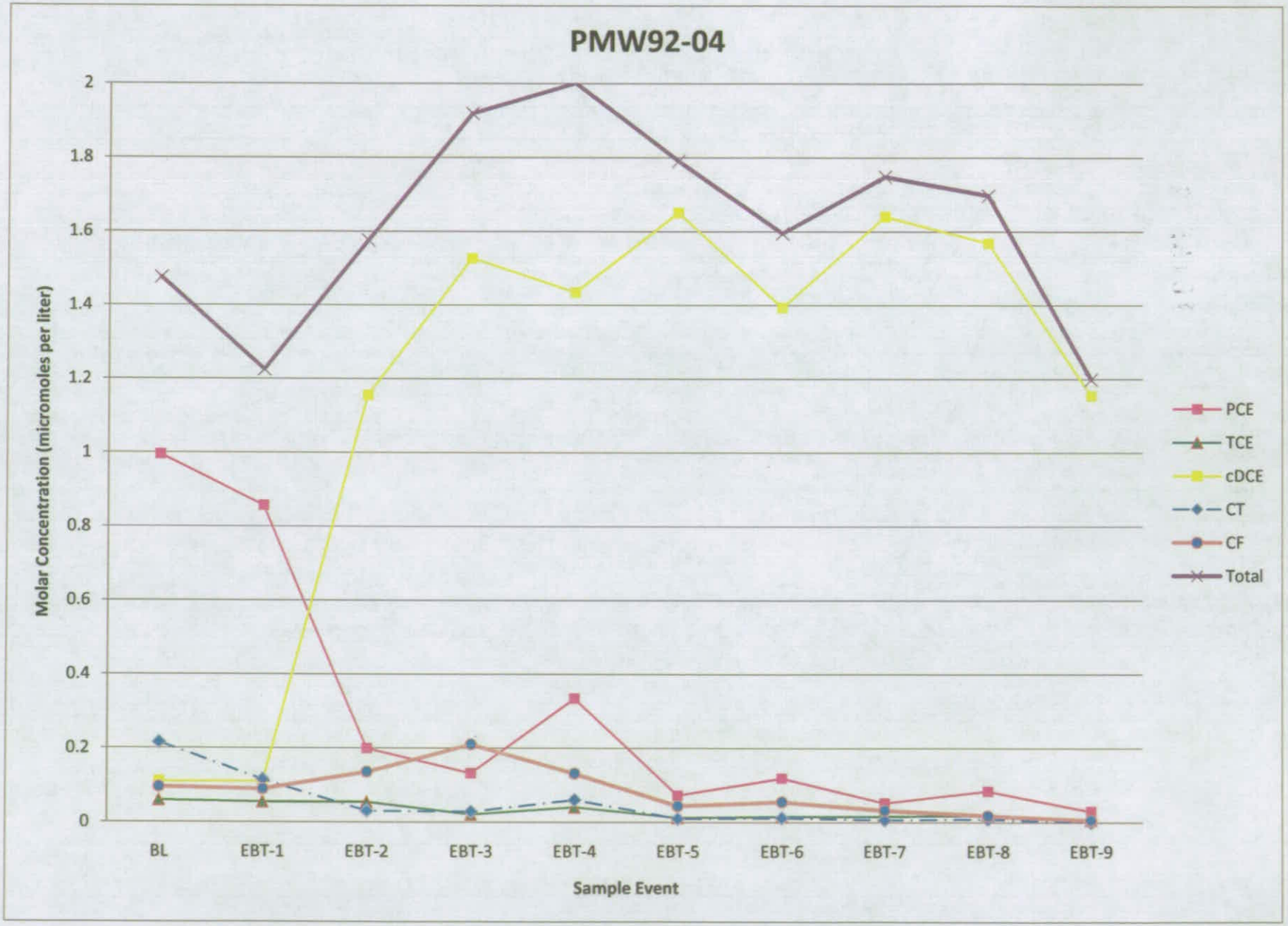

PMW85-04
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

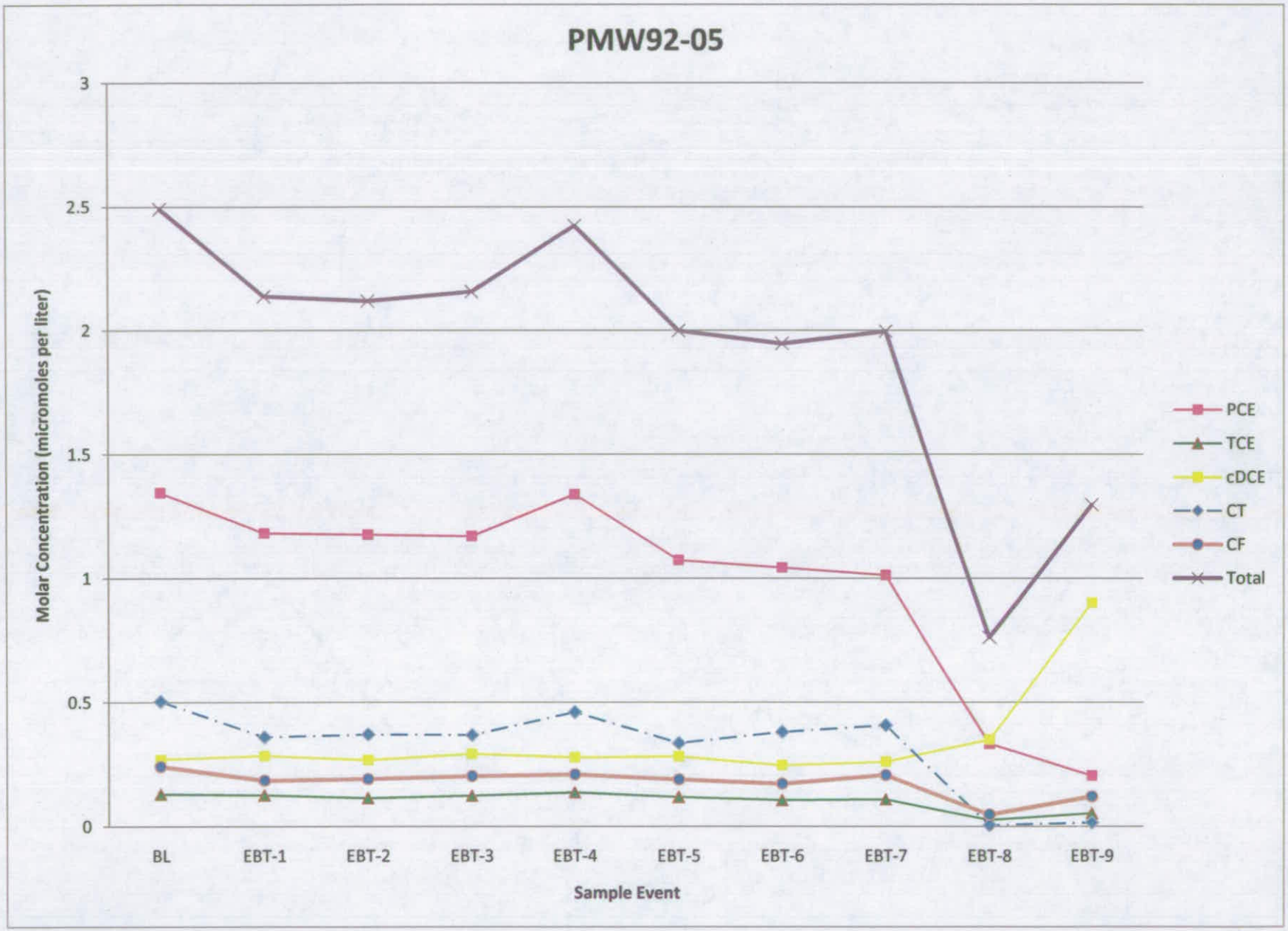

PMW85-05
Molar Concentration (micromoles per liter)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

