ANNUAL GROUNDWATER MONITORING REPORT

HAZARDOUS WASTE MANAGEMENT UNITS 5,7,10, AND 16 CALENDAR YEAR 2008

RADFORD ARMY AMMUNITION PLANT RADFORD, VIRGINIA

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1.0 INTRODUCTION

This document presents the Annual Groundwater Monitoring Report for calendar year 2008 for Hazardous Waste Management Units (HWMUs) 5, 7, 10, and 16 located at the Radford Army Ammunition Plant (Radford AAP) in Radford, Virginia. The Annual Groundwater Monitoring Report was compiled in accordance with the requirements specified in the Final Hazardous Waste Post-Closure Care Permit dated October 4, 2002, for HWMUs 5, 7, 10, and 16.

The Annual Groundwater Monitoring Report presents the following set of information for each Unit: basic information and unit identification, a description of the groundwater monitoring plan, a discussion of groundwater movement, potentiometric surface maps, a table of groundwater elevations, and detailed statistical evaluations of the analytical data.

Please note that the sampling frequency for HWMUs 5, 7, 10, and 16 was changed from quarterly to semiannual in the VDEQ-approved Class 1 Permit Modification dated June 14, 2007. Therefore, this Annual Groundwater Monitoring Report evaluates the analytical data from Second Quarter 2008 and Fourth Quarter 2008 for each Unit.

1.1 HWMU-5

HWMU-5 is a closed lined neutralization pond. The Unit received certification for closure in 1989. As stated in Permit Condition I.K.1 of the Final Post-Closure Care Permit, the Compliance Period during which the Groundwater Protection Standard applies to HWMU-5 is 19 years, beginning on the effective date of the original Post-Closure Care Permit for HWMU-5 (October 28, 2001) and continuing until October 28, 2020. This report is the seventh complete Annual Groundwater Monitoring Report submitted to the Virginia Department of Environmental Quality (VDEQ) for this Unit during the Compliance Period.

1.2 HWMU-7

HWMU-7 is a closed unlined holding and neutralization basin. The Unit received certification for closure in 1990. As stated in Permit Condition I.K.2, the Compliance Period during which the Groundwater Protection Standard applies to HWMU-7 is 18 years, beginning on the effective date of the original Post-Closure Care Permit for HWMU-7 (October 30, 1999) and continuing until October 30, 2017. This report is the ninth complete Annual Groundwater Monitoring Report submitted to the VDEQ for this Unit during the Compliance Period.

1.3 HWMU-10

HWMU-10 is a closed equalization basin for the biological treatment system. The Unit received certification for closure in 1998. As stated in Permit Condition I.K.3, the Compliance Period during which the Groundwater Protection Standard applies to HWMU-10 is 18 years, beginning on the effective date of the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Management Units 5, 7, 10, and 16 (October 4, 2002) and continuing until October 4, 2020. This report is the seventh Annual Groundwater Monitoring Report submitted to the VDEQ for this Unit during the Compliance Period.

1.4 HWMU-16

HWMU-16 is a closed hazardous waste landfill. The Unit received certification for closure in 1993. As stated in Permit Condition I.K.4, the Compliance Period during which the Groundwater Protection Standard applies to HWMU-16 is 13 years, beginning on the effective date of the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Management Units 5, 7, 10, and 16 (October 4, 2002) and continuing until October 4, 2015. This report is the seventh Annual Groundwater Monitoring Report submitted to the VDEQ for this Unit during the Compliance Period.

2.0 HWMU-5 ANNUAL GROUNDWATER MONITORING REPORT

2.1 Waste Management Unit Information

Unit Name: Hazardous Waste Management Unit 5 (HWMU-5)
Owner/Operator: United States Army/Alliant Techsystems Inc.

Unit Location: Radford AAP Main Plant Area, Radford, Virginia

Class: Hazardous Waste Management Unit Type: Closed Lined Neutralization Pond

2.2 Groundwater Monitoring Plan

Monitoring Network:

Upgradient Well: 5W8B

Point of Compliance Wells: 5W5B, 5W7B, 5WC21, 5WC22, 5WC23 Plume Monitoring Wells: 5SW5, S5W7, 5W9A, 5W10A, 5W11A Observation Wells: 5WCA, S5W6, S5W8, 5WC11, 5WC22

Monitoring Status: Compliance Monitoring Program

CY 2008 Monitoring Events:

Second Quarter 2008: April 28-30, 2008 Fourth Quarter 2008: October 27-29, 2008

2.3 Groundwater Movement

The monitoring wells at HWMU-5 are screened entirely within either weathered carbonate bedrock residuum or alluvium or across the weathered residuum/carbonate bedrock interface. The static water level measurements gathered during the 2008 semiannual monitoring events are summarized in **Table 1**. Groundwater fluctuations ranged from 1.95 to 5.5 feet during the 2008 groundwater monitoring events. As shown on the HWMU-5 Potentiometric Surface Maps (**Appendix A-1**), groundwater movement beneath the site is generally to the northeast.

Darcian flow conditions were assumed for the alluvium, residuum, and carbonate bedrock beneath HWMU-5. As a result, the groundwater velocities were calculated by multiplying the hydraulic conductivity (determined from previously conducted slug tests) by the average hydraulic gradient across the site and dividing by an assumed effective porosity for the aquifer. The average hydraulic gradient was determined by superimposing three evenly spaced flow line vectors over the potentiometric surface map, measuring their lengths, calculating the head differential over the distances measured, and dividing the head differential by the length of the flow line vectors. The three calculated gradients were then averaged to a single value. Using this method, the average groundwater hydraulic gradient across the site based on Fourth Quarter 2008 groundwater elevations was calculated to be 0.031 ft/ft. Historical slug test data for the site yielded an average hydraulic conductivity of 5.25 x 10⁻⁵ ft/second. This value is consistent with

literature values for carbonate rock and for clayey, silty sand and gravel alluvium and residuum (Domenico and Schwartz, 1990).

The estimated groundwater velocity across the site was calculated to be approximately 0.35 ft/day or 128 ft/year based on the following:

- Average hydraulic conductivity of 5.25 x 10⁻⁵ ft/second.
- Average hydraulic gradient of 0.031 ft/ft.
- Assumed effective porosity of 0.40, based on a representative range of porosities for carbonate rock, weathered residuum, and clayey, silty sand and gravel alluvium (Domenico and Schwartz, 1990).

The actual groundwater flow velocities in the carbonate bedrock may vary as much as one to two orders of magnitude from the velocity presented above depending on water level conditions and the distribution of solution features.

2.4 Groundwater Analytical Data Evaluation

The groundwater samples collected from the compliance monitoring network during the 2008 semiannual monitoring events were analyzed for the constituents listed in Appendix E to Attachment 2 of the Final Post-Closure Care Permit, plus chromium, diethyl ether, 2-nitroaniline, 4-nitroaniline, and nitrobenzene (which were added to the constituent list for HWMU-5 following Fourth Quarter 2003) and dichlorodifluoromethane (which was added to the constituent list following Third Quarter 2006). In addition, groundwater samples were collected from the upgradient well and the point of compliance wells for the annual monitoring for the constituents listed in Appendix IX of 40 CFR Part 264. The laboratory analytical results for the 2008 monitoring events are included in **Appendix A-2** (point of compliance wells) and in **Appendix A-3** (plume monitoring wells). The laboratory analytical results for the 2008 monitoring events are included on CD-ROM in **Appendix E**. The analytical data were validated in accordance with SW-846, *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*, and *USEPA Contract Laboratory Program National Functional Functional Guidelines for Inorganic Data Review*. Data validation reports are included in **Appendix E**. Copies of field notes recorded during sample collection are included in **Appendix F**.

2.4.1 Comparison to Groundwater Protection Standards

As specified in Permit Condition V.J.1.i, the 2008 groundwater analytical data for the upgradient well and the point of compliance wells were compared to the Groundwater Protection Standards (GPSs) for HWMU-5 listed in Appendix G of Permit Attachment 2. In accordance with Permit Condition V.I.2, Radford AAP performed a simple empirical comparison of the upgradient well and the point of compliance well data to GPSs (**Appendix A-2**).

As shown in **Appendix A-2**, no inorganic constituents were detected at concentrations greater than their respective GPSs.

As also shown in **Appendix A-2**, concentrations of trichloroethene (TCE) greater than the GPS of 5 μ g/l were detected in point of compliance well 5W5B during each semiannual monitoring event in 2008. These data are consistent with previous monitoring events for HWMU-5. No other organic constituents were detected at concentrations greater than their GPSs during the 2008 semiannual monitoring events.

Radford AAP has concluded investigations for TCE in and around HWMU-5 and a corrective action program has been developed to address TCE at HWMU-5. A permit modification request for corrective action that includes the proposed corrective action plan was submitted by letter dated December 17, 2008. The permit modification fee was submitted by letter dated December 8, 2008.

2.4.2 Comparison to Background Concentrations

As specified in Permit Condition V.O, the 2008 groundwater analytical data for the plume monitoring wells were compared to the background concentrations for HWMU-5 listed in Appendix F of Permit Attachment 2. In accordance with Permit Condition V.I.2, Radford AAP performed a simple empirical comparison of the plume monitoring well data to the background concentrations (**Appendix A-3**).

During Second Quarter 2008, dichlorodifluoromethane initially was detected in plume monitoring well S5W7 at a concentration of 1.2 μ g/l, which was greater than the site-specific background concentration of 1 μ g/l. On July 17, 2008, Radford AAP collected a verification sample from well S5W7 in order to confirm or refute the detected dichlorodifluoromethane concentration. Dichlorodifluoromethane was not detected in the verification sample at a concentration greater than the site-specific background concentration.

No other constituent concentrations detected in the plume monitoring wells were greater than their respective background concentrations. In accordance with the requirements of Permit Condition V.K.3, the established background values and the computations used to determine the background values are included in **Appendix A-4**. The background values and associated computations are taken from the Groundwater Quality Assessment Report for HWMU-5 dated August 1999.

2.4.3 Annual Monitoring for Constituents Listed in Appendix IX of 40 CFR Part 264

During Second Quarter 2008, the groundwater samples collected from the upgradient well and the point of compliance wells were analyzed for the constituents listed in Appendix IX to 40 CFR Part 264 in accordance with Permit Condition V.J.1.e. No additional Appendix IX constituents, which are not listed in Appendix E of Permit Attachment 2 (Unit 5 – Groundwater Compliance Monitoring Constituent List), were detected during the Second Quarter 2008 groundwater monitoring event. Therefore, no changes to the Groundwater Monitoring List for the Unit are required.

2.5 Recommendations

Based on an evaluation of the groundwater analytical data and additional information for HWMU-5, no inorganic constituents and no organic constituents other than TCE were detected at concentrations greater than their respective GPSs during calendar year 2008. TCE was detected in point of compliance well 5W5B during each semiannual monitoring event in 2008 at concentrations greater than the established GPS for TCE of 5 µg/l but within the range of historical detections. Radford AAP has concluded investigations for TCE in and around HWMU-5 and a corrective action program has been developed to address TCE at HWMU-5. A permit modification request for corrective action that includes the proposed corrective action plan was submitted in December 2008. The permit modification fee was submitted by letter dated December 8, 2008.

3.0 HWMU-7 ANNUAL GROUNDWATER MONITORING REPORT

3.1 Waste Management Unit Information

Unit Name: Hazardous Waste Management Unit 7 (HWMU-7) **Owner/Operator:** United States Army/Alliant Techsystems Inc.

Unit Location: Radford AAP Main Plant Area, Radford, Virginia

Class: Hazardous Waste Management Unit

Type: Closed Unlined Holding and Neutralization Basin

3.2 Groundwater Monitoring Plan

Monitoring Network:

Upgradient Well: 7W12B

Point of Compliance Wells: 7WCA, 7MW6, 7W11B

Plume Monitoring Wells: 7W9C, 7W10B, 7W10C, 7W13

Observation Wells: 7MW5, 7W9B, 7W11

Monitoring Status: Compliance Monitoring Program

CY 2008 Monitoring Events:

Second Quarter 2008: April 22-23, 2008 Fourth Quarter 2008: October 22-23, 2008

3.3 Groundwater Movement

The monitoring wells at HWMU-7 are screened entirely within alluvium, weathered carbonate bedrock residuum, or carbonate bedrock or across the interfaces between two of the listed strata. The static water level measurements gathered during the 2008 semiannual monitoring events are summarized in **Table 2**. Groundwater fluctuations ranged from 0 to 2.3 feet annually. As shown on the HWMU-7 Potentiometric Surface Maps (**Appendix B-1**), groundwater movement beneath the site is generally to the west towards the New River and to the northeast and southwest toward the unnamed intermittent drainages that flow into the New River north and south of the site.

Darcian flow conditions were assumed for the alluvium, residuum, and carbonate bedrock beneath HWMU-7. As a result, the groundwater velocities were calculated by multiplying the hydraulic conductivity (determined from previously conducted slug tests) by the average hydraulic gradient across the site, and dividing by an assumed effective porosity for the aquifer materials. The average hydraulic gradient was determined by superimposing three evenly spaced flow line vectors over the potentiometric surface map, measuring their lengths, calculating the head differential over the distances measured, and dividing the head differential by the length of the flow line vectors. The three calculated gradients were then averaged to a single value. Using this method, the average groundwater hydraulic gradient across the site

based on the Fourth Quarter 2008 groundwater elevations was calculated to be 0.009 ft/ft. Historical slug test data for the site yielded an average hydraulic conductivity of 5.1 x 10⁻⁶ ft/second. This value is consistent with literature values for carbonate rock and for clayey, silty sand and gravel alluvium and residuum (Domenico and Schwartz, 1990).

The estimated groundwater velocity across the site was calculated to be approximately 9.91×10^{-3} ft/day or 3.6 ft/year, based on the following:

- Average hydraulic conductivity of 5.1 x 10⁻⁶ ft/second.
- Average hydraulic gradient of 0.009 ft/ft.
- Assumed effective porosity of 0.40, based on a representative range of porosities for carbonate rock, weathered residuum, and clayey, silty sand and gravel alluvium (Domenico and Schwartz, 1990).

The actual groundwater flow velocities in the carbonate bedrock may vary as much as one to two orders of magnitude from the velocity presented above depending on water level conditions and the distribution of solution features.

3.4 Groundwater Analytical Data Evaluation

The groundwater samples collected from the compliance monitoring network during the 2008 semiannual monitoring events were analyzed for the constituents listed in Appendix E to Attachment 3 of the Final Post-Closure Care Permit, plus copper (which was added to the constituent list for HWMU-7 following Third Quarter 2003) and zinc (which was added to the constituent list for HWMU-7 following Second Quarter 2004). In addition, groundwater samples were collected from the upgradient well and the point of compliance wells for the annual monitoring for the constituents listed in Appendix IX of 40 CFR Part 264. The laboratory analytical results for the 2008 monitoring events are included in **Appendix B-2** (point of compliance wells) and in **Appendix B-3** (plume monitoring wells). The laboratory analytical results for the 2008 monitoring events also are included in electronic format in **Appendix E**. The analytical data were validated in accordance with SW-846, *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*, and *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. Data validation reports are included in **Appendix E**. Copies of field notes recorded during sample collection are included in **Appendix F**.

3.4.1 Comparison to Groundwater Protection Standards

As specified in Permit Condition V.J.2.i, the 2008 groundwater analytical data for the upgradient well and the point of compliance wells were compared to the GPSs for HWMU-7 listed in Appendix G of Permit Attachment 3. In accordance with Permit Condition V.I.2, Radford AAP performed a simple empirical comparison of the upgradient well and the point of compliance well data to the GPSs (**Appendix B-2**).

As shown in **Appendix B-2**, no constituents were detected at concentrations greater than their respective GPSs.

3.4.2 Comparison to Background Concentrations

As specified in Permit Condition V.O, the 2008 groundwater analytical data for the plume monitoring wells were compared to the background concentrations for HWMU-7. The original background concentrations as presented in the Groundwater Quality Assessment Report for HWMU-7 dated August 1998 are listed in Appendix F of Permit Attachment 3. However, in correspondence dated October 31, 2007, the VDEQ indicated that Radford AAP should statistically recalculate the background concentration values for HWMU-7 as part of the clean closure evaluation for the Unit. In December 2007, Draper Aden Associates recalculated background values for all plume monitoring well constituents at HWMU-7. For the calendar year 2008 semiannual monitoring events, Radford AAP performed a simple empirical comparison of the plume monitoring well data to the recalculated background concentrations (**Appendix B-3**). The recalculated background values and the computations used to determine the background values are included in **Appendix B-4**.

During Second Quarter 2008, total arsenic initially was detected in plume monitoring well 7W13 at a concentration of 10.5 μ g/l, which was greater than the site-specific background concentration of 10 μ g/l. On July 17, 2008, Radford AAP collected verification samples from well 7W13 in order to confirm or refute the detected arsenic concentration. Total arsenic was not detected in the verification samples at concentrations greater than the site-specific background concentration.

As shown in **Appendix B-3**, total barium concentrations detected in plume monitoring wells 7W10B and 7W10C during each 2008 semiannual monitoring event were greater than the background concentration of 41 μ g/l. However, all of the total barium concentrations detected in wells 7W10B and 7W10C were more than an order of magnitude below the USEPA MCL for barium of 2,000 μ g/l. Higher total barium concentrations in downgradient plume monitoring wells relative to background at HWMU-7 may be the result of natural variations in trace element distribution in groundwater. In addition, these concentrations are consistent with previous barium concentrations detected these wells.

During Second Quarter 2008, total cobalt was detected in plume monitoring wells 7W9C and 7W13 at concentrations greater than the site-specific background concentration of 5 μ g/l. On July 17, 2008, Radford AAP collected verification samples from wells 7W9C and 7W13 in order to confirm or refute the detected cobalt concentrations. Total cobalt was not detected in the verification sample collected from well 7W9C. The July 2008 verification sample for well 7W13 confirmed the Second Quarter 2008 total cobalt concentration of 5.8 μ g/l. Similarly, total cobalt was detected in plume monitoring well 7W13 during Fourth Quarter 2008 at a concentration greater than the site-specific background concentration. On December 17, 2008, Radford AAP collected a verification sample from well 7W13, which confirmed the Fourth Quarter 2008 total cobalt concentration of 12 μ g/l. However, the total cobalt concentrations detected in well 7W13 are more than an order of magnitude below the permit-specified GPS for cobalt of 313 μ g/l. A higher total cobalt concentration in downgradient plume monitoring well 7W13 relative to background at HWMU-7 may be the result of natural variations in trace

element distribution in groundwater. In addition, the total cobalt concentrations detected in well 7W13 are consistent with previous cobalt concentrations detected in this well.

No other constituent concentrations detected in the plume monitoring wells were greater than their respective background concentrations.

3.4.3 Annual Monitoring for Constituents Listed in Appendix IX of 40 CFR Part 264

During Second Quarter 2008, the groundwater samples collected from the upgradient well and the point of compliance wells were analyzed for the constituents listed in Appendix IX to 40 CFR Part 264 in accordance with Permit Condition V.J.2.e. Upon receipt of the Second Quarter 2008 analytical data, Radford AAP notified the VDEQ of the detection in point of compliance well 7MW6 of an additional Appendix IX constituent (chloroform) which was not listed in Appendix E of Permit Attachment 3 (Unit 7 – Groundwater Compliance Monitoring Constituent List). However, Radford AAP did not verify the chloroform concentration detected in well 7MW6 based on the June 14, 2007 concurrence by the VDEQ with the Alternate Source Demonstration (ASD) for chloroform at HWMU-7 submitted on January 31, 2007, which identified an upgradient off-site source for chloroform in groundwater. Therefore, chloroform will not be added to the Groundwater Monitoring List for the Unit.

No additional Appendix IX constituents were detected during Second Quarter 2008 Therefore, no changes to the Groundwater Monitoring List for the Unit are required.

3.5 Recommendations

Based on an evaluation of the groundwater analytical data and additional information for HWMU-7, no constituents were detected at concentrations greater than their respective GPSs during calendar year 2008. Therefore, no further action is recommended at this time.

The Appendix IX constituent chloroform was detected in point of compliance well 7MW6 during Second Quarter 2008. Chloroform will not be added to the Compliance Monitoring Constituent List for HWMU-7 based on the June 14, 2007 concurrence by the VDEQ with the ASD for chloroform at HWMU-7 submitted on January 31, 2007. No additional Appendix IX constituents were detected during Second Quarter 2008; therefore, no changes to the Groundwater Monitoring List for the Unit are required.

An evaluation of the plume monitoring well data indicates that the concentrations of total barium in plume monitoring wells 7W10B and 7W10C were greater than the site-specific background concentration. As stated previously, higher total barium concentrations in downgradient plume monitoring wells relative to background at HWMU-7 may be the result of natural variations in trace element distribution in groundwater. In addition, these concentrations are consistent with previous barium concentrations detected these wells. Therefore, no further action regarding the total barium concentrations detected in plume monitoring wells 7W10B and 7W10C is recommended at this time.

An evaluation of the plume monitoring well data indicates that the concentrations of total cobalt in plume monitoring well 7W13 were greater than the site-specific background

concentration. As stated previously, a higher total cobalt concentration in downgradient plume monitoring well 7W13 relative to background at HWMU-7 may be the result of natural variations in trace element distribution in groundwater. In addition, the total cobalt concentrations detected in well 7W13 are consistent with previous cobalt concentrations detected in this well. Therefore, no further action regarding the total cobalt concentrations detected in plume monitoring well 7W13 is recommended at this time.

In correspondence to the VDEQ dated August 9, 2007, Radford AAP submitted a Class 3 permit modification for the Post-Closure Care Permit for HWMUs 5, 7, 10, and 16. The permit modification included an amended closure plan for HMWU-7. Upon incorporation of the Class 3 permit modification into the Permit, Radford AAP will finalize the closure report for HWMU-7. The closure report will include a clean closure evaluation for soil and groundwater at the Unit. Upon VDEQ approval of the closure report, HWMU-7 will be clean closed.

4.0 HWMU-10 ANNUAL GROUNDWATER MONITORING REPORT

4.1 Waste Management Unit Information

Unit Name: Hazardous Waste Management Unit 10 (HWMU-10)

Owner/Operator: United States Army/Alliant Techsystems Inc.

Unit Location: Radford AAP Main Plant Area, Radford, Virginia

Class: Hazardous Waste Management Unit

Type: Closed Equalization Basin for the Biological Treatment System

4.2 Groundwater Monitoring Plan

Monitoring Network:

Upgradient Well: 10D4

Point of Compliance Wells: 10MW1, 10DDH2R, 10D3, 10D3D

Plume Monitoring Wells: none Observation Wells: none

Monitoring Status: Compliance Monitoring Program

CY 2008 Monitoring Events:

Second Quarter 2008: April 17, 2008 Fourth Quarter 2008: October 30, 2008

4.3 Groundwater Movement

The monitoring wells at HWMU-10 are screened either across the alluvium/limestone bedrock interface or entirely within bedrock. The static water level measurements gathered during the 2008 semiannual monitoring events are summarized in **Table 3**. Groundwater fluctuations ranged from 0.03 to 1.2 feet annually. As shown on the HWMU-10 Potentiometric Surface Maps (**Appendix C-1**), groundwater movement beneath the site is generally to the north towards the New River.

Darcian flow conditions were assumed for the alluvium and limestone bedrock beneath HWMU-10. As a result, the groundwater velocities were calculated by multiplying the hydraulic conductivity (determined from previously conducted slug tests) by the average hydraulic gradient across the site and dividing by an assumed effective porosity for the aquifer materials. The average hydraulic gradient was determined by superimposing three evenly spaced flow line vectors over the potentiometric surface map, measuring their lengths, calculating the head differential over the distances measured, and dividing the head differential by the length of the flow line vectors. The three calculated gradients were then averaged to a single value. Using this method, the average groundwater hydraulic gradient across the site based on Fourth Quarter 2008 groundwater elevations was calculated to be 0.017 ft/ft. Historical slug test data for the site yielded an average hydraulic conductivity of 4.9 x 10⁻⁴ ft/second. This value is consistent with

literature values for limestone and for clayey, silty sand and gravel alluvium (Domenico and Schwartz, 1990).

The estimated groundwater velocity across the site was calculated to be approximately 1.8 ft/day or 657 ft/year, based on the following:

- Average hydraulic conductivity of 4.9 x 10⁻⁴ ft/second.
- Average hydraulic gradient of 0.017 ft/ft.
- Assumed effective porosity of 0.40, based on a representative range of porosities for limestone and for clayey, silty sand and gravel alluvium (Domenico and Schwartz, 1990).

The actual groundwater flow velocities in the carbonate bedrock may vary as much as one to two orders of magnitude from the velocity presented above depending on water level conditions and the distribution of solution features.

4.4 Groundwater Analytical Data Evaluation

The groundwater samples collected from the compliance monitoring network during the 2008 semiannual monitoring events were analyzed for the constituents listed in Appendix E to Attachment 4 of the Final Post-Closure Care Permit, plus cobalt and vanadium (which were added to the constituent list for HWMU-10 following Second Quarter 2004) and acetone and 2-propanol (which were added to the constituent list for HMWU-10 following Second Quarter 2005). In addition, groundwater samples were collected from the upgradient well and the point of compliance wells for the annual monitoring for the constituents listed in Appendix IX of 40 CFR Part 264. The laboratory analytical results for the 2008 monitoring events are included in **Appendix C-2**. The laboratory analytical results for the 2008 monitoring events also are included in electronic format in **Appendix E**. The analytical data were validated in accordance with SW-846, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. Data validation reports are included in **Appendix E**. Copies of field notes recorded during sample collection are included in **Appendix F**.

4.4.1 Comparison to Groundwater Protection Standards

As specified in Permit Condition V.J.3.i, the 2008 groundwater analytical data for the upgradient well and the point of compliance wells were compared to GPSs for HWMU-10 listed in Appendix G of Permit Attachment 4. In accordance with Permit Condition V.I.2, Radford AAP performed a simple empirical comparison of the upgradient well and the point of compliance well data to the GPSs (**Appendix C-2**). As shown in **Appendix C-2**, none of the constituent concentrations detected in the upgradient well and in the point of compliance wells were greater than their respective GPSs.

4.4.2 Comparison to Background Concentrations

Only the analytical data from plume monitoring wells are compared to background concentrations. However, the compliance monitoring network at HWMU-10 is composed entirely of point of compliance wells. Therefore, the analytical data from HWMU-10 is not compared to background concentrations.

4.4.3 Annual Monitoring for Constituents Listed in Appendix IX of 40 CFR Part 264

During Second Quarter 2008, the groundwater samples collected from the upgradient well and the point of compliance wells were analyzed for the constituents listed in Appendix IX to 40 CFR Part 264 in accordance with Permit Condition V.J.3.e. Upon receipt of the Second Quarter 2008 analytical data, Radford AAP notified the VDEQ of the detection of two additional Appendix IX constituents (chlordane and diethyl phthalate) that were not listed in Appendix E of Permit Attachment 4 (Unit 10 – Groundwater Compliance Monitoring Constituent List). In accordance with Permit Condition V.J.3.e.(1), Radford AAP resampled the subject well (10MW1) for the detected constituents in order to confirm or refute the additional Appendix IX constituent detections. Chlordane and diethyl phthalate were not confirmed in the subject well at concentrations above their respective detection limits. As a result, chlordane and diethyl phthalate will not be added to the Groundwater Monitoring List for the Unit.

No additional Appendix IX constituents were detected during Second Quarter 2008. Therefore, no changes to the Groundwater Monitoring List for the Unit are required.

4.5 Recommendations

Based on an evaluation of the groundwater analytical data and additional information for HWMU-10, no constituents were detected at concentrations greater than their respective GPSs during calendar year 2008. Therefore, no further action is recommended at this time.

The Appendix IX constituents chlordane and diethyl phthalate were initially detected in compliance well 10MW1 during Second Quarter 2008. In accordance with Permit Condition V.J.3.e.(1), Radford AAP resampled the subject well for the detected constituent in order to confirm or refute the detection of the additional Appendix IX constituents. Chlordane and diethyl phthalate were not confirmed in the subject well at concentrations above their respective detection limits. As a result, chlordane and diethyl phthalate will not be added to the Groundwater Monitoring List for the Unit.

5.0 HWMU-16 ANNUAL GROUNDWATER MONITORING REPORT

5.1 Waste Management Unit Information

Unit Name: Hazardous Waste Management Unit 16 (HWMU-16)

Owner/Operator: United States Army/Alliant Techsystems Inc.

Unit Location: Radford AAP Main Plant Area, Radford, Virginia

Class: Hazardous Waste Management Unit Type: Closed Hazardous Waste Landfill

5.2 Groundwater Monitoring Plan

Monitoring Network:

Upgradient Well: 16C1

Point of Compliance Wells: 16WC1A, 16WC1B, 16MW8, 16MW9

Plume Monitoring Wells: 16-1, 16-2, 16-3, 16-5, 16WC2B, 16SPRING

Observation Wells: 16WC2A, 16C3, 16CDH3

Monitoring Status: Compliance Monitoring Program

CY 2008 Monitoring Events:

Second Quarter 2008: April 14-16, 2008 Fourth Quarter 2008: October 14-16, 2008

5.3 Groundwater Movement

The monitoring wells at HWMU-16 are screened entirely within either carbonate bedrock or weathered carbonate bedrock residuum, or across the residuum/bedrock interface. The static water level measurements gathered during the 2008 semiannual monitoring events are summarized in **Table 4**. Groundwater fluctuations ranged from 0.07 to 6.7 feet annually. As shown on the HWMU-16 Potentiometric Surface Maps (**Appendix D-1**), groundwater movement beneath the site is generally to the northeast.

Darcian flow conditions were assumed for the weathered residuum and carbonate bedrock beneath HWMU-16. As a result, the groundwater velocities were calculated by multiplying the hydraulic conductivity (determined from previously conducted slug tests) by the average hydraulic gradient across the site and dividing by an assumed effective porosity for the aquifer materials. The average hydraulic gradient was determined by superimposing three evenly spaced flow line vectors over the potentiometric surface map, measuring their lengths, calculating the head differential over the distances measured, and dividing the head differential by the length of the flow line vectors. The three calculated gradients were then averaged to a single value. Using this method, the average groundwater hydraulic gradient across the site based on Fourth Quarter 2008 groundwater elevations was calculated to be 0.091 ft/ft. Historical slug test data for the site yielded an average hydraulic conductivity of 7.87 x 10⁻⁵ ft/second. This

value is consistent with literature values for carbonate rock and for clay and silt residuum (Domenico and Schwartz, 1990).

The estimated groundwater velocity across the site was calculated to be approximately 1.55 ft/day or 566 ft/year based on the following:

- Average hydraulic conductivity of 7.87 x 10⁻⁵ ft/second.
- Average hydraulic gradient of 0.091 ft/ft.
- Assumed effective porosity of 0.40, based on a representative range of porosities for carbonate rock and clay and silt residuum (Domenico and Schwartz, 1990).

The actual groundwater flow velocities in the carbonate bedrock may vary as much as one to two orders of magnitude from the velocity presented above depending on water level conditions and the distribution of solution features.

5.4 Groundwater Analytical Data Evaluation

The groundwater samples collected from the compliance monitoring network during the 2008 semiannual monitoring events were analyzed for the constituents listed in Appendix E to Attachment 5 of the Final Post-Closure Care Permit, plus chloroethane, diethyl ether, dimethyl ether, and methylene chloride (which were added to the constituent list for HWMU-16 following Third Quarter 2003), and 1,1,2-trichloro-1,2,2-trifluoroethane (which was added to the constituent list for HWMU-16 following Second Quarter 2004). In addition, groundwater samples were collected from the upgradient well and the point of compliance wells for the annual monitoring for the constituents listed in Appendix IX of 40 CFR Part 264. The laboratory analytical results for the 2008 monitoring events are included in Appendix D-2 (point of compliance wells) and in **Appendix D-3** (plume monitoring wells). The laboratory analytical results for the 2008 monitoring events also are included in electronic format in Appendix E. The analytical data were validated in accordance with SW-846, USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, and USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. Data validation reports are included in Appendix E. Copies of field notes recorded during sample collection are included in **Appendix F**.

Please note that plume monitoring well 16-1 was dry during Fourth Quarter 2008; therefore, no groundwater samples were collected from plume monitoring well 16-1 during that event.

5.4.1 Comparison to Groundwater Protection Standards

As specified in Permit Condition V.J.4.i, the 2008 groundwater analytical data for the upgradient well and the point of compliance wells were compared to GPSs for HWMU-16 listed in Appendix G of Permit Attachment 5. In accordance with Permit Condition V.I.2, Radford AAP performed a simple empirical comparison of the upgradient well and the point of compliance well data to the GPSs (**Appendix D-2**).

As shown in **Appendix D-2**, no constituents were detected at concentrations greater than their respective GPSs.

5.4.2 Comparison to Background Concentrations

As specified in Permit Condition V.O, the 2008 groundwater analytical data for the plume monitoring wells were compared to the background concentrations for HWMU-16 listed in Appendix F of Permit Attachment 5. In accordance with Permit Condition V.I.2, Radford AAP performed a simple empirical comparison of the plume monitoring well data to the background concentrations (**Appendix D-3**).

As shown in **Appendix D-3**, total barium concentrations detected in plume monitoring wells 16-2, 16-3, and 16-5 and in spring sampling location 16SPRING during each 2008 semiannual monitoring event were greater than the background concentration of 175.4 μ g/l. In addition, the total barium concentration detected in plume monitoring well 16-1 during Second Quarter 2008 was greater than the background concentration of 175.4 μ g/l. However, all of the total barium concentrations detected in the plume monitoring wells were well below the USEPA MCL for barium of 2,000 μ g/l. Furthermore, higher barium concentrations in downgradient plume monitoring wells relative to background may be the result of natural variations in trace element distribution in groundwater. As illustrated in the boring logs for the compliance network monitoring wells (Appendix H of Permit Attachment 5), upgradient well 16C1 is screened in limestone while downgradient plume monitoring wells 16-1, 16-2, 16-3, and 16-5 are screened in shale and fault breccia. Such differing lithologic formations would be expected to contain very different trace element distributions.

No other constituent concentrations detected in the plume monitoring wells were greater than their respective background concentrations. In accordance with the requirements of Permit Condition V.K.3, the established background values and the computations used to determine the background values are included in **Appendix D-4**. The background values and associated computations are taken from the Groundwater Quality Assessment Report for HWMU-16 dated August 1999.

5.4.3 Annual Monitoring for Constituents Listed in Appendix IX of 40 CFR Part 264

During Second Quarter 2008, the groundwater samples collected from the upgradient well and the point of compliance wells were analyzed for the constituents listed in Appendix IX to 40 CFR Part 264 in accordance with Permit Condition V.J.4.e. No additional Appendix IX constituents, which are not listed in Appendix E of Permit Attachment 5 (Unit 16 – Groundwater Compliance Monitoring Constituent List), were detected during the Second Quarter 2008 groundwater monitoring event. Therefore, no changes to the Groundwater Monitoring List for the Unit are required.

5.5 Recommendations

Based on an evaluation of the groundwater analytical data and additional information for HWMU-16, no constituents were detected at concentrations greater than their respective GPSs during calendar year 2008. Therefore, no further action is recommended at this time.

The evaluation of the plume monitoring well data indicated that the concentrations of total barium in plume monitoring wells 16-1, 16-2, 16-3, 16-5, and 16SPRING were greater than the site-specific background concentration. As stated previously, higher total barium concentrations in downgradient plume monitoring wells relative to background are likely due to natural variations in trace element distribution in groundwater. Upgradient well 16C1 is screened in limestone while downgradient plume monitoring wells 16-1, 16-2, 16-3, and 16-5 are screened in shale and fault breccia. Such differing lithologic formations would be expected to contain very different trace element distributions. Therefore, no further action regarding the 2008 total barium concentrations detected in plume monitoring wells 16-1, 16-2, 16-3, and 16-5 and in spring sampling location 16SPRING is recommended at this time.

SIGNATURE/CERTIFICATION

Prepared by:	
Name:	Ross G. Miller, Senior Project Geologist
Signature:	Jose Inlet
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Address:	2206 South Main Street
City/State/Zip:	Blacksburg, Virginia 24060-6600
Virginia Professional Certifi	cation:
prepared in accordance with	d or supervised preparation of the attached report, that it has been industry standards and practices, and that the information contained e to the best of my knowledge.
Name:	Michael D. Lawless, Environmental Program Manager
Signature:	
•	cation Type and Number: PG 832
	Draper Aden Associates
Address:	
City/State/Zip:	Blacksburg, Virginia 24060-6600

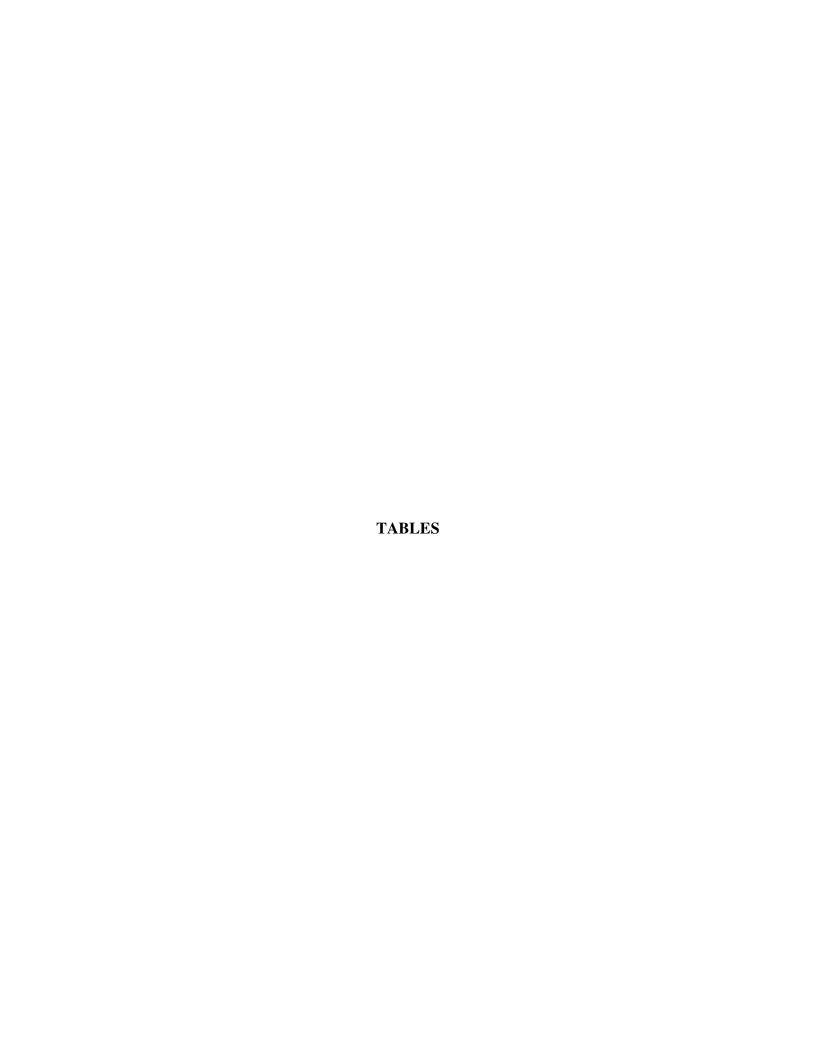


TABLE 1 HWMU-5 GROUNDWATER ELEVATIONS - 2008 RADFORD ARMY AMMUNITION PLANT RADFORD, VIRGINIA

MONITORING	ELEVATION	SECOND QUARTER 2008 FOURTH QUARTER 20			
WELL ID	TOP OF WELL	DTW	GW ELEV	DTW	GW ELEV
5W8B	1789.58	14.46	1775.12	16.96	1772.62
5W5B	1775.13	8.81	1766.32	12.83	1762.30
5W7B	1774.78	8.93	1765.85	12.46	1762.32
5WC21	1774.43	8.89	1765.54	12.77	1761.66
5WC22	1774.45	8.87	1765.58	12.79	1761.66
5WC23	1773.84	8.35	1765.49	12.27	1761.57
S5W5	1772.31	7.36	1764.95	11.61	1760.70
S5W7	1776.08	10.85	1765.23	13.61	1762.47
5W9A	1762.20	2.12	1760.08	5.39	1756.81
5W10A	1771.40	14.58	1756.82	17.27	1754.13
5W11A	1766.20	11.09	1755.11	15.77	1750.43
5WC11	1788.92	15.93	1772.99	17.88	1771.04
5WC12	1788.96	15.63	1773.33	17.70	1771.26
5WCA	1779.05	12.92	1766.13	16.34	1762.71
S5W6	1771.43	5.55	1765.88	11.03	1760.40
S5W8	1783.68	11.68	1772.00	14.02	1769.66

NOTES:

DTW: Depth to water from top of casing. GW ELEV: Groundwater elevation.

All elevations in feet above mean sea level.

TABLE 2 HWMU-7 GROUNDWATER ELEVATIONS - 2008 RADFORD ARMY AMMUNITION PLANT RADFORD, VIRGINIA

MONITORING	ELEVATION	SECOND QUARTER 2008 FOURTH QUARTE			JARTER 2008
WELL ID	TOP OF WELL	DTW	DTW GW ELEV DTW		GW ELEV
7W12B	1717.31	24.86	1692.45	24.86	1692.45
7WCA	1715.40	24.85	1690.55	25.04	1690.36
7MW6	1715.30	26.05	1689.25	26.91	1688.39
7W11B	1715.90	24.97	1690.93	25.23	1690.67
7W9C	1704.45	13.79	1690.66	15.12	1689.33
7W10B	1706.65	15.30	1691.35	15.75	1690.90
7W10C	1709.30	18.88	1690.42	21.20	1688.10
7W13	1705.42	18.43	1686.99	19.45	1685.97
7W9B	1712.49	23.27	1689.22	22.75	1689.74
7MW5	1716.20	24.02	1692.18	25.05	1691.15
7W11	1714.82	24.81	1690.01	24.34	1690.48

NOTES:

DTW: Depth to water from top of casing. GW ELEV: Groundwater elevation.

All elevations in feet above mean sea level.

TABLE 3 HWMU-10

GROUNDWATER ELEVATIONS - 2008 RADFORD ARMY AMMUNITION PLANT RADFORD, VIRGINIA

MONITORING	ELEVATION	SECOND QU	JARTER 2008	FOURTH QUARTER 200		
WELL ID	TOP OF WELL	DTW	GW ELEV	DTW	GW ELEV	
10D4	1714.38	22.90	1691.48	22.93	1691.45	
10DDH2R	1704.38	20.34	1684.04	21.28	1683.10	
10D3	1702.95	18.85	1684.10	20.08	1682.87	
10D3D	1702.64	18.72	1683.92	19.86	1682.78	
10MW1	1703.62	18.94	1684.68	19.73	1683.89	

NOTES:

DTW: Depth to water from top of casing. GW ELEV: Groundwater elevation.

All elevations in feet above mean sea level.

TABLE 4 HWMU-16 GROUNDWATER ELEVATIONS - 2008 RADFORD ARMY AMMUNITION PLANT RADFORD, VIRGINIA

MONITORING	ELEVATION	SECOND QUARTER 2008 FOURTH QUARTER 2008					
WELL ID	TOP OF WELL	DTW	GW ELEV	DTW	GW ELEV		
16C1	1840.14	51.37	1788.77	50.56	1789.58		
16MW8	1815.82	73.71	1742.11	74.16	1741.66		
16MW9	1808.88	65.48	1743.40	67.25	1741.63		
16WC1A	1812.61	68.93	1743.68	70.66	1741.95		
16WC1B	1812.95	69.17	1743.78	71.16	1741.79		
16-1	1815.82	53.32	1762.50	60.00	1755.82		
16-2	1810.99	55.78	1755.21	55.17	1755.82		
16-3	1824.77	58.58	1766.19	58.51	1766.26		
16-5	1742.60	3.43	1739.17	5.43	1737.17		
16WC2B	1818.71	55.77	1762.94	55.42	1763.29		
16WC2A	1820.05	DRY	DRY	DRY	DRY		
16C3	1822.22	DRY	DRY	DRY	DRY		
16CDH3	1825.60	DRY	DRY	DRY	DRY		
SPRING	na	na	na	na	na		

NOTES:

DTW: Depth to water from top of casing. GW ELEV: Groundwater elevation.

All elevations in feet above mean sea level.

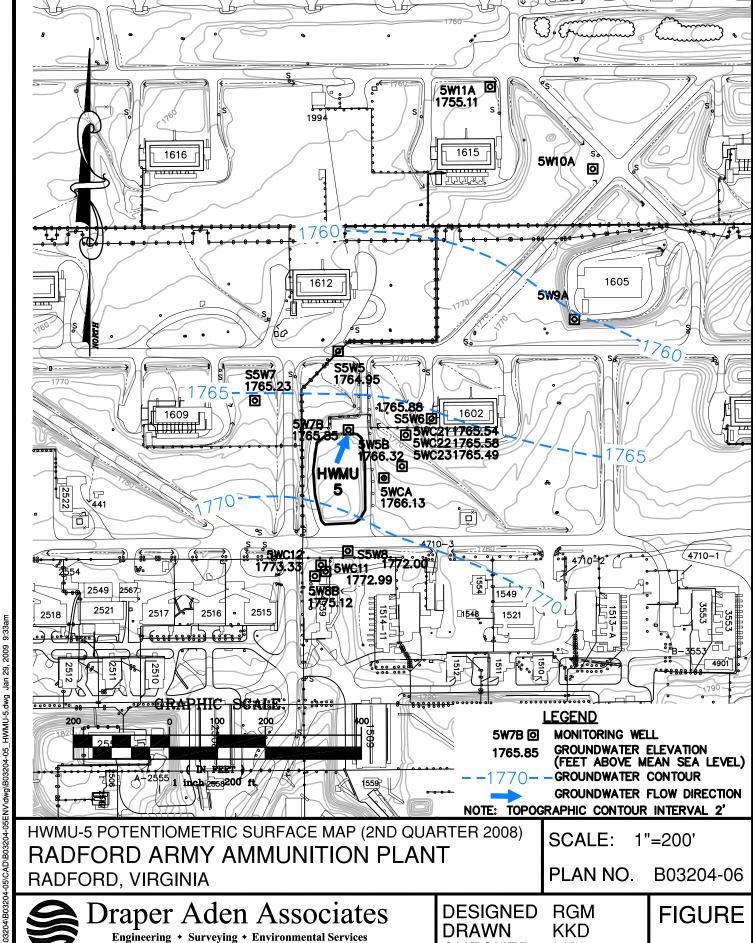
na: Not applicable.

APPENDIX A

HWMU-5

APPENDIX A-1

HWMU-5 POTENTIOMETRIC SURFACE MAPS SECOND QUARTER 2008 FOURTH QUARTER 2008



Richmond, VA

Charlottesville, VA

Hampton Roads, VA

CHECKED

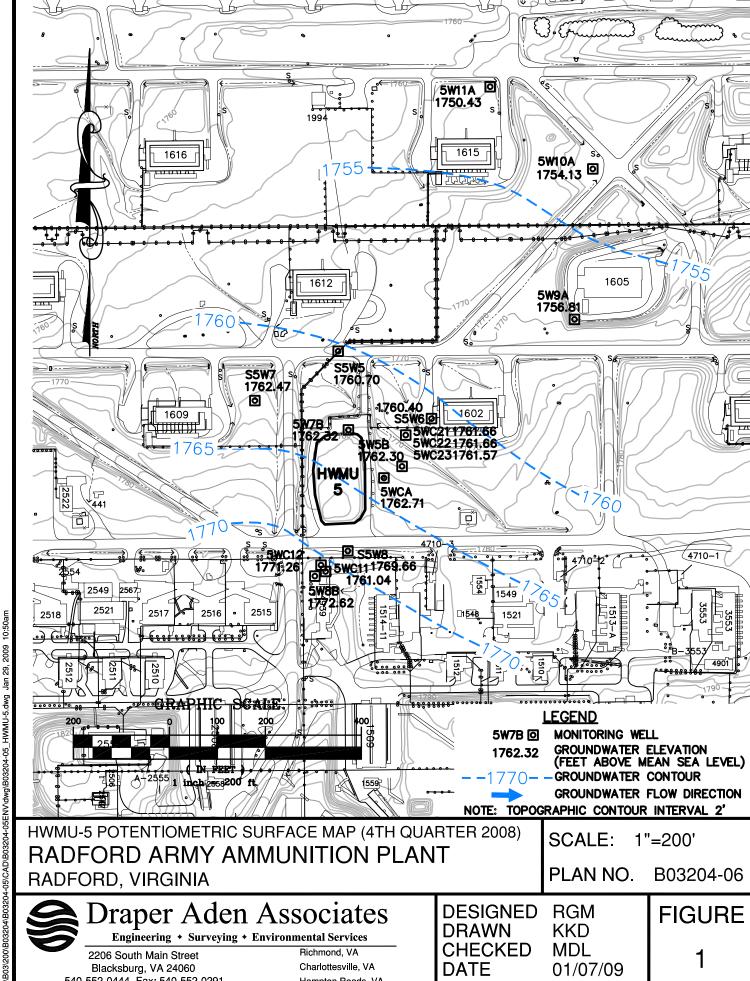
DATE

MDL

7/29/2008

2206 South Main Street Blacksburg, VA 24060

540-552-0444 Fax: 540-552-0291



Charlottesville, VA

Hampton Roads, VA

DATE

01/07/09

Blacksburg, VA 24060

540-552-0444 Fax: 540-552-0291

APPENDIX A-2

HWMU-5 2008 LABORATORY ANALYTICAL RESULTS POINT OF COMPLIANCE WELLS

Target Analyte Monitoring Results - HWMU-5 Point of Compliance Wells

Radford Army Ammunition Plant, Radford, Virginia

 $Upgradient\ well = 5W8B$

All Results in ug/L. 5W5B Q 5W7B Q 5WC21 Q 5WC22 Q 5W8B Q 5WC23 Q GPS Analyte/Quarter QLMethod CAS # 7440-36-0 Antimony Second Quarter 2008 U U 0.79 J U U U 6 6020 Fourth Quarter 2008 U U 6 U U U U 6020 CAS # 7440-38-2 **Arsenic** Second Quarter 2008 50 U U U IJ U U 6020 10 Fourth Quarter 2008 U U U U U U 6020 CAS # 7440-39-3 **Barium** Second Quarter 2008 2000 115 39.7 37.3 14.2 34.6 25.4 10 6020 Fourth Quarter 2008 2000 112 54.8 53.3 15.6 30.3 27.2 10 6020 Beryllium CAS # 7440-41-7 Second Quarter 2008 U U 0.63 J 1.9 U U 4 6020 Fourth Quarter 2008 U U U 2.1 U U 6020 Cadmium CAS # 7440-43-9 Second Quarter 2008 U U U 0.56 J 0.23 J 5 0.37 J 6020 Fourth Quarter 2008 U U U 5 U U 6020 Chromium CAS # 7440-47-3 100 Second Quarter 2008 U U 3 7.4 U U 6020 5 Fourth Quarter 2008 U 100 U U 8.6 U U 6020 CAS # 7440-48-4 Cobalt Second Quarter 2008 1.3 J U 62.7 J 16.9 3 313 6020 11 J 5 Fourth Quarter 2008 U U 12.4 71.2 U U 5 313 6020 CAS # 7440-50-8 Copper Second Quarter 2008 U 1.2 6.1 1300 6020 4.9 J П U Fourth Quarter 2008 U U 5.9 1300 6020 6.3 CAS # 7439-92-1 Lead Second Quarter 2008 U U 1.7 U U U 1 15 6020 Fourth Quarter 2008 U U 2.9 U U U 6020 Mercury CAS # 7439-97-6 Second Quarter 2008 U U U U U U 2 2 7470A Fourth Quarter 2008 U U U 2 2 7470A U U U CAS # 7440-02-0 Nickel Second Quarter 2008 U U 39.5 4.4 313 6020 11.6 10.5 10 Fourth Quarter 2008 U U 313 12.5 36.2 U U 10 6020 Selenium CAS # 7782-49-2 Second Quarter 2008 U 11.2 U U U U 50 6020 10 Fourth Quarter 2008 U U U U U U 10 50 6020 CAS # 7440-22-4 Silver Second Quarter 2008 U U U U 78.25 U П 2 6020 Fourth Quarter 2008 U U U U U 2 78.25 6020 CAS # 7440-28-0 **Thallium** Second Quarter 2008 U U U U U U 2 6020



10

10

10

2

109.55

109.55

4695

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33.8

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CAS # 7440-31-5

CAS # 7440-62-2

CAS # 7440-66-6

3.5 J

U

U

U

Fourth Quarter 2008

Second Quarter 2008

Fourth Quarter 2008

Second Quarter 2008

Fourth Quarter 2008

Vanadium
Second Quarter 2008

Tin

Zinc

Target Analyte Monitoring Results - HWMU-5 Point of Compliance Wells

Radford Army Ammunition Plant, Radford, Virginia

 $Upgradient\ well = 5W8B$

All Results in ug/L.

Second Cuarter 2008	The Results in ug/E.									
Second Claster 2008	Analyte/Quarter	5W8B Q	5W5B Q	5W7B Q	5WC21 Q	5WC22 Q	5WC23 Q	QL	GPS	Method
Cyanide	Sulfide						CAS# 18496-25-	8		
Second Quarter 2008	Second Quarter 2008	U	U	U	U	U	U	1000	-	9034
CASE # 83-92-9 CASE	Cyanide						CAS # 57-12-5		•	
Second Quarter 2008	Second Quarter 2008	U	U	U	U	U	U	20	-	9014
Cas # 2089-96-8 Cas # 2089-	Acenaphthene	"		1		l	CAS # 83-32-9			
Second Quarter 2008	Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Case 67-64-1 Second Quarier 2008	Acenaphthylene						CAS # 208-96-8			
Second Quarter 2008	Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Fourth Quarter 2008	Acetone						CAS # 67-64-1			
Acetonitrie	Second Quarter 2008	UJ	U J	U J	UJ	UJ	UJ	10	223.57	8260B
Second Quarier 2008	Fourth Quarter 2008	U	U	U	U	U	U	10	223.57	8260B
Acetophenone Cas # 98-86-2	Acetonitrile						CAS # 75-05-8			
Second Quarter 2008	Second Quarter 2008	U	U	U	U	U	U	100	-	8260B
Second Quarter 2008	Acetophenone						CAS # 98-86-2			
Second Quarier 2008		U	U	U	U	U	U	10	-	8270C
Second Quarter 2008	2-Acetylaminofluorene						CAS # 53-96-3			
Second Quarter 2008		U	U	U	U	U	U	30	-	8270C
Second Quarter 2008	Acrolein						CAS # 107-02-8			
Acrylonitrile		UJ	U J	UJ	UJ	ı	1	10	-	8260B
Second Quarter 2008						_				
Aldrin		U J	U J	U J	U.J		1	1	_	8260B
Second Quarter 2008						-		•		
Allyl chloride Second Quarter 2008		11 .1	11 .1	11 .1	11 .1	1	1	0.025	_	8081A
Second Quarter 2008		0 0	0 0	0 0	0 0			0.020		000171
### A-Minobiphenyl Second Quarter 2008		11 1	11 1	11 1	11 1	1	1	1	_	9260B
Second Quarter 2008		0 0	0 0	0 0	0 0			'		02000
Aniline		11	11	- 11	11	1	1	10		9270C
Second Quarter 2008		0	U	0	0			10		02700
Anthracene Second Quarter 2008 U U U U U U U U 10		11	11	11	- 11	1	1	10		92700
Second Quarter 2008		U	U	U	U			10		62700
Aramite		1 0		111	1 0	1	1	10	_	00700
Second Quarter 2008		U	U	U	U			10		82700
Second Quarter 2008		1		1	1	1	1	- 10		20720
Second Quarter 2008		U	U	U	U			10	-	82/0C
Second Quarter 2008		1								
Second Quarter 2008		U	U	U	U			1	-	8260B
Second Quarter 2008		1	Ti .	1	1	1	1		1	1
Second Quarter 2008		U	U	U	U			10	-	8270C
Second Quarter 2008		1	1	1	1				1	
Second Quarter 2008		U	U	U	U			10	-	8270C
Second Quarter 2008			ı	1		1	1			
Second Quarter 2008 U U U U U U U U O O		U	U	U	U			10	-	8270C
Second Quarter 2008	Benzo[ghi]perylene						CAS # 191-24-2			
Second Quarter 2008 U U U U U U U U O O	Second Quarter 2008	U	U	U	U			10	-	8270C
1,4-Benzenediamine CAS # 106-50-3 Second Quarter 2008 U U U U U U U U U U Second Quarter 2008 U U U U U U U U U U U U D Second Quarter 2008 U U U U U U U U U D Second Quarter 2008 U U U U U U U U D 50 - 8270C Respectively Respectively <t< td=""><td>Benzo(a)pyrene</td><td></td><td></td><td></td><td></td><td></td><td>CAS # 50-32-8</td><td></td><td></td><td></td></t<>	Benzo(a)pyrene						CAS # 50-32-8			
Second Quarter 2008 U U U U U U 50 - 82700	Second Quarter 2008	U	U	U	U			10	-	8270C
Benzyl alcohol CAS # 100-51-6	1,4-Benzenediamine				 		CAS # 106-50-3			
	Second Quarter 2008	U	U	U	U	U	U	50	-	8270C
Second Quarter 2008 U U U U U U U 10 - 82700	Benzyl alcohol						CAS # 100-51-6			
	Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
							_			



Target Analyte Monitoring Results - HWMU-5 Point of Compliance Wells

Radford Army Ammunition Plant, Radford, Virginia Upgradient well = 5W8B

All Results in ug/L.

Analyte/Quarter	5W8B Q	5W5B Q	5W7B Q	5WC21 Q	5WC22 Q	5WC23 Q	QL	GPS	Method
alpha-BHC	<u>'</u>					CAS # 319-84-6			
Second Quarter 2008	U	U	U	U	U	U	0.025	-	8081A
beta-BHC						CAS # 319-85-7			1
Second Quarter 2008	U	U	U	U	U	U	0.025	-	8081A
delta-BHC						CAS # 319-86-8			
Second Quarter 2008	U	U	U	U	U	U	0.025	-	8081A
gamma-BHC						CAS # 58-89-9			1
Second Quarter 2008	U	U	U	U	U	U	0.025	-	8081A
bis(2-Chloroethoxy)metha	ne					CAS # 111-91-1			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
bis(2-Chloroethyl)ether	ŭ		ŭ	ŭ	Ŭ	CAS # 111-44-4	10		02700
Second Quarter 2008	U	U	U	U	U	U U	10		8270C
		0	U	U		CAS # 108-60-1	10		6270C
bis(2-Chloro-1-methylethyl	1			1		1	40		20720
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
bis(2-Ethylhexyl)phthalate	1			1		CAS # 117-81-7		1	l
Second Quarter 2008	U	U	U	U	U	U	6	10	8270C
Fourth Quarter 2008	U	U	U	U	U	U	6	10	8270C
Bromobenzene	1		1		ı	CAS # 108-86-1			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
Bromochloromethane						CAS # 74-97-5			
Second Quarter 2008	UJ	U J	U J	U	U	U	1	-	8260B
Bromodichloromethane						CAS # 75-27-4			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
Bromoform						CAS # 75-25-2			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
4-Bromophenyl phenyl eth	er					CAS # 101-55-3			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
2-Butanone						CAS # 78-93-3			
Second Quarter 2008	U	U	U	U	U	U	10	691.08	8260B
Fourth Quarter 2008	U	U	U	U	U	U	10	691.08	8260B
n-Butyl alcohol						CAS # 71-36-3			
Second Quarter 2008	U J	U J	U J	UJ	UJ	U J	200	-	8260B
tert-Butyl alcohol						CAS # 75-65-0			
Second Quarter 2008	U J	U J	U J	U J	UJ	U J	20	-	8260B
n-Butylbenzene						CAS # 104-51-8			1
Second Quarter 2008	UJ	U J	U J	U	U	U	1	-	8260B
sec-Butylbenzene						CAS # 135-98-8			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
tert-Butylbenzene	Ŭ		Ü	J	Ü	CAS # 98-06-6	•		OZOOB
Second Quarter 2008	U	U	U	U	U	U U	1	_	8260B
	U	-	U	U		CAS # 85-68-7			0200B
Butyl benzyl phthalate				1	ı	1	40	1	00700
Second Quarter 2008	U	U	U	U	U	U 75 15 0	10	-	8270C
Carbon disulfide	1		1	1		CAS # 75-15-0		1	1
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
Carbon tetrachloride	1		ı	1	I.	CAS # 56-23-5		1	1
Second Quarter 2008	U	U	U	U	U	U	1	5	8260B
Chlordane						CAS # 57-74-9			
Second Quarter 2008	U	U	U	U	U	U	0.25	-	8081A



Target Analyte Monitoring Results - HWMU-5 Point of Compliance Wells

Radford Army Ammunition Plant, Radford, Virginia

 $Upgradient \ well = 5W8B$

				_				1	
Analyte/Quarter	5W8B Q	5W5B Q	5W7B Q	5WC21 Q	5WC22 Q	5WC23 Q	QL	GPS	Method
p-Chloroaniline						CAS # 106-47-8			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Chlorobenzene						CAS # 108-90-7			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
Chlorobenzilate						CAS # 510-15-6			
Second Quarter 2008	U	U	U	U	U	U	20	-	8270C
p-Chloro-m-cresol				1		CAS # 59-50-7			1
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Chloroethane						CAS # 75-00-3			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
2-Chloroethyl vinyl ether						CAS # 110-75-8			
Second Quarter 2008	U	U	U	U	U	U	5	-	8260B
Chloroform						CAS # 67-66-3			
Second Quarter 2008	U	U	U	U	U	U	1	80	8260B
Fourth Quarter 2008	U	U	1.1	U	U	U	1	80	8260B
Chloromethane						CAS # 74-87-3			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
2-Chloronaphthalene						CAS # 91-58-7			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
2-Chlorophenol	J		J		ŭ	CAS # 95-57-8	.0		02.00
Second Quarter 2008	U	U	U	U	U	U U	10	_	8270C
4-Chlorophenyl phenyl eth			Ü	Ü	ŭ	CAS # 7005-72-3			02700
Second Quarter 2008	U	U	U	U	U	U	10		8270C
	U	0	U	U	U	CAS # 126-99-8	10		82700
Chloroprene		U J	UJ	U	U	U	1	_	00000
Second Quarter 2008	υJ	U J	U J	U	U	CAS # 95-49-8	'		8260B
2-Chlorotoluene				111				1	00000
Second Quarter 2008	U	U	U	U	U	U CAS # 106-43-4	1	-	8260B
4-Chlorotoluene			I	1		1		1	
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
Chrysene			I		I	CAS # 218-01-9		1	1
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Cyclohexane	1		II.		1	CAS # 110-82-7		1	1
Second Quarter 2008	U	U	U	U	U	U	2	-	8260B
2,4-Dichlorophenoxyacetic	acid		1		1	CAS # 94-75-7		1	
Second Quarter 2008	U	U	U	U	U	U	5	-	8151A
4,4'-DDD						CAS # 72-54-8			
Second Quarter 2008	U	U	U	U	U	U	0.025	-	8081A
4,4'-DDE						CAS # 72-55-9			
Second Quarter 2008	U	U	U	U	U	U	0.025	-	8081A
4,4'-DDT						CAS # 50-29-3			
Second Quarter 2008	U	U	U	U	U	U	0.025	-	8081A
Diallate						CAS # 2303-16-4	!		
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Dibenz(a,h)anthracene	I		1	-1	I	CAS # 53-70-3	<u> </u>	1	1
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Dibenzofuran	I .		<u>I</u>		<u> </u>	CAS # 132-64-9		1	1
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Dibromochloromethane			<u> </u>			CAS # 124-48-1			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B



${\it Target\ Analyte\ Monitoring\ Results\ -\ HWMU-5\ Point\ of\ Compliance\ Wells}$

Radford Army Ammunition Plant, Radford, Virginia

 $Upgradient\ well = 5W8B$

An Resuns in ug/L.						1	ı.	1	li
Analyte/Quarter	5W8B Q	5W5B Q	5W7B Q	5WC21 Q	5WC22 Q	5WC23 Q	QL	GPS	Method
1,2-Dibromo-3-chloropropa	ane					CAS # 96-12-8			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
1,2-Dibromoethane						CAS # 106-93-4			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
Di-n-butyl phthalate						CAS # 84-74-2			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
1,2-Dichlorobenzene						CAS # 95-50-1			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
1,3-Dichlorobenzene						CAS # 541-73-1			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
1,4-Dichlorobenzene						CAS # 106-46-7			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
3,3'-Dichlorobenzidine						CAS # 91-94-1			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
trans-1,4-Dichloro-2-buten	е					CAS # 110-57-6			
Second Quarter 2008	U J	U J	U J	U	U	U	1	-	8260B
Dichlorodifluoromethane				"	l	CAS # 75-71-8			
Second Quarter 2008	U	U	U	U	U	U	1	125.2	8260B
Fourth Quarter 2008	UJ	U J	UJ	UJ	UJ	U J	1	125.2	8260B
1,1-Dichloroethane				"	l .	CAS # 75-34-3			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
1,2-Dichloroethane						CAS # 107-06-2			
Second Quarter 2008	U	U	U	U	U	U	1	5	8260B
Fourth Quarter 2008	U	U	U	U	U	U	1	5	8260B
1,1-Dichloroethene			I.			CAS # 75-35-4			I.
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
cis-1,2-Dichloroethene						CAS # 156-59-2			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
trans-1,2-Dichloroethene						CAS # 156-60-5			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
2,4-Dichlorophenol						CAS # 120-83-2			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
2,6-Dichlorophenol						CAS # 87-65-0			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
1,2-Dichloropropane						CAS # 78-87-5			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
1,3-Dichloropropane						CAS # 142-28-9			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
2,2-Dichloropropane						CAS # 594-20-7			
Second Quarter 2008	U	U	U	UJ	UJ	UJ	1	-	8260B
1,1-Dichloropropene					-	CAS # 563-58-6			
Second Quarter 2008	U	U	U	U	U	U U	1	-	8260B
cis-1,3-Dichloropropene	-	-	_			CAS # 10061-01			
Second Quarter 2008	U	U	U	U	U	U U	1	-	8260B
						CAS # 10061-02			32300
trans-1,3-Dichloropropene Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
	U	J			_	CAS # 60-57-1	'		02000
Dieldrin Second Quarter 2008	U	U	U	U	U	U	0.025	-	8081A
Second Quarter 2008	U	U	0	0	U	U	0.025		0081A

Target Analyte Monitoring Results - HWMU-5 Point of Compliance Wells

Radford Army Ammunition Plant, Radford, Virginia

 $Upgradient \ well = 5W8B$

Analyte/Quarter	5W8B Q	5W5B Q	5W7B Q	5WC21 Q	5WC22 Q	5WC23 Q	QL	GPS	Method
Diethyl ether						CAS # 60-29-7			
Second Quarter 2008	UJ	U J	U J	U	U	U	12	-	8260B
Fourth Quarter 2008	U	U	U	U	U	U	12	-	8260B
Diethyl phthalate						CAS # 84-66-2			
Second Quarter 2008	U	U	U	U	U	U	10	12,520	8270C
Fourth Quarter 2008	U	U	U	U	U	U	10	12,520	8270C
O,O-Diethyl O-2-pyrazinyl						CAS # 297-97-2			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Dimethoate						CAS # 60-51-5			
Second Quarter 2008	U	U	U	U	U	U	20	-	8270C
Dimethyl ether						CAS # 115-10-6			
Second Quarter 2008	UJ	U J	U J	UJ	UJ	U J	2	-	8260B
p-(Dimethylamino)azobenz	ene					CAS # 60-11-7			1
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
7,12-Dimethylbenz[a]anthr	acene					CAS # 57-97-6			
Second Quarter 2008	U	U	U	U	U	U	20	-	8270C
3,3'-Dimethylbenzidine						CAS # 119-93-7			
Second Quarter 2008	U	U	U	U	U	U	20	-	8270C
a,a-Dimethylphenethylamii	ne					CAS # 122-09-8			1
Second Quarter 2008	U	U	U	U	U	U	50	-	8270C
2,4-Dimethylphenol						CAS # 105-67-9			
Second Quarter 2008	U J	U J	U J	UJ	UJ	U J	10	-	8270C
Dimethyl phthalate						CAS # 131-11-3			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
m-Dinitrobenzene						CAS # 99-65-0			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
4,6-Dinitro-o-cresol						CAS # 534-52-1			
Second Quarter 2008	U	U	U	U	U	U	20	-	8270C
2,4-Dinitrophenol						CAS # 51-28-5			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
2,4-Dinitrotoluene	_			_		CAS # 121-14-2			
Second Quarter 2008	U	U	U	U	U	U	10	31.3	8270C
Fourth Quarter 2008	U	U	U	U	U	U	10	31.3	8270C
2,6-Dinitrotoluene	_					CAS # 606-20-2			
Second Quarter 2008	U	U	U	U	U	U	10	15.65	8270C
Fourth Quarter 2008	U	U	U	U	U	U	10	15.65	8270C
Dinoseb						CAS # 88-85-7			
Second Quarter 2008	U	U	U	U	U	U	2.5	-	8151A
Di-n-octyl phthalate						CAS # 117-84-0			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
1,4-Dioxane	J		0	<u> </u>		CAS # 123-91-1	.0		02,00
Second Quarter 2008	U	U	U	U	U	U U	200	-	8260B
Diphenylamine	Ŭ		Ŭ			CAS # 122-39-4	_50		02000
Second Quarter 2008	U	U	U	U	U	U	10	_	8270C
	3		3	J		CAS # 298-04-4	10		32700
Disulfoton Second Quarter 2008	U	U	U	U	U	U	10	-	92700
	U	U	U	U		CAS # 959-98-8	10		8270C
Endosulfan I				1 11	1	T	0.005	_	0004 4
Second Quarter 2008	U	U	U	U	U	U	0.025		8081A

Target Analyte Monitoring Results - HWMU-5 Point of Compliance Wells

Radford Army Ammunition Plant, Radford, Virginia

 $Upgradient\ well = 5W8B$

Analyte/Quarter	5W8B Q	5W5B Q	5W7B Q	5WC21 Q	5WC22 Q	5WC23 Q	QL	GPS	Method
Endosulfan II						CAS # 33213-65	-9		-
Second Quarter 2008	U	U	U	U	U	U	0.025	-	8081A
Endosulfan sulfate						CAS # 1031-07-8	3		
Second Quarter 2008	U	U	U	U	U	U	0.025	-	8081A
Endrin						CAS # 72-20-8			
Second Quarter 2008	U	U	U	U	U	U	0.025	-	8081A
Ethyl acetate				-		CAS # 75-25-2			
Second Quarter 2008	U	U	U	UJ	UJ	U J	2	-	8260B
Endrin aldehyde						CAS # 7421-93-4	1		
Second Quarter 2008	U	U	U	U	U	U	0.025	-	8081A
Ethanol						CAS # 110-82-7			
Second Quarter 2008	UJ	U J	UJ	UJ	UJ	UJ	500	-	8260B
Ethylbenzene					_	CAS # 100-41-4			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
Ethyl methacrylate						CAS # 97-63-2			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
Ethyl methanesulfonate			_		_	CAS # 62-50-0	•		
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Ethylene oxide	Ü	Ŭ	Ü			CAS # 75-21-8	10		02700
Second Quarter 2008	U	U	U	UJ	U J	U J	20	_	8260B
	U	0	U	0 0	-	CAS # 52-85-7	20		0200B
Famphur Second Quarter 2008	U	U	U	U	U	U	10	_	8270C
	U	U	U	U	_	CAS # 206-44-0	10		02700
Fluoranthene Second Quarter 2008	U	U	U	U	U	U	10	_	8270C
	U	U	U	U	_	CAS # 86-73-7	10		82700
Fluorene Second Quarter 2008	U	U	U	U	U	U	10	_	00700
	U	U	U	U		CAS # 76-44-8	10	_	8270C
Heptachlor	1 11 1			I	1	1	0.005	_	0004.6
Second Quarter 2008	U J	U J	U J	U J	UJ	U J CAS # 1024-57-3	0.025	-	8081A
Heptachlor epoxide	1			1	ı	1	1		1 00014
Second Quarter 2008	U	U	U	U	U	CAS # 118-74-1	0.025	-	8081A
Hexachlorobenzene	1			1	I.	1	40	_	20700
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Hexachlorobutadiene	1			1		CAS # 87-68-3	l .	1	
Second Quarter 2008	U J	U J	U J	U	U	U	1	-	8260B
Hexachlorocyclopentadie	1			1	ı	CAS # 77-47-4	l	1	
Second Quarter 2008	U	U	U	U	U	U 07.70.4	20	-	8270C
Hexachloroethane	1			1		CAS # 67-72-1	l .	1	T
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
Hexachlorophene	1		ı	1		CAS # 70-30-4	ı	1	1
Second Quarter 2008	U	U	U	U	U	U	500	-	8270C
Hexachloropropene						CAS # 188871-	7		
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
2-Hexanone			1			CAS # 591-78-6	ı	1	1
Second Quarter 2008	U	U	U	U	U	U	5	-	8260B
Indeno[1,2,3-cd]pyrene						CAS # 193-39-5			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Isobutyl alcohol						CAS # 78-83-1			
Second Quarter 2008	U	U	U	UJ	U J	UJ	125	-	8260B



Upgradient well = 5W8B

Analyte/Quarter	5W8B Q	5W5B Q	5W7B Q	5WC21 Q	5WC22 Q	5WC23 Q	QL	GPS	Method
Isodrin						CAS # 465-73-6			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
sophorone	1					CAS # 78-59-1			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
sopropylbenzene						CAS # 98-82-8			
Second Quarter 2008	U	U	U	U	U	U	200	-	8260B
Isopropylether						CAS # 108-20-3			
Second Quarter 2008	U J	U J	U J	U	U	U	1	-	8260B
4-Isopropyltoluene						CAS # 99-87-6			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
Isosafrole						CAS # 120-58-1			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Kepone						CAS # 143-50-0			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Methacrylonitrile						CAS # 126-98-7			
Second Quarter 2008	U	U	U	U	U	U	10	-	8260B
Methapyrilene	J				- C	CAS # 91-80-5			02002
Second Quarter 2008	U	U	U	U	U	U	10		8270C
	Ŭ	- C	Ü			CAS # 72-43-5			02700
Methoxychlor Second Quarter 2008	U	U	U	U	U	U U	0.025	_	8081A
	U	U	U	U	_	CAS # 74-83-9	0.023		0001A
Bromomethane Second Quarter 2008	UJ	U J	U J	U	U	U	-		00000
	UJ	U J	U J	U	_	CAS # 56-49-5	1	-	8260B
3-Methylcholanthrene	1			1	ı		- 10