



**Department of Energy**  
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P.O. Box 550  
Richland, Washington 99352

07-AMCP-0061

DEC 19 2006

Ms. Jane A. Hedges, Program Manager  
Nuclear Waste Program  
State of Washington  
Department of Ecology  
3100 Port of Benton  
Richland, Washington 99354

Dear Ms. Hedges:

**TRANSMITTAL OF THE BURIAL GROUND SAMPLING AND ANALYSIS RESULTS FOR  
JULY - SEPTEMBER 2006 QUARTER**

The purpose of this letter is to provide burial ground sampling and analysis results for the July – September 2006 Quarter. Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) Milestone M-91-40, requirement 2, paragraph 3, requires quarterly reports of results from retrieval burial grounds Sampling and Analysis Plan (SAP) sampling activities. No sampling and analysis activities were conducted under the M-91-40 SAPs for the 218-W-4C, 218-E-12B, or 218-W-3A Burial Grounds during the July – September 2006 Quarter, so no analysis results for those burial grounds are provided.

Sampling in accordance with the 218-W-4B SAP was started during the July - September 2006 Quarter. As described in the attached report, vapor samples were collected through existing vent risers in Trench T-07, which contains retrievably stored waste, and were analyzed for volatile organic compounds using field-screening instruments. The highest concentrations were detected in the western portion of Trench T-07. Preliminary action levels are not applicable to these vapor samples. Other than incidental and unavoidable vapor releases to atmosphere associated with sampling at the vent risers, no contaminant releases to the environment were documented as a result of the vent-riser vapor sampling.

If you have any questions, please contact me, or you may contact Mark French, of my staff, on (509) 373-9863.

Sincerely,

A handwritten signature in black ink, appearing to read "M. S. McCormick".

Matthew S. McCormick, Assistant Manager  
for the Central Plateau

AMCP:GLS

Attachment

cc: See Page 2

Ms. Jane A. Hedges  
07-AMCP-0061

-2-

DEC 19 2006

cc w/attach:

G. Bohnee, NPT

N. Ceto, EPA

L. J. Cusack, Ecology

S. Harris, CTUIR

R. Jim, YN

T. M. Martin, HAB

M. E. Mills, Ecology

K. Niles, ODOE

R. Piippo, FHI

V. J. Rohay, FHI

L. Seelatsee, Wanapum

D. G. Singleton, Ecology

R. Skinnarland, Ecology

J. B. Price, Ecology

Administrative Record (M-91)

Environmental Portal

## **BURIAL GROUND SAMPLING AND ANALYSIS RESULTS FOR JULY – SEPTEMBER 2006**

### **SUMMARY**

Step I of the sampling design in DOE/RL-2004-70, 218-W-4B Burial Ground Sampling and Analysis Plan, was initiated during the July – September 2006 quarter. Vapor samples were collected through existing vent risers in trench T-07, which contains retrievably stored waste (RSW)<sup>1</sup>, and were analyzed for volatile organic compounds (VOC) using field-screening instruments. The highest concentrations were detected in the western portion of trench T-07. Preliminary action levels are not applicable to these vapor samples. Other than incidental and unavoidable vapor releases to atmosphere associated with sampling at the vent risers, no contaminant releases to the environment were documented as a result of the vent-riser vapor sampling.

Results for vapor samples submitted for laboratory analysis are anticipated to be received during the next quarter (October – December 2006) and will be provided in the next quarterly letter report. Based on the sampling design in the sampling and analysis plan (SAP) for the 218-W-4B Burial Ground (DOE/RL-2004-70), Step II sampling is planned following retrieval of the RSW.

Step I of the sampling design in DOE/RL-2004-71, 218-W-3A Burial Ground Sampling and Analysis Plan, was initiated during the July – September 2005 quarter and completed during the October – December 2005 quarter. No sampling and analysis activities were conducted as part of the SAP for the 218-W-3A Burial Ground during the July – September 2006 quarter. Therefore, there are no analysis results for the 218-W-3A Burial Ground to be provided for this period.

Based on the sampling design in the SAP for the 218-W-3A Burial Ground (DOE/RL-2004-71), Step II sampling is planned following retrieval of the RSW.

Step I of the sampling design in DOE/RL-2004-32, 218-E-12B Burial Ground Sampling and Analysis Plan, was completed during the April – June 2005 quarter. No sampling and analysis activities were conducted as part of the SAP for the 218-E-12B Burial Ground during the July – September 2006 quarter. Therefore, there are no analysis results for the 218-E-12B Burial Ground to be provided for this period.

Based on the sampling design in the SAP for the 218-E-12B Burial Ground (DOE/RL-2004-32), Step II sampling is planned following retrieval of the RSW.

Step I of the sampling design in DOE/RL-2003-48, 218-W-4C Burial Ground Sampling and Analysis Plan, was initiated during the October – December 2003 quarter and completed during the January – March 2004 quarter. No sampling and analysis activities were conducted as part of the SAP for the 218-W-4C Burial Ground during the July – September 2006 quarter. Therefore, there are no analysis results for the 218-W-4C Burial Ground to be provided for this period.

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<sup>1</sup> Retrievably stored for purposes of the Atomic Energy Act of 1954.

## **BURIAL GROUND SAMPLING AND ANALYSIS RESULTS FOR JULY – SEPTEMBER 2006**

Based on the sampling design in the SAP for the 218-W-4C Burial Ground (DOE/RL-2003-48), Step II sampling is planned following retrieval of the RSW.

### **1.0 INTRODUCTION**

This quarterly letter report has been prepared in response to Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) (Ecology et al. 1989) Interim Milestone M-91-40, Requirement 2, paragraph 3. This letter report covers the quarter from July through September 2006.

The sampling and analysis activities summarized in this quarterly letter report were conducted in accordance with DOE/RL-2004-70, which was approved by the Washington State Department of Ecology (Ecology) on July 25, 2006.

The 218-W-4B Burial Ground SAP was developed to determine whether contaminants have been released to the vadose zone from RSW in the 218-W-4B Burial Ground in the 200 West Area of the Hanford Site. In the 218-W-4B Burial Ground, trenches T-07 and T-11 contain suspect TRU<sup>2</sup> RSW (Figure 1). Vent risers are present in trench T-07. In the portion of the trench with vent risers, the RSW typically is contained in 208 L (55-gal) drums. The drums are assumed to be arranged in modules, with plywood and a plastic cover over each module. A schematic cross section of a retrievable storage trench containing vent risers is shown in Figure 2. The east end of the trench is referred to as trench T-V7. Trench T-V7 is a diamond-shaped structure made up of a concrete-lined “V” bottom and a metal cover. One metal duct extends vertically above the soil cover at the east end of the trench.

The 218-W-4B Burial Ground sampling design consists of three steps. Step I is vapor sampling through vent risers in the trenches before waste retrieval. Step II and Step III are conducted following waste retrieval. Step II includes sampling the surface of the trench floor. Step III involves assessing the data collected in Step I and Step II, leading to potential characterization of the substrate soils beneath the trench floor.

The Step I sampling in the 218-W-4B Burial Ground was initiated during the July – September 2006 quarter addressed by this letter report. As specified in the 218-W-4B SAP, the Step II and Step III sampling to characterize the substrate soils will be conducted when the entire RSW portion of the trench has become accessible and sampling activities will not interfere with waste retrieval operations. The results of the Step I sampling will be used to focus the Step II sampling.

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<sup>2</sup> Transuranic (radioactive waste materials as defined in DOE G 435.1-1, Implementation Guide for Use with DOE M 435.1-1).

## BURIAL GROUND SAMPLING AND ANALYSIS RESULTS FOR JULY – SEPTEMBER 2006

### 2.0 SAMPLING METHODOLOGY

Seventeen vent risers are present in trench T-07 in the 218-W-4B Burial Ground. No vent risers are present in trench T-11, the other trench that contains RSW. As stated in the SAP, sampling was limited to the existing vent risers that were accessible without posing health and safety risks to workers. During Step I, vapor samples were collected from 14 of these vent risers (Table 1). Vapor sampling at the other three vent risers, and at the vertical duct at the east end of trench T-V7, could not be collected because of health and safety risks to workers.

Two types of vapor samples were collected. Vapor samples initially were collected from each accessible riser and analyzed using a field-screening instrument. A vapor sample then was collected from the vent riser that had the highest VOC concentration, based on the field-screening results. This vapor sample was contained in a SUMMA<sup>3</sup> canister for laboratory analysis. One sample plus one duplicate sample also were collected in SUMMA canisters from a vent riser with lower VOC concentrations.

Vent-riser sampling was initiated on August 23, 2006, and completed on September 5, 2006. The vent risers in trench T-07 were sampled on August 23, August 24, and August 29, 2006, and were analyzed using field-screening instruments. The SUMMA canister samples were collected on September 5, 2006.

A sample location number (trench and riser) was established and recorded for each vent riser. The vent risers in each trench were numbered sequentially from west to east (Figure 3).

After the vent-riser cap was removed, a 15.2 m- (50-ft-) long piece of Teflon-lined<sup>4</sup> TYGON<sup>5</sup> tubing was lowered to the bottom of the riser or until refusal. The tubing was 0.64 cm (0.25 in.) inside diameter and 0.95 cm (0.375 in.) outside diameter with a metal filter on the lower end. The tubing was marked at 0.3 m (1-ft) intervals so that depth from the top of the trench surface to the bottom could be measured. The depth-to-bottom from the top of the trench surface was typically 3 to 5 m (10 to 16 ft) (Table 2). The tubing then was pulled back approximately 0.1 m (0.25 ft) to lift the filter off the bottom of the trench. The top of the riser was sealed to prevent intrusion of ambient air during purging and sampling. The vapor sampling method is shown schematically in Figure 2.

The sample tubing was connected to a sampling pump, which was used to extract vapor from the bottom of the vent riser. The sampling pump was operated at 3.5 to 4 L/min for approximately 5 minutes to purge the tubing. This purge volume (17.5 to 20 L) sufficiently exceeded the

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<sup>3</sup> SUMMA is a trademark of Moletrics, Inc., Cleveland, Ohio.

<sup>4</sup> Teflon is a trademark of E.I. du Pont de Nemours and Company, Wilmington, Delaware.

<sup>5</sup> TYGON is a registered trademark of Norton Performance Plastics Corporation, a Saint-Gobain Company, Akron, Ohio.

## BURIAL GROUND SAMPLING AND ANALYSIS RESULTS FOR JULY – SEPTEMBER 2006

volume of the sampling tube (approximately 0.5 L) to ensure that the sampling tube was purged before sampling began.

Vapor samples then were collected in Tedlar<sup>6</sup> bags for field-screening analysis. Typically, four samples were collected at each vent riser. Two samples were collected in 1 L Tedlar bags for analysis using the Bruel & Kjaer 1302 photoacoustic gas analyzer<sup>7</sup> (B&K analyzer) for field-screening analysis for VOCs. The second sample was collected as a back-up sample in the event that the first sample could not be analyzed (e.g., if the Tedlar bag holding the first sample was discovered to have a leak). Following collection of these samples, two vapor samples were collected in 12 L Tedlar bags for analysis using the MIRAN SapphIRe Ambient Air Analyzer<sup>8</sup> (MIRAN analyzer) for field-screening analysis for VOCs. The second sample was collected as a back-up sample in the event that the first sample could not be analyzed. Following sample analysis, the sample tubing was removed from the riser and the cap was replaced.

Note: The SAP, Section 3.2.4, General Soil-Vapor Sampling Requirements, states that “The soil vapor in Tedlar bags may be analyzed using an Innova<sup>9</sup> multigas analyzer or other field-screening instrument that can differentiate between carbon tetrachloride and chloroform at the target-required quantitation limits specified in Table 2-1 [of the SAP].” The B&K analyzer was used for field screening of all samples collected in 1 L Tedlar bags. The same analytical technology (developed by B&K) is used in both the B&K and Innova analyzers. The Innova analyzer identified in the SAP and the B&K analyzer used on this project are both configured to analyze for carbon tetrachloride and chloroform. The target-required quantitation limits are the same for both instruments.

Following analysis of the vapor samples using the B&K and MIRAN analyzers, the field-screening results were used to determine the locations for collection of vapor samples in SUMMA canisters for laboratory analysis. The sampling methodology was similar to that used for the field-screening samples. Following the 5-minute purge, the valve on the canister was opened for 5 minutes to allow vapor to flow into the 6 L canister. The SUMMA canisters were transported to the laboratory for analysis.

The locations of the vent risers in the 218-W-4B Burial Ground trenches were surveyed in September 2006. The coordinates were recorded using the local Hanford Site coordinate system. These coordinates later were converted to coordinates using NAVD88, North American Vertical Datum of 1988, and the Washington State plane (south zone) in NAD83, North American Datum of 1983, with the 1991 adjustment for horizontal coordinates. The survey data will allow the locations of the vent risers to be established following waste (and vent-riser) retrieval. The relative locations of the vent risers are shown on Figure 3.

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<sup>6</sup> Tedlar is a registered trademark of E. I. du Pont de Nemours and Company, Wilmington, Delaware.

<sup>7</sup> 1302 photoacoustic gas analyzer is a trademark of Brüel and Kjær, S&V, Nærum, Denmark.

<sup>8</sup> MIRAN and the SapphIRe Ambient Air Analyzer are registered trademarks of Thermo Electron Corporation, Franklin, Massachusetts.

<sup>9</sup> Innova is a trademark of Innova AirTech Instruments A/S, Ballerup, Denmark.

## BURIAL GROUND SAMPLING AND ANALYSIS RESULTS FOR JULY – SEPTEMBER 2006

### 3.0 ANALYTICAL RESULTS

During Step I sampling at the 218-W-4B Burial Ground, vapor samples were collected from inside the engineered trenches through vent risers. Most of the samples were collected near the base of the trench, which is typically approximately 3 to 5 m (10 to 16 ft) below the engineered surface overlying the trench (Table 2).

The samples in 1 L Tedlar bags were analyzed using the B&K analyzer, which is configured to analyze for carbon tetrachloride, chloroform, methylene chloride, and methyl ethyl ketone. The samples in 12 L Tedlar bags were analyzed using the MIRAN analyzer, which identifies up to five compounds with the highest concentrations in the vapor sample from a library of more than 100 VOCs. The samples that were collected as back-up samples also were analyzed.

The results measured using the B&K and MIRAN analyzer field-screening instruments for samples collected through 218-W-4B Burial Ground vent risers in trench T-07 are provided in Table 3.

Field screening using the B&K analyzer indicated a maximum carbon tetrachloride concentration of 7,580 ppmv in riser T-07-4. Field screening using the MIRAN analyzer indicated a maximum carbon tetrachloride concentration of 274 ppmv in riser T-07-6. It is suspected that the B&K carbon tetrachloride results may be affected by interference from a co-contaminant with a similar infrared absorbance peak (e.g., tetrachloroethylene), and tests are planned to evaluate this possibility. Results of any tests will be provided in the next quarterly letter report. The field-screening results also will be compared to the laboratory results in the next quarterly letter report. Although the reason for the difference in readings between the two field-screening instruments is not completely understood, the results are relatively the same (i.e., the highest VOC concentration is carbon tetrachloride on both instruments, in samples from the western portion of the trench) and can be used to guide Step II sampling following RSW retrieval.

The B&K analyzer was calibrated at the factory for four VOCs: carbon tetrachloride, chloroform, methylene chloride, and methyl ethyl ketone. Additionally, the instrument response is checked during each day of use using two calibration gas standards for carbon tetrachloride. Results of the instrument response checks for both the lower concentration calibration gas and the higher concentration calibration gas show good response for carbon tetrachloride, indicating that the data are reliable for carbon tetrachloride as a single compound (Table 4).

The MIRAN analyzer contains factory calibration data for 120 chemical compounds. The calibration data have been confirmed on site using calibration gases for the following eight VOCs: carbon tetrachloride; chloroform; methylene chloride; 1,1,1-trichloroethane; 1,1,2-trichloroethane; 1,1-dichloroethane; trichloroethylene; and tetrachloroethylene. Additionally, on a quarterly basis, the MIRAN analyzer is checked for instrument response using a closed-loop injection system and 10 certified chemical compounds. Results of the instrument response checks indicate that all 10 of these compounds show good response (Table 5). Good agreement between the expected concentration and the instrument response indicates that the data generated from these analyses are reliable.

## BURIAL GROUND SAMPLING AND ANALYSIS RESULTS FOR JULY – SEPTEMBER 2006

Blank samples consisting of ambient air also were analyzed using the B&K and MIRAN analyzers to confirm that the instruments were not identifying concentrations of VOCs in samples containing no VOCs (i.e., false positives). Blank samples were analyzed using the B&K analyzer before and after analysis of the samples each day and were analyzed using the MIRAN analyzer at the start of analysis each day. No VOCs were detected in the blanks analyzed using the B&K analyzer, with the exception of some detections of methylene chloride near the detection limit (Table 6). No VOCs were detected in the blanks analyzed using the MIRAN analyzer.

The SUMMA canister samples for laboratory analysis were collected from vent risers T-07-4 and T-07-6 on September 5, 2006. A duplicate SUMMA canister sample was collected from vent riser T-07-6. Vapor samples from vent riser T-07-4 contained the highest VOC concentrations, based on field screening, in trench T-07. The additional SUMMA canister sample and the duplicate sample were collected from vent riser T-07-6, which had slightly lower VOC concentrations, to reduce the potential that the highest VOC concentrations would exceed calibration standards and make the duplicate analysis of little value. The results of the SUMMA canister samples were not available by September 30, 2006, and will be included in a subsequent quarterly report.

The maximum concentrations of VOCs detected in trench T-07 are summarized in Table 1. For most of these VOCs, the highest concentration was detected in the western part of trench T-07 (Table 3).

### 4.0 QUALITY CONTROL

Based on the SAP, field quality control required the collection of duplicate samples and equipment-blank samples for vent-riser vapor samples collected in Tedlar bags or SUMMA canisters.

For vent-riser vapor samples collected in Tedlar bags, duplicates are defined as samples collected with enough volume to permit two separate analyses, performed sequentially, using the same analytical equipment. For the samples collected in 1 L Tedlar bags, the sample and duplicate sample were analyzed sequentially from the same Tedlar bag using the B&K analyzer. As a result, duplicates were analyzed for both the primary and back-up samples. Duplicate samples were analyzed for all but two vent-riser samples collected in 1 L Tedlar bags. As a result, one field duplicate was analyzed for every 20 samples, as required. Duplicate samples could not be analyzed for the samples and back-up samples collected in 12 L Tedlar bags, because the MIRAN analyzer uses the entire 12 L sample volume for the first analysis.

For vent-riser vapor samples collected in SUMMA canisters, a duplicate is defined as an independent sample collected as close as possible to the same point in space and time, taken from the same source, stored in separate containers, and analyzed independently. A duplicate SUMMA canister sample was collected on September 5 at vent riser T-07-6 (Table 1 footnote).

## BURIAL GROUND SAMPLING AND ANALYSIS RESULTS FOR JULY – SEPTEMBER 2006

The duplicate samples were collected to evaluate the performance of the analytical method by comparing two analyses of the vapor concentration. Of the 28 sample/duplicate pairs analyzed using the B&K analyzer, there were 62 detections of the same VOC in both the sample and the duplicate. For example, detection of carbon tetrachloride and chloroform in both the sample and its duplicate would constitute 2 detections of the same VOC in both the sample and the duplicate. However, in only 34 of these sample/duplicate detections were the VOCs at concentrations greater than five times the method detection limit (1 ppmv for the B&K analyzer) (Table 3). The required precision of +/- 25 percent applies only to VOC detections that are greater than five times the method detection limit (DOE/RL-96-68, Hanford Analytical Services Quality Assurance Requirements Documents, Section 7.5.1.3).

The relative percent difference (RPD) was calculated for the 34 pairs of VOC results according to the formula:

$$RPD = \frac{(C_1 - C_2) \times 100}{(C_1 + C_2) / 2}$$

where

$C_1$  = the larger of the two observed values

$C_2$  = the smaller of the two observed values.

For all of the VOCs detected in these 34 pairs of results, the RPD ranged from 0 to 6.5 percent. These data met the required precision of +/- 25 percent.

For the vent-riser vapor samples collected in SUMMA canisters, one duplicate sample was collected from vent riser T-07-6 in a separate SUMMA canister. Results are not yet available.

The purpose of collecting equipment blanks is to verify the adequacy of sampling equipment decontamination procedures. Tedlar bags that were reused were cleaned by filling and emptying the bag with atmospheric air a minimum of three times. However, equipment blanks, which would consist of filling the cleaned bag with certified clean air and analyzing the contents to ensure that the Tedlar bag material is not responsible for VOC cross contamination, inadvertently were not analyzed. The SUMMA canisters are analyzed for cleanliness at the laboratory.

As discussed above, an instrument response check is conducted daily using the B&K analyzer and quarterly using the MIRAN analyzer. The concentration of each chemical compound measured during the response check using the B&K analyzer is provided in Table 4. The concentration of each chemical compound measured during the response check using the MIRAN analyzer is provided in Table 5. The pairs of standard and measured VOC concentrations were used to evaluate the accuracy of the analyses conducted using the B&K and MIRAN analyzers. The percent recovery (%R) was calculated according to the formula:

$$\%R = 100 \times (C_m / C_s)$$

## BURIAL GROUND SAMPLING AND ANALYSIS RESULTS FOR JULY – SEPTEMBER 2006

where

$C_m$  = the measured concentration of the standard

$C_s$  = the known value of the standard.

For the B&K analyzer, the minimum %R was 82.4 and the maximum %R was 89.1 for the lower concentration carbon tetrachloride standard (Table 4). For the higher concentration carbon tetrachloride standard, the minimum %R was 88.0 and the maximum %R was 105.5. For the MIRAN, the minimum %R was 75 and the maximum was 107.8. These calculations indicate that the analyses of carbon tetrachloride as a single compound using the B&K were accurate within 25 percent, as required. The calculations also indicate that the VOC concentrations using the MIRAN analyzer were accurate within 25 percent, as required. These results indicate good recovery.

No holding times were exceeded during the collection and field screening of vent-riser vapor samples.

Formal data validation was not performed on these field-screening analytical results. For field-screening data, the data were reviewed and determined to be usable, based on review of the sampling methodology and analyses of duplicates, blanks, and standards.

### 5.0 HEALTH AND SAFETY MONITORING AND RADIOLOGICAL FIELD SCREENING

Health and safety monitoring was conducted by industrial hygienists during the Step I sampling activities at the 218-W-4B Burial Ground. Before the cap was removed from each vent riser, the industrial hygienists conducted screening for VOCs using an organic vapor analyzer (OVA) and for combustible gases. (NOTE: Combustible gases were monitored to test the environment for intrinsic safeness for equipment selection and breathing-zone exposure.) The OVA included an 11.8 eV lamp and was calibrated for carbon tetrachloride. The lamp will ionize and measure compounds with lower ionization potentials, such as carbon tetrachloride (ionization potential of 11.47 eV). However, the total concentration measured may include other VOCs with ionization potentials equal to or less than 11.8 eV. The industrial hygienists surveyed for VOCs again at the top of the riser, following removal of the vent-riser cap. VOC concentrations ranging from 0.2 to 18.7 ppmv were detected at nine vent risers using the OVA. The radiological control technician then surveyed for radiological contamination. After each riser was surveyed and monitored for entry, a vapor sample was collected for analysis. During the sampling activities, the industrial hygienists performed continuous monitoring in the breathing zone and point source for VOCs. Controls put in place to prevent exposure included restricted access to limit personnel entry to only those designated to perform the work. A vapor and gas barrier was placed at the top of the vent riser to prevent bypass during vapor sampling.

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After the vent-riser sample was collected, the radiological control technician wiped the tubing and filter with a cloth as it was retrieved, to monitor for potential radiological contamination. Radiological field screening detected no radiological contamination at the vent risers in the 218-W-4B Burial Ground.

### **6.0 COMPARISON TO REGULATORY REQUIREMENTS**

As determined through the data quality objectives process, preliminary action levels are not applicable to VOC vapor samples.

### **7.0 DOCUMENTED CONTAMINANT RELEASES TO THE ENVIRONMENT**

Other than incidental and unavoidable vapor releases to atmosphere associated with sampling at the vent risers, no contaminant releases to the environment were documented as a result of the vent-riser vapor sampling. The vent-riser vapor samples were collected from within the engineered trench. The Step II and Step III characterization of the trench floor and vadose zone is designed to evaluate whether contaminants within the engineered trench were released to the environment.

### **8.0 PLANNED AND/OR SCHEDULED ADDITIONAL WORK**

The fieldwork associated with the Step I sampling at the 218-W-4B Burial Ground was completed during this quarter (July – September 2006). The analytical results of the SUMMA canister samples are anticipated to be provided during the next quarter (October – December 2006). These results will be evaluated and reported in the next quarterly report.

Based on the sampling design in the 218-W-4B Burial Ground SAP (DOE/RL-2004-70), Step II sampling is planned following completion of Step I sampling and retrieval of the RSW. The Step II characterization will be scheduled when the entire RSW portion of the trench has become accessible and sampling will not interfere with waste-retrieval operations.

Based on the sampling design in the 218-W-3A Burial Ground SAP (DOE/RL-2004-71), Step II sampling is planned following completion of Step I sampling and retrieval of the RSW. The Step II characterization will be scheduled when the entire RSW portion of the trench has become accessible and sampling will not interfere with waste-retrieval operations.

Based on the sampling design in the 218-E-12B Burial Ground SAP (DOE/RL-2004-32), Step II sampling is planned following completion of Step I sampling and retrieval of the RSW. The Step II characterization will be scheduled when the entire RSW portion of the trench has become accessible and sampling will not interfere with waste-retrieval operations.

## **BURIAL GROUND SAMPLING AND ANALYSIS RESULTS FOR JULY – SEPTEMBER 2006**

Based on the sampling design in the 218-W-4C Burial Ground SAP (DOE/RL-2003-48), Step II sampling is planned following completion of Step I sampling and retrieval of the RSW. The Step II characterization will be scheduled when the asphalt pad in an entire trench has become accessible and sampling will not interfere with waste-retrieval operations.

### **9.0 REFERENCES**

Atomic Energy Act of 1954, 42 USC 2011, et seq.

DOE G 435.1-1, 1999, Implementation Guide for Use with DOE M 435.1-1, U.S. Department of Energy, Washington, D.C.

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DOE/RL-2004-71, 2006, 218-W-3A Burial Ground Sampling and Analysis Plan, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology, EPA, and DOE, 1989, Hanford Federal Facility Agreement and Consent Order, 2 vols., Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington, as amended.

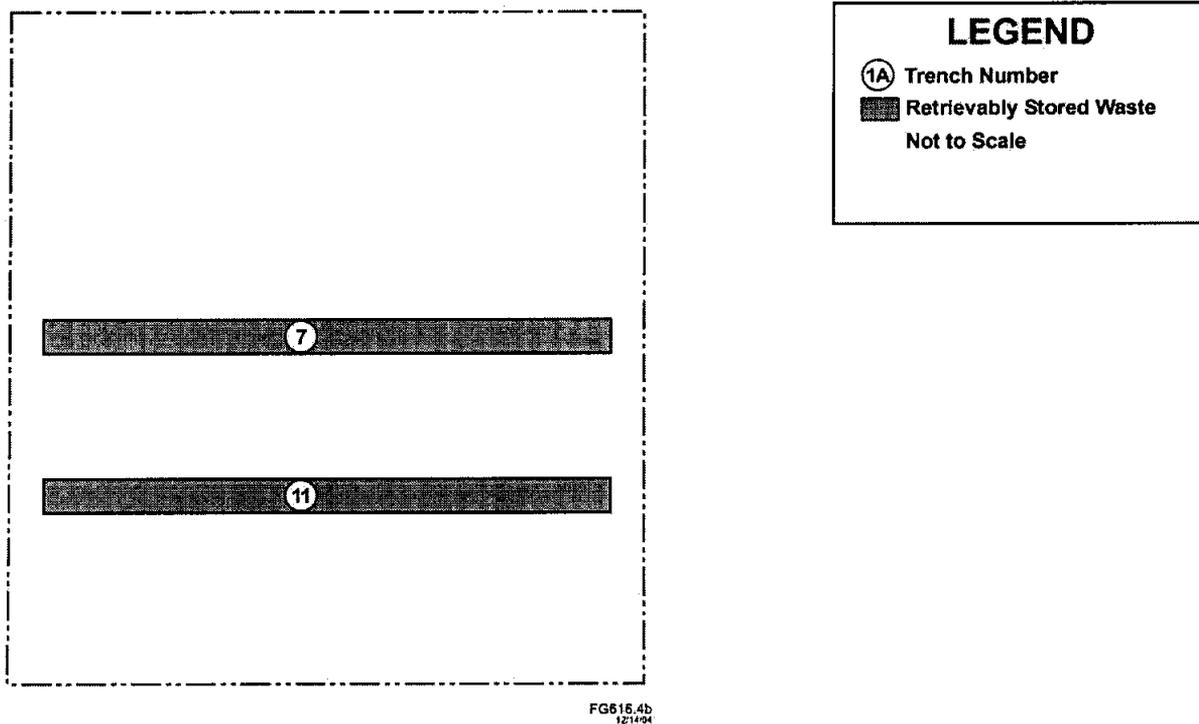
Hanford Environmental Information System, Hanford Site database.

NAD83, 1991, North American Datum of 1983, National Geodetic Survey, Federal Geodetic Control Committee, Silver Spring, Maryland.

NAVD88, 1988, North American Vertical Datum of 1988, National Geodetic Survey, Federal Geodetic Control Committee, Silver Spring, Maryland.

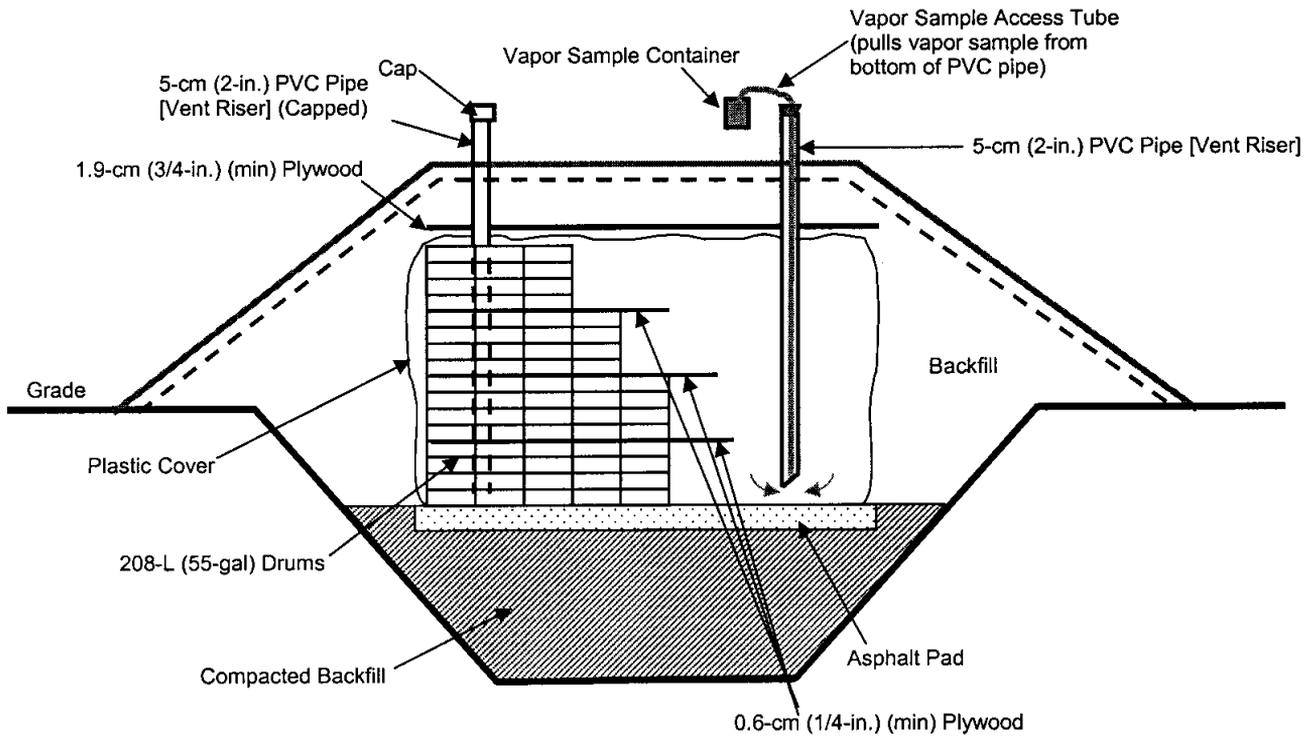
**BURIAL GROUND SAMPLING AND ANALYSIS RESULTS  
FOR JULY – SEPTEMBER 2006**

Figure 1. Locations of Retrievably Stored Waste Trenches at the 218-W-4B Burial Ground.



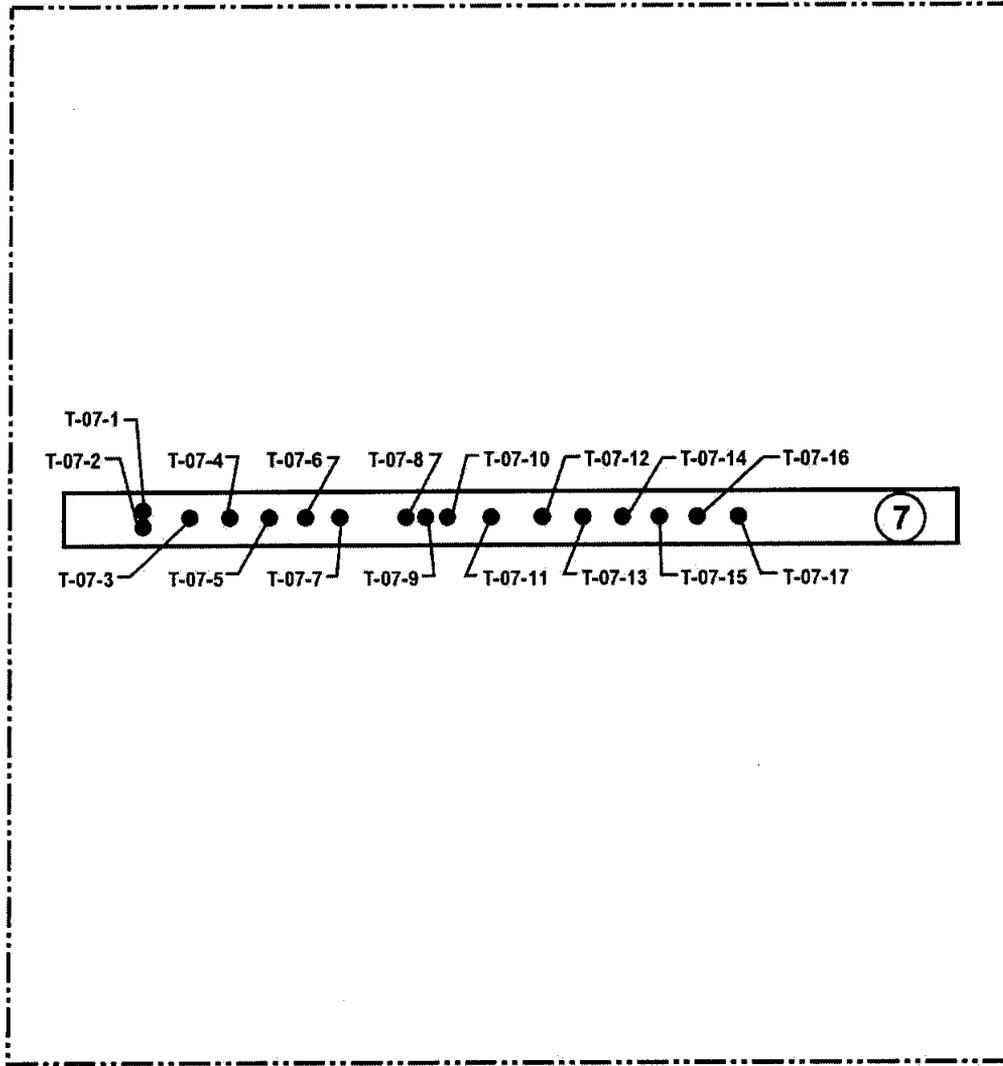
# BURIAL GROUND SAMPLING AND ANALYSIS RESULTS FOR JULY – SEPTEMBER 2006

Figure 2. Schematic View of the 218-W-4B Burial Ground Trench and the Vent-Riser Sampling Method.



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Figure 3. Locations of Vent Risers in the 218-W-4B Burial Ground Trench.



FG2184B.1  
10/24/06

**LEGEND**

- ⑦ Trench Number
- Vent Risers in Areas of Retrievably Stored Waste

Table 1. Summary of 218-W-4B Burial Ground Step I Sampling.

Trench	# of Vent Risers	# of Vent Risers Sampled for Field Screening	# of SUMMA Canister Samples Collected*	Maximum Concentrations in Vent-Riser Samples, Based on Field Screening								
				CCl <sub>4</sub> (ppmv) <sup>a c</sup>	Chloroform (ppmv) <sup>a</sup>	Methylene Chloride (ppmv) <sup>a</sup>	MEK (ppmv) <sup>a</sup>	PCE (ppmv) <sup>b</sup>	Dichloro-benzene, m- (ppmv) <sup>b</sup>	R-113 (ppmv) <sup>b</sup>	Tetrahydro-furan (ppmv) <sup>b</sup>	Carbon Dioxide (ppmv) <sup>b</sup>
				CAS # 56-23-5	CAS # 67-66-3	CAS # 75-09-2	CAS # 78-93-3	CAS # 127-18-4	CAS # 541-73-1	CAS# 76-13-1	CAS # 109-99-9	CAS # 124-38-9
T-07	17	14	3	7,580	155	51.2	193	124	40.0	47.0	132.4	59,800

\*A SUMMA canister sample was collected from the vent riser with the highest VOC concentrations, based on field screening, in trench T-07 (vent riser T-07-4).

A second SUMMA canister sample was collected in trench T-07 from a vent riser with slightly lower VOC concentrations (vent riser T-07-6). The duplicate SUMMA canister sample was collected from this vent riser (T-07-6) to reduce the potential that the VOC concentrations would exceed calibration standards and make the duplicate analysis of little value. SUMMA is a trademark of Moetrics, Inc., Cleveland, Ohio.

<sup>a</sup> Measured using the B&K 1302 photoacoustic gas analyzer, a trademark of Brüel and Kjær, S&V, Nærum, Denmark.

<sup>b</sup> Measured using the MIRAN analyzer.

<sup>c</sup> The maximum carbon tetrachloride concentration measured using the MIRAN SapphIRe Ambient Air Analyzer was 274 ppmv. MIRAN and the SapphIRe Ambient Air Analyzer are registered trademarks of Thermo Electron Corporation, Franklin, Massachusetts.

CAS = Chemical Abstracts Service.

CCl<sub>4</sub> = carbon tetrachloride.

MEK = methyl ethyl ketone

PCE = tetrachloroethylene.

ppmv = parts per million by volume.

R-113 = refrigerant, 1,1,2-Trichloro-1,2,2-trifluoroethane.

VOC = volatile organic compound.

Table 2. Field Measurements for Samples Collected Through Vent Risers in the  
218-W-4B Burial Ground Trench. (7 Pages)

Vent Riser	Sample Depth <sup>a</sup> Below Surface (m)	B&K 1302 Photoacoustic Gas Analyzer				MIRAN SapphIRe Ambient Air Analyzer			
		Sample Identifier	HEIS Number	Sample Date and Time	Analysis Date and Time	Sample Identifier	HEIS Number	Sample Date and Time	Analysis Date and Time
T-07-1	4.4	T-07-1 B1KWD1	B1KWD1	8/23/06 10:32	8/23/06 12:27	T-07-1 B1KW35	B1KW35	8/23/06 10:42	8/23/06 12:10
		T-07-1 B1KWD1 duplicate	B1KWD2	8/23/06 10:32	8/23/06 12:29				
		T-07-1 B1KWD3	B1KWD3	8/23/06 10:34	8/23/06 12:31	T-07-1 B1KW36	B1KW36	8/23/06 10:49	8/23/06 12:17
		T-07-1 B1KWD3 duplicate	B1KWD4	8/23/06 10:34	8/23/06 12:33				
T-07-2	4.3	T-07-2 B1KWC7	B1KWC7	8/23/06 13:35	8/23/06 16:08	T-07-2 B1KW38 <sup>b</sup>	B1KW38	8/23/06 13:47	8/23/06 14:38
		T-07-2 B1KWC7 duplicate	B1KWC8	8/23/06 13:35	8/23/06 16:10				
		T-07-2 B1KWC9	B1KWC9	8/23/06 13:37	8/23/06 16:12				
		T-07-2 B1KWC9 duplicate	B1KWD0	8/23/06 13:37	8/23/06 16:14				
T-07-3	4.9	T-07-3 B1KWC3	B1KWC3	8/23/06 14:07	8/23/06 16:18	T-07-3 B1KW39	B1KW39	8/23/06 14:10	8/23/06 16:40
		T-07-3 B1KWC3 duplicate	B1KWC4	8/23/06 14:07	8/23/06 16:20				

Table 2. Field Measurements for Samples Collected Through Vent Risers in the 218-W-4B Burial Ground Trench. (7 Pages)

Vent Riser	Sample Depth <sup>a</sup> Below Surface (m)	B&K 1302 Photoacoustic Gas Analyzer				MIRAN SapphIRe Ambient Air Analyzer			
		Sample Identifier	HEIS Number	Sample Date and Time	Analysis Date and Time	Sample Identifier	HEIS Number	Sample Date and Time	Analysis Date and Time
T-07-3 cont.	4.9 cont.	T-07-3 B1KWC5	B1KWC5	8/23/06 14:08	8/23/06 16:22	T-07-3 B1KW40	B1KW40	8/23/06 14:17	8/23/06 16:46
		T-07-3 B1KWC5 duplicate	B1KWC6	8/23/06 14:08	8/23/06 16:24				
T-07-4	4.9	T-07-4 B1KWB7	B1KWB7	8/23/06 14:50	8/23/06 16:26	T-07-4 B1KW41 <sup>b</sup>	B1KW41	8/23/06 14:54	8/23/06 16:52
		T-07-4 B1KWB8	B1KWB8	8/23/06 14:52	8/23/06 16:30				
		T-07-4 B1KWB9 <sup>d</sup>	B1KWB9	8/29/06 11:01	8/29/06 13:40	T-07-4 B1KW43 <sup>d</sup>	B1KW43	8/29/06 11:03	8/29/06 15:57
		T-07-4 B1KWB9 duplicate <sup>e</sup>	B1KWC0	8/29/06 11:01	8/29/06 14:20				
		T-07-4 B1KWC1 <sup>d</sup>	B1KWC1	8/29/06 11:02	8/29/06 13:42				
		T-07-4 B1KWC1 duplicate <sup>e</sup>	B1KWC2	8/29/06 11:02	8/29/06 14:21				
T-07-5	3.4	T-07-5 B1KWB3	B1KWB3	8/24/06 09:29	8/24/06 11:32	T-07-5 B1KW45 <sup>b</sup>	B1KW45	8/24/06 09:35	8/24/06 12:34
		T-07-5 B1KWB3 duplicate	B1KWB4	8/24/06 09:29	8/24/06 11:34				

Table 2. Field Measurements for Samples Collected Through Vent Risers in the  
218-W-4B Burial Ground Trench. (7 Pages)

Vent Riser	Sample Depth <sup>a</sup> Below Surface (m)	B&K 1302 Photoacoustic Gas Analyzer				MIRAN SapphIRe Ambient Air Analyzer			
		Sample Identifier	HEIS Number	Sample Date and Time	Analysis Date and Time	Sample Identifier	HEIS Number	Sample Date and Time	Analysis Date and Time
T-07-5 cont.	3.4 cont.	T-07-5 B1KWB5	B1KWB5	8/24/06 09:30	8/24/06 11:36				
		T-07-5 B1KWB5 duplicate	B1KWB6	8/24/06 09:30	8/24/06 11:38				
T-07-6	4.7	T-07-6 B1KW95	B1KW95	8/24/06 10:00	8/24/06 11:41	T-07-6 B1KW47	B1KW47	8/24/06 10:01	8/24/06 12:49
		T-07-6 B1KW95 duplicate <sup>e</sup>	B1KW96	8/24/06 10:00	8/24/06 12:03				
		T-07-6 B1KW97	B1KW97	8/24/06 10:01	8/24/06 11:45	T-07-6 B1KW48	B1KW48	8/24/06 10:09	8/24/06 12:55
		T-07-6 B1KW97 duplicate <sup>e</sup>	B1KW98	8/24/06 10:01	8/24/06 12:05				
		T-07-6 B1KW99 <sup>d</sup>	B1KW99	8/29/06 10:59	8/29/06 13:36	T-07-6 B1KW49 <sup>d</sup>	B1KW49	8/29/06 11:00	8/29/06 15:44
		T-07-6 B1KW99 duplicate <sup>e</sup>	B1KWB0	8/29/06 10:59	8/29/06 14:56				
		T-07-6 B1KWB1 <sup>d</sup>	B1KWB1	8/29/06 11:00	8/29/06 13:38	T-07-6 B1KW50 <sup>d</sup>	B1KW50	8/29/06 11:05	8/29/06 15:49
		T-07-6 B1KWB1 duplicate <sup>e</sup>	B1KWB2	8/29/06 11:00	8/29/06 14:58				

BURIAL GROUND SAMPLING AND ANALYSIS RESULTS  
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Table 2. Field Measurements for Samples Collected Through Vent Risers in the 218-W-4B Burial Ground Trench. (7 Pages)

Vent Riser	Sample Depth <sup>a</sup> Below Surface (m)	B&K 1302 Photoacoustic Gas Analyzer				MIRAN SapphIRe Ambient Air Analyzer			
		Sample Identifier	HEIS Number	Sample Date and Time	Analysis Date and Time	Sample Identifier	HEIS Number	Sample Date and Time	Analysis Date and Time
T-07-10	4.7	T-07-10 B1KW93 <sup>b</sup>	B1KW93	8/24/06 10:28	8/24/06 11:49	T-07-10 B1KW51	B1KW51	8/24/06 10:28	8/24/06 13:01
		T-07-10 B1KW93 duplicate	B1KW94	8/24/06 10:28	8/24/06 12:01	T-07-10 B1KW52	B1KW52	8/24/06 10:33	8/24/06 13:07
T-07-11	4.6	T-07-11 B1KW89	B1KW89	8/24/06 13:24	8/24/06 14:59	T-07-11 B1KW53	B1KW53	8/24/06 13:31	8/24/06 16:18
		T-07-11 B1KW89 duplicate <sup>c</sup>	B1KW90	8/24/06 13:24	8/24/06 15:16				
		T-07-11 B1KW91	B1KW91	8/24/06 13:25	8/24/06 15:00	T-07-11 B1KW54	B1KW54	8/24/06 13:26	8/24/06 16:24
		T-07-11 B1KW91 duplicate <sup>c</sup>	B1KW92	8/24/06 13:25	8/24/06 15:18				
T-07-12	4.7	T-07-12 B1KW87 <sup>b</sup>	B1KW87	8/24/06 13:46	8/24/06 14:53	T-07-12 B1KW55	B1KW55	8/24/06 13:47	8/24/06 16:30
		T-07-12 B1KW87 duplicate <sup>c</sup>	B1KW88	8/24/06 13:46	8/24/06 15:12	T-07-12 B1KW56	B1KW56	8/24/06 13:53	8/24/06 16:40

BURIAL GROUND SAMPLING AND ANALYSIS RESULTS  
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Table 2. Field Measurements for Samples Collected Through Vent Risers in the  
218-W-4B Burial Ground Trench. (7 Pages)

Vent Riser	Sample Depth <sup>a</sup> Below Surface (m)	B&K 1302 Photoacoustic Gas Analyzer				MIRAN SapphIRe Ambient Air Analyzer			
		Sample Identifier	HEIS Number	Sample Date and Time	Analysis Date and Time	Sample Identifier	HEIS Number	Sample Date and Time	Analysis Date and Time
T-07-13	3.0	T-07-13 B1KW83	B1KW83	8/24/06 14:10	8/24/06 15:02	T-07-13 B1KW57 <sup>b</sup>	B1KW57	8/24/06 14:11	8/24/06 16:48
		T-07-13 B1KW83 duplicate <sup>c</sup>	B1KW84	8/24/06 14:10	8/24/06 15:20				
		T-07-13 B1KW85	B1KW85	8/24/06 14:11	8/24/06 15:04				
		T-07-13 B1KW85 duplicate <sup>c</sup>	B1KW86	8/24/06 14:11	8/24/06 15:22				
T-07-14	5.0	T-07-14 B1KW79	B1KW79	8/29/06 10:22	8/29/06 13:31	T-07-14 B1KW59	B1KW59	8/29/06 10:24	8/29/06 15:31
		T-07-14 B1KW79 duplicate <sup>c</sup>	B1KW80	8/29/06 10:22	8/29/06 14:52				
		T-07-14 B1KW81	B1KW81	8/29/06 10:35	8/29/06 13:34	T-07-14 B1KW60	B1KW60	8/29/06 10:29	8/29/06 15:38
		T-07-14 B1KW81 duplicate <sup>c</sup>	B1KW82	8/29/06 10:35	8/29/06 14:54				

BURIAL GROUND SAMPLING AND ANALYSIS RESULTS  
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Table 2. Field Measurements for Samples Collected Through Vent Risers in the  
218-W-4B Burial Ground Trench. (7 Pages)

Vent Riser	Sample Depth <sup>a</sup> Below Surface (m)	B&K 1302 Photoacoustic Gas Analyzer				MIRAN SapphIRe Ambient Air Analyzer			
		Sample Identifier	HEIS Number	Sample Date and Time	Analysis Date and Time	Sample Identifier	HEIS Number	Sample Date and Time	Analysis Date and Time
T-07-15	4.1	T-07-15 B1KW75	B1KW75	8/29/06 10:18	8/29/06 13:28	T-07-15 B1KW61	B1KW61	8/29/06 10:20	8/29/06 15:20
		T-07-15 B1KW75 duplicate <sup>c</sup>	B1KW76	8/29/06 10:18	8/29/06 14:48				
		T-07-15 B1KW77	B1KW77	8/29/06 10:19	8/29/06 13:30	T-07-15 B1KW62	B1KW62	8/29/06 10:26	8/29/06 15:26
		T-07-15 B1KW77 duplicate <sup>c</sup>	B1KW78	8/29/06 10:19	8/29/06 14:50				
T-07-16	3.4	T-07-16 B1KW71	B1KW71	8/29/06 09:53	8/29/06 13:25	T-07-16 B1KW63	B1KW63	8/29/06 09:54	8/29/06 15:08
		T-07-16 B1KW71 duplicate <sup>c</sup>	B1KW72	8/29/06 09:53	8/29/06 14:44				
		T-07-16 B1KW73	B1KW73	8/29/06 09:54	8/29/06 13:26	T-07-16 B1KW64	B1KW64	8/29/06 10:01	8/29/06 15:14
		T-07-16 B1KW73 duplicate <sup>c</sup>	B1KW74	8/29/06 09:54	8/29/06 14:46				

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Table 2. Field Measurements for Samples Collected Through Vent Risers in the 218-W-4B Burial Ground Trench. (7 Pages)

Vent Riser	Sample Depth <sup>a</sup> Below Surface (m)	B&K 1302 Photoacoustic Gas Analyzer				MIRAN SapphIRe Ambient Air Analyzer			
		Sample Identifier	HEIS Number	Sample Date and Time	Analysis Date and Time	Sample Identifier	HEIS Number	Sample Date and Time	Analysis Date and Time
T-07-17	2.3	T-07-17 B1KW67	B1KW67	8/29/06 09:41	8/29/06 13:21	T-07-17 B1KW66 <sup>b</sup>	B1KW66	8/29/06 09:57	8/29/06 15:01
		T-07-17 B1KW67 duplicate <sup>c</sup>	B1KW68	8/29/06 09:41	8/29/06 14:39				
		T-07-17 B1KW69	B1KW69	8/29/06 09:42	8/29/06 13:23				
		T-07-17 B1KW69 duplicate <sup>c</sup>	B1KW70	8/29/06 09:42	8/29/06 14:41				

<sup>a</sup> Depths are approximate; all risers are assumed to be vertical.

<sup>b</sup> Either the first sample or the back-up sample was not analyzed because the instrument indicated a problem with the purge of the bag or because the bag was discovered to have a hole.

<sup>c</sup> Sample collected in three 5 L Tedlar bags rather than one 12 L Tedlar bag. Tedlar is a registered trademark of E. I. du Pont de Nemours and Company, Wilmington, Delaware.

<sup>d</sup> Resampled to confirm earlier results.

<sup>e</sup> The duplicate was not analyzed immediately following sample analysis but still represents a sequential analysis of the vapor in the Tedlar bag during the same field analytical event.

B&K 1302 Photoacoustic Gas Analyzer is a trademark of Brüel and Kjær, S&V, Nærum, Denmark.

MIRAN and the SapphIRe Ambient Air Analyzer are registered trademarks of Thermo Electron Corporation, Franklin, Massachusetts.

Tedlar is a registered trademark of E. I. du Pont de Nemours and Company, Wilmington, Delaware.

HEIS = Hanford Environmental Information System database.

ppmv = parts per million by volume.

Table 3. Field-Screening Results for Samples Collected Through Vent Risers in the 218-W-4B Burial Ground Trench T-07. (8 Pages)

Sample Identifier	HEIS Number	Sample Date	B&K 1302 Photoacoustic Gas Analyzer				MIRAN SapphIRe Ambient Air Analyzer*						
			CCl <sub>4</sub> <sup>a</sup> (ppmv)	Chloroform (ppmv)	Methylene Chloride (ppmv)	MEK (ppmv)	CCl <sub>4</sub> <sup>a</sup> (ppmv)	Chloroform (ppmv)	PCE (ppmv)	Dichlorobenzene, m- <sup>b</sup> (ppmv)	R-113 <sup>b</sup> (ppmv)	Tetrahydrofuran <sup>b</sup> (ppmv)	Carbon Dioxide (ppmv)
			CAS # 56-23-5	CAS # 67-66-3	CAS # 75-09-2	CAS # 78-93-3	CAS # 56-23-5	CAS # 67-66-3	CAS # 127-18-4	CAS # 541-73-1	CAS # 76-13-1	CAS # 109-99-9	CAS # 124-38-9
T-07-1 B1KWD1	B1KWD1	8/23/06	1.33	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA
T-07-1 B1KWD1 duplicate	B1KWD2	8/23/06	1.32	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA
T-07-1 B1KWD3	B1KWD3	8/23/06	1.73	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA
T-07-1 B1KWD3 duplicate	B1KWD4	8/23/06	1.73	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA
T-07-1 B1KW35	B1KW35	8/23/06	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	360
T-07-1 B1KW36	B1KW36	8/23/06	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	360
T-07-2 B1KWC7	B1KWC7	8/23/06	1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA
T-07-2 B1KWC7 duplicate	B1KWC8	8/23/06	1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA
T-07-2 B1KWC9	B1KWC9	8/23/06	1.59	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA
T-07-2 B1KWC9 duplicate	B1KWD0	8/23/06	1.62	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA
T-07-2 B1KW38 <sup>d</sup>	B1KW38	8/23/06	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	354
T-07-3 B1KWC3	B1KWC3	8/23/06	18.5	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA

BURIAL GROUND SAMPLING AND ANALYSIS RESULTS  
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Table 3. Field-Screening Results for Samples Collected Through Vent Risers in the 218-W-4B Burial Ground Trench T-07. (8 Pages)

Sample Identifier	HEIS Number	Sample Date	B&K 1302 Photoacoustic Gas Analyzer				MIRAN SapphIRe Ambient Air Analyzer*							
			CCl <sub>4</sub> <sup>a</sup> (ppmv)	Chloroform (ppmv)	Methylene Chloride (ppmv)	MEK (ppmv)	CCl <sub>4</sub> <sup>a</sup> (ppmv)	Chloroform (ppmv)	PCE (ppmv)	Dichlorobenzene, m- <sup>b</sup> (ppmv)	R-113 <sup>b</sup> (ppmv)	Tetrahydrofuran <sup>b</sup> (ppmv)	Carbon Dioxide (ppmv)	
			CAS # 56-23-5	CAS # 67-66-3	CAS # 75-09-2	CAS # 78-93-3	CAS # 56-23-5	CAS # 67-66-3	CAS # 127-18-4	CAS # 541-73-1	CAS # 76-13-1	CAS # 109-99-9	CAS # 124-38-9	
T-07-3 B1KWC3 duplicate	B1KWC4	8/23/06	18.6	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	
T-07-3 B1KWC5	B1KWC5	8/23/06	18.9	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	
T-07-3 B1KWC5 duplicate	B1KWC6	8/23/06	18.9	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	
T-07-3 B1KW39	B1KW39	8/23/06	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	580	
T-07-3 B1KW40	B1KW40	8/23/06	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	540	
T-07-4 B1KWB7	B1KWB7	8/23/06	7,320	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	
T-07-4 B1KWB8	B1KWB8	8/23/06	7,340	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	
T-07-4 B1KW41 <sup>d</sup>	B1KW41	8/23/06	NA	NA	NA	NA	51.5 J	ND	266 J	ND	ND	ND	97,300 J	
T-07-4 B1KWB9	B1KWB9	8/29/06	7,450	151.00	48.00	188.00	NA	NA	NA	NA	NA	NA	NA	
T-07-4 B1KWB9 duplicate	B1KWC0	8/29/06	7,580	Not analyzed <sup>c</sup>	Not analyzed <sup>c</sup>	Not analyzed <sup>c</sup>	NA	NA	NA	NA	NA	NA	NA	
T-07-4 B1KWC1	B1KWC1	8/29/06	7,560	155.00	50.90	193.00	NA	NA	NA	NA	NA	NA	NA	
T-07-4 B1KWC1 duplicate	B1KWC2	8/29/06	7,460	Not analyzed <sup>c</sup>	Not analyzed <sup>c</sup>	Not analyzed <sup>c</sup>	NA	NA	NA	NA	NA	NA	NA	

BURIAL GROUND SAMPLING AND ANALYSIS RESULTS  
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Table 3. Field-Screening Results for Samples Collected Through Vent Risers in the 218-W-4B Burial Ground Trench T-07. (8 Pages)

Sample Identifier	HEIS Number	Sample Date	B&K 1302 Photoacoustic Gas Analyzer				MIRAN SapphIRe Ambient Air Analyzer*						
			CCl <sub>4</sub> <sup>a</sup> (ppmv)	Chloroform (ppmv)	Methylene Chloride (ppmv)	MEK (ppmv)	CCl <sub>4</sub> <sup>a</sup> (ppmv)	Chloroform (ppmv)	PCE (ppmv)	Dichlorobenzene, m- <sup>b</sup> (ppmv)	R-113 <sup>b</sup> (ppmv)	Tetrahydrofuran <sup>b</sup> (ppmv)	Carbon Dioxide (ppmv)
			CAS # 56-23-5	CAS # 67-66-3	CAS # 75-09-2	CAS # 78-93-3	CAS # 56-23-5	CAS # 67-66-3	CAS # 127-18-4	CAS # 541-73-1	CAS # 76-13-1	CAS # 109-99-9	CAS # 124-38-9
T-07-4 B1KW43	B1KW43	8/29/06	NA	NA	NA	NA	92.87	ND	62.52	ND	47.03	132.37	45,400
T-07-4 B1KW44	B1KW44	8/29/06	NA	NA	NA	NA	84.35	ND	64.49	ND	36.83	118.32	37,700
T-07-5 B1KWB3	B1KWB3	8/24/06	9.65	2.53	1.70	2.51	NA	NA	NA	NA	NA	NA	NA
T-07-5 B1KWB3 duplicate	B1KWB4	8/24/06	9.55	2.68	1 U	3.00	NA	NA	NA	NA	NA	NA	NA
T-07-5 B1KWB5	B1KWB5	8/24/06	4.08	1.44	1 U	1.10	NA	NA	NA	NA	NA	NA	NA
T-07-5 B1KWB5 duplicate	B1KWB6	8/24/06	4.02	1.50	1 U	1.04	NA	NA	NA	NA	NA	NA	NA
T-07-5 B1KW45 <sup>d</sup>	B1KW45	8/24/06	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
T-07-6 B1KW95	B1KW95	8/24/06	1,550	9.04	51.20	78.40	NA	NA	NA	NA	NA	NA	NA
T-07-6 B1KW95 duplicate	B1KW96	8/24/06	1,550	Not analyzed <sup>c</sup>	Not analyzed <sup>c</sup>	Not analyzed <sup>c</sup>	NA	NA	NA	NA	NA	NA	NA
T-07-6 B1KW97	B1KW97	8/24/06	1,690	8.73	46.80	71.70	NA	NA	NA	NA	NA	NA	NA
T-07-6 B1KW97 duplicate	B1KW98	8/24/06	1,660	Not analyzed <sup>c</sup>	Not analyzed <sup>c</sup>	Not analyzed <sup>c</sup>	NA	NA	NA	NA	NA	NA	NA
T-07-6 B1KW47	B1KW47	8/24/06	NA	NA	NA	NA	225 J	ND	ND	ND	ND	ND	51,100 J

BURIAL GROUND SAMPLING AND ANALYSIS RESULTS  
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Table 3. Field-Screening Results for Samples Collected Through Vent Risers in the 218-W-4B Burial Ground Trench T-07. (8 Pages)

Sample Identifier	HEIS Number	Sample Date	B&K 1302 Photoacoustic Gas Analyzer				MIRAN SappHRe Ambient Air Analyzer*							
			CCl <sub>4</sub> <sup>a</sup> (ppmv)	Chloroform (ppmv)	Methylene Chloride (ppmv)	MEK (ppmv)	CCl <sub>4</sub> <sup>a</sup> (ppmv)	Chloroform (ppmv)	PCE (ppmv)	Dichlorobenzene, m- <sup>b</sup> (ppmv)	R-113 <sup>b</sup> (ppmv)	Tetrahydrofuran <sup>b</sup> (ppmv)	Carbon Dioxide (ppmv)	
			CAS # 56-23-5	CAS # 67-66-3	CAS # 75-09-2	CAS # 78-93-3	CAS # 56-23-5	CAS # 67-66-3	CAS # 127-18-4	CAS # 541-73-1	CAS # 76-13-1	CAS # 109-99-9	CAS # 124-38-9	
T-07-6 B1KW48	B1KW48	8/24/06	NA	NA	NA	NA	274	18.5	124	ND	ND	ND	59,800	
T-07-6 B1KW99	B1KW99	8/29/06	98.20	1 U	19.60	30.30	NA	NA	NA	NA	NA	NA	NA	
T-07-6 B1KW99 duplicate	B1KWB0	8/29/06	97.60	1 U	19.80	30.20	NA	NA	NA	NA	NA	NA	NA	
T-07-6 B1KWB1	B1KWB1	8/29/06	34.40	1 U	7.46	10.10	NA	NA	NA	NA	NA	NA	NA	
T-07-6 B1KWB1 duplicate	B1KWB2	8/29/06	34.50	1 U	7.53	10.10	NA	NA	NA	NA	NA	NA	NA	
T-07-6 B1KW49	B1KW49	8/29/06	NA	NA	NA	NA	21.74 J	ND	ND	38.69 J	ND	ND	ND	
T-07-6 B1KW50	B1KW50	8/29/06	NA	NA	NA	NA	11.94 J	ND	ND	ND	ND	ND	ND	
T-07-10 B1KW93 <sup>d</sup>	B1KW93	8/24/06	809	23.6	17.70	8.93	NA	NA	NA	NA	NA	NA	NA	
T-07-10 B1KW93 duplicate	B1KW94	8/24/06	804	Not analyzed <sup>c</sup>	Not analyzed <sup>c</sup>	Not analyzed <sup>c</sup>	NA	NA	NA	NA	NA	NA	NA	
T-07-10 B1KW51	B1KW51	8/24/06	NA	NA	NA	NA	144	ND	ND	40	ND	ND	25,100	
T-07-10 B1KW52	B1KW52	8/24/06	NA	NA	NA	NA	121	ND	ND	37	ND	ND	20,900	
T-07-11 B1KW89	B1KW89	8/24/06	82.90	1 U	17.00	21.80	NA	NA	NA	NA	NA	NA	NA	

BURIAL GROUND SAMPLING AND ANALYSIS RESULTS  
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Table 3. Field-Screening Results for Samples Collected Through Vent Risers in the 218-W-4B Burial Ground Trench T-07. (8 Pages)

Sample Identifier	HEIS Number	Sample Date	B&K 1302 Photoacoustic Gas Analyzer				MIRAN SapphIRe Ambient Air Analyzer*						
			CCl <sub>4</sub> <sup>a</sup> (ppmv)	Chloroform (ppmv)	Methylene Chloride (ppmv)	MEK (ppmv)	CCl <sub>4</sub> <sup>a</sup> (ppmv)	Chloroform (ppmv)	PCE (ppmv)	Dichlorobenzene, m- <sup>b</sup> (ppmv)	R-113 <sup>b</sup> (ppmv)	Tetrahydrofuran <sup>b</sup> (ppmv)	Carbon Dioxide (ppmv)
			CAS # 56-23-5	CAS # 67-66-3	CAS # 75-09-2	CAS # 78-93-3	CAS # 56-23-5	CAS # 67-66-3	CAS # 127-18-4	CAS # 541-73-1	CAS # 76-13-1	CAS # 109-99-9	CAS # 124-38-9
T-07-11 B1KW89 duplicate	B1KW90	8/24/06	83.30	1 U	17.60	22.00	NA	NA	NA	NA	NA	NA	NA
T-07-11 B1KW91	B1KW91	8/24/06	53.90	1 U	10.20	13.20	NA	NA	NA	NA	NA	NA	NA
T-07-11 B1KW91 duplicate	B1KW92	8/24/06	54.00	1 U	10.80	13.10	NA	NA	NA	NA	NA	NA	NA
T-07-11 B1KW53	B1KW53	8/24/06	NA	NA	NA	NA	14 J	ND	ND	ND	ND	ND	ND
T-07-11 B1KW54	B1KW54	8/24/06	NA	NA	NA	NA	18 J	ND	ND	ND	ND	ND	ND
T-07-12 B1KW87 <sup>d</sup>	B1KW87	8/24/06	24.70	13.10	9.17	21.20	NA	NA	NA	NA	NA	NA	NA
T-07-12 B1KW87 duplicate	B1KW88	8/24/06	24.80	12.70	9.41	21.20	NA	NA	NA	NA	NA	NA	NA
T-07-12 B1KW55	B1KW55	8/24/06	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
T-07-12 B1KW56	B1KW56	8/24/06	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
T-07-13 B1KW83	B1KW83	8/24/06	1.58	1 U	1.64	1 U	NA	NA	NA	NA	NA	NA	NA
T-07-13 B1KW83 duplicate	B1KW84	8/24/06	1.63	1 U	2.38	1.06	NA	NA	NA	NA	NA	NA	NA
T-07-13 B1KW85	B1KW85	8/24/06	1.37	1 U	1.73	1 U	NA	NA	NA	NA	NA	NA	NA

BURIAL GROUND SAMPLING AND ANALYSIS RESULTS  
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Table 3. Field-Screening Results for Samples Collected Through Vent Risers in the 218-W-4B Burial Ground Trench T-07. (8 Pages)

Sample Identifier	HEIS Number	Sample Date	B&K 1302 Photoacoustic Gas Analyzer				MIRAN SapphIRe Ambient Air Analyzer*						
			CCl <sub>4</sub> <sup>a</sup> (ppmv)	Chloroform (ppmv)	Methylene Chloride (ppmv)	MEK (ppmv)	CCl <sub>4</sub> <sup>a</sup> (ppmv)	Chloroform (ppmv)	PCE (ppmv)	Dichlorobenzene, m- <sup>b</sup> (ppmv)	R-113 <sup>b</sup> (ppmv)	Tetrahydrofuran <sup>b</sup> (ppmv)	Carbon Dioxide (ppmv)
			CAS # 56-23-5	CAS # 67-66-3	CAS # 75-09-2	CAS # 78-93-3	CAS # 56-23-5	CAS # 67-66-3	CAS # 127-18-4	CAS # 541-73-1	CAS # 76-13-1	CAS # 109-99-9	CAS # 124-38-9
T-07-13 B1KW85 duplicate	B1KW86	8/24/06	1.39	1 U	2.05	1.01	NA	NA	NA	NA	NA	NA	NA
T-07-13 B1KW57 <sup>d</sup>	B1KW57	8/24/06	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND
T-07-14 B1KW79	B1KW79	8/29/06	4.36	1.56	15.90	3.92	NA	NA	NA	NA	NA	NA	NA
T-07-14 B1KW79 duplicate	B1KW80	8/29/06	4.32	1.56	16.20	3.86	NA	NA	NA	NA	NA	NA	NA
T-07-14 B1KW81	B1KW81	8/29/06	4.74	1.47	17.00	4.11	NA	NA	NA	NA	NA	NA	NA
T-07-14 B1KW81 duplicate	B1KW82	8/29/06	4.52	1.53	17.00	4.02	NA	NA	NA	NA	NA	NA	NA
T-07-14 B1KW59	B1KW59	8/29/06	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	360 J
T-07-14 B1KW60	B1KW60	8/29/06	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	360 J
T-07-15 B1KW75	B1KW75	8/29/06	1 U	1 U	2.22	1 U	NA	NA	NA	NA	NA	NA	NA
T-07-15 B1KW75 duplicate	B1KW76	8/29/06	1 U	1 U	2.61	1 U	NA	NA	NA	NA	NA	NA	NA
T-07-15 B1KW77	B1KW77	8/29/06	1 U	1 U	2.24	1 U	NA	NA	NA	NA	NA	NA	NA

BURIAL GROUND SAMPLING AND ANALYSIS RESULTS  
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Table 3. Field-Screening Results for Samples Collected Through Vent Risers in the 218-W-4B Burial Ground Trench T-07. (8 Pages)

Sample Identifier	HEIS Number	Sample Date	B&K 1302 Photoacoustic Gas Analyzer				MIRAN SapphIRe Ambient Air Analyzer*							
			CCl <sub>4</sub> <sup>a</sup> (ppmv)	Chloroform (ppmv)	Methylene Chloride (ppmv)	MEK (ppmv)	CCl <sub>4</sub> <sup>a</sup> (ppmv)	Chloroform (ppmv)	PCE (ppmv)	Dichlorobenzene, m- <sup>b</sup> (ppmv)	R-113 <sup>b</sup> (ppmv)	Tetrahydrofuran <sup>b</sup> (ppmv)	Carbon Dioxide (ppmv)	
			CAS # 56-23-5	CAS # 67-66-3	CAS # 75-09-2	CAS # 78-93-3	CAS # 56-23-5	CAS # 67-66-3	CAS # 127-18-4	CAS # 541-73-1	CAS # 76-13-1	CAS # 109-99-9	CAS # 124-38-9	
T-07-15 B1KW77 duplicate	B1KW78	8/29/06	1 U	1 U	2.51	1.02	NA	NA	NA	NA	NA	NA	NA	NA
T-07-15 B1KW61	B1KW61	8/29/06	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	360 J
T-07-15 B1KW62	B1KW62	8/29/06	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	360 J
T-07-16 B1KW71	B1KW71	8/29/06	2.80	3.11	14.70	6.21	NA	NA	NA	NA	NA	NA	NA	NA
T-07-16 B1KW71 duplicate	B1KW72	8/29/06	2.79	3.55	14.50	6.11	NA	NA	NA	NA	NA	NA	NA	NA
T-07-16 B1KW73	B1KW73	8/29/06	2.67	3.09	14.50	6.18	NA	NA	NA	NA	NA	NA	NA	NA
T-07-16 B1KW73 duplicate	B1KW74	8/29/06	2.64	3.03	14.50	6.14	NA	NA	NA	NA	NA	NA	NA	NA
T-07-16 B1KW63	B1KW63	8/29/06	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	30,200
T-07-16 B1KW64	B1KW64	8/29/06	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	30,200
T-07-17 B1KW67	B1KW67	8/29/06	2.65	2.53	16.50	5.26	NA	NA	NA	NA	NA	NA	NA	NA
T-07-17 B1KW67 duplicate	B1KW68	8/29/06	2.62	2.65	17.60	5.38	NA	NA	NA	NA	NA	NA	NA	NA
T-07-17 B1KW69	B1KW69	8/29/06	2.67	2.48	16.70	5.36	NA	NA	NA	NA	NA	NA	NA	NA

BURIAL GROUND SAMPLING AND ANALYSIS RESULTS  
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Table 3. Field-Screening Results for Samples Collected Through Vent Risers in the 218-W-4B Burial Ground Trench T-07. (8 Pages)

Sample Identifier	HEIS Number	Sample Date	B&K 1302 Photoacoustic Gas Analyzer				MIRAN SapphIRe Ambient Air Analyzer*						
			CCl <sub>4</sub> <sup>a</sup> (ppmv)	Chloroform (ppmv)	Methylene Chloride (ppmv)	MEK (ppmv)	CCl <sub>4</sub> <sup>a</sup> (ppmv)	Chloroform (ppmv)	PCE (ppmv)	Dichlorobenzene, m- <sup>b</sup> (ppmv)	R-113 <sup>b</sup> (ppmv)	Tetrahydrofuran <sup>b</sup> (ppmv)	Carbon Dioxide (ppmv)
			CAS # 56-23-5	CAS # 67-66-3	CAS # 75-09-2	CAS # 78-93-3	CAS # 56-23-5	CAS # 67-66-3	CAS # 127-18-4	CAS # 541-73-1	CAS # 76-13-1	CAS # 109-99-9	CAS # 124-38-9
T-07-17 B1KW69 duplicate	B1KW70	8/29/06	2.64	2.45	17.50	5.50	NA	NA	NA	NA	NA	NA	NA
T-07-17 B1KW66 <sup>d</sup>	B1KW66	8/29/06	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	32,000

\*The MIRAN SapphIRe Ambient Air Analyzer identifies up to 5 compounds with the highest concentrations in the vapor sample. Only the compounds that were detected in at least one sample are included in this table.

<sup>a</sup> The B&K analyzer has two filters for analysis of carbon tetrachloride. The low concentration filter is calibrated from 1 to 100 ppmv; the high concentration filter is calibrated from 100 to 20,000 ppmv. If the initial analysis of carbon tetrachloride using the low concentration filter exceeds 100 ppmv, the sample is reanalyzed using the high concentration filter, and this value is reported. The MIRAN analyzer is calibrated for carbon tetrachloride from 0.05 to 15,000 ppmv.

<sup>b</sup> Although this volatile organic compound was not identified as a contaminant of concern in the SAP, it was detected by the field-screening instrument.

<sup>c</sup> The duplicate was analyzed using the high-concentration filter for carbon tetrachloride. Insufficient sample volume was available for duplicate analysis for the other volatile organic compounds.

<sup>d</sup> Either the first sample or the back-up sample was not analyzed because the instrument indicated a problem with the purge of the bag or because the bag was discovered to have a hole.

B&K 1302 Photoacoustic Gas Analyzer is a trademark of Brüel and Kjær, S&V, Nærum, Denmark.

MIRAN and the SapphIRe Ambient Air Analyzer are registered trademarks of Thermo Electron Corporation, Franklin, Massachusetts.

NA = not applicable (i.e., sample analyzed using other field-screening instrument).

ND = not detected.

CAS = Chemical Abstracts Service.

CCl<sub>4</sub> = carbon tetrachloride.

HEIS = Hanford Environmental Information System database.

J = Result is an estimate

MEK = methyl ethyl ketone.

PCE = tetrachloroethylene.

ppmv = parts per million by volume.

R-113 = refrigerant, 1,1,2-Trichloro-1,2,2-trifluoroethane.

U = Analyte was undetected, with the indicated reporting limit.

BURIAL GROUND SAMPLING AND ANALYSIS RESULTS  
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Table 4. Field-Screening Results for Carbon Tetrachloride Concentration Standards Analyzed using the B&K 1302 Photoacoustic Gas Analyzer.

Analysis Date	Analysis Time	Carbon Tetrachloride Concentration Standard (ppmv)	Carbon Tetrachloride Concentration Analyzed (ppmv)	Percent Recovery (%)
8/23/06	12:23	25.37	21.20	83.6
8/23/06	16:35	200	176	88.0
8/23/06	16:39	25.37	21.80	85.9
8/24/06	11:30	25.37	20.90	82.4
8/24/06	15:24	200	194	97.0
8/24/06	15:30	25.37	21.90	86.3
8/29/06	13:19	25.37	21.80	85.9
8/29/06	13:56	25.37	22.60	89.1
8/29/06	14:15	200	211	105.5
8/29/06	15:04	25.37	22.10	87.1

ppmv = parts per million by volume.

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Table 5. Field-Screening Results for Calibration Standards Analyzed using MIRAN Analyzer.

Analysis Type	Analysis Date	Analysis Time	MIRAN SapphIRe Ambient Air Analyzer									
			DCM (ppmv)	1,1-DCA (ppmv)	TCM (ppmv)	1,1,1-TCA (ppmv)	CCl <sub>4</sub> (ppmv)	TCE (ppmv)	1,1,2-TCA (ppmv)	PCE (ppmv)	Methane (ppmv)	CO <sub>2</sub> (ppmv)
Calibration Standard	NA	NA	4.3	1.3	9.61	26.3	0.85	12	5.91	0.53	51	105.1
Calibration Check	06/08/06	10:50	4.2	1	8.66	20.2	0.9	9	6.11	0.66	55	110
Percent Recovery (%)	NA	NA	97.7	76.9	90.1	76.8	105.9	75	103.4	124.5	107.8	104.7

MIRAN and the SapphIRe Ambient Air Analyzer are registered trademarks of Thermo Electron Corporation, Franklin, Massachusetts.

CCl<sub>4</sub> = carbon tetrachloride.

CO<sub>2</sub> = carbon dioxide.

DCA = dichloroethane.

DCM = dichloromethane (methylene chloride).

HEIS = Hanford Environmental Information System database.

NA = not applicable.

ppmv = parts per million by volume.

PCE = tetrachloroethylene.

TCA = trichloroethane.

TCE = trichloroethylene.

TCM = trichloromethane (chloroform).

Table 6. Field-Screening Results for Blank Samples.

Analysis Type	Analysis Date	Analysis Time	B&K 1302 Photoacoustic Gas Analyzer				MIRAN SapphIRE Ambient Air Analyzer*			
			CCl <sub>4</sub> (ppmv)	TCM (ppmv)	DCM (ppmv)	MEK (ppmv)	CCl <sub>4</sub> (ppmv)	TCM (ppmv)	PCE (ppmv)	CO <sub>2</sub> <sup>a</sup> (ppmv)
			CAS # 56-23-5	CAS # 67-66-3	CAS # 75-09-2	CAS # 78-93-3	CAS # 56-23-5	CAS # 67-66-3	CAS # 127-18-4	CAS # 124-38-9
Ambient Air	8/23/06	12:19	1 U	1 U	1 U	1 U	NA	NA	NA	NA
Ambient Air	8/23/06	16:41	1 U	1 U	1 U	1 U	NA	NA	NA	NA
Ambient Air	8/23/06	12:06	NA	NA	NA	NA	ND	ND	ND	361
Ambient Air	8/24/06	11:28	1 U	1 U	1 U	1 U	NA	NA	NA	NA
Ambient Air	8/24/06	11:43	1 U	1 U	1 U	1 U	NA	NA	NA	NA
Ambient Air	8/24/06	15:26	1 U	1 U	1 U	1 U	NA	NA	NA	NA
Ambient Air	8/24/06	15:29	1 U	1 U	1.38	1 U	NA	NA	NA	NA
Ambient Air	8/24/06	12:30	NA	NA	NA	NA	ND	ND	ND	361
Ambient Air	8/29/06	13:17	1 U	1 U	1.27	1 U	NA	NA	NA	NA
Ambient Air	8/29/06	13:58	1 U	1 U	2.60	1 U	NA	NA	NA	NA
Ambient Air	8/29/06	15:06	1 U	1 U	1.29	1 U	NA	NA	NA	NA
Ambient Air	8/29/06	14:50	NA	NA	NA	NA	ND	ND	ND	361

\*The MIRAN SapphIRE Ambient Air Analyzer identifies up to 5 compounds with the highest concentrations in the vapor sample. No volatile organic compounds were detected in the blank samples. Only the contaminants of concern that were identified in at least one sample (Table 3) are listed in this table.

<sup>a</sup>CO<sub>2</sub> levels are baselined to zero at ambient atmospheric conditions of 360 ppmv. Values shown are CO<sub>2</sub> concentrations above ambient.

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MIRAN and the SapphIRE Ambient Air Analyzer are registered trademarks of Thermo Electron Corporation, Franklin, Massachusetts.

NA = not applicable (i.e., sample analyzed using other field-screening instrument).

ND = not detected.

CCl<sub>4</sub> = carbon tetrachloride.

CO<sub>2</sub> = carbon dioxide.

DCM = dichloromethane (methylene chloride).

HEIS = Hanford Environmental Information System database.

ppmv = parts per million by volume.

PCE = tetrachloroethylene.

TCM = trichloromethane (chloroform).

U = Analyte was undetected, with the indicated reporting limit.