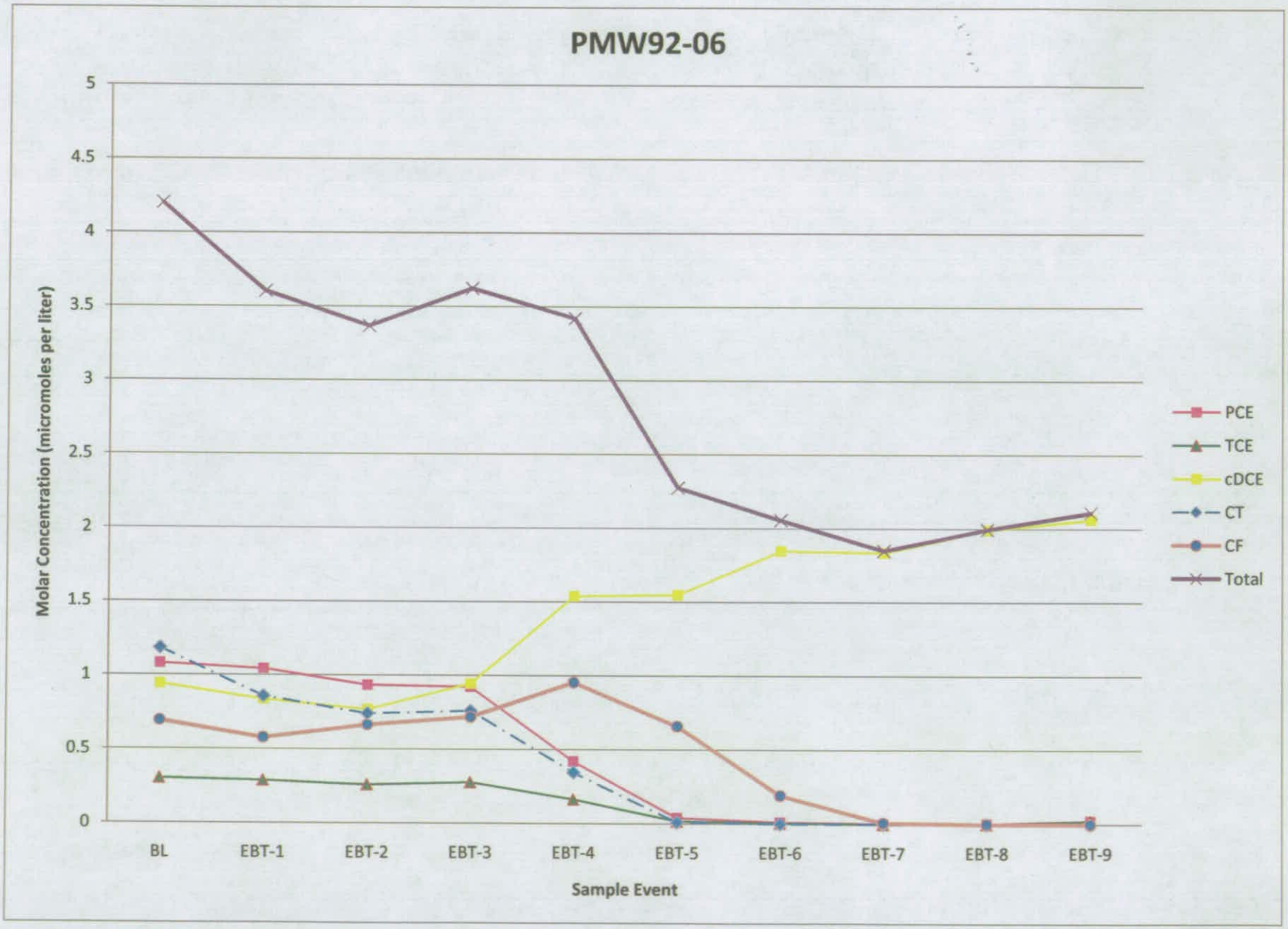

PMW92-01
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total


PMW92-02
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total


PMW92-03
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total


PMW92-04
Molar Concentration (micromoles per liter)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total


PMW92-05
Molar Concentration (micromoles per liter)
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total


PMW92-06
Molar Concentration (micromoles per liter)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
BL
EBT-1
EBT-2
EBT-3
EBT-4
EBT-5
EBT-6
EBT-7
EBT-8
EBT-9
Sample Event
PCE
TCE
cDCE
CT
CF
Total

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ADMINISTRATIVE RECORD

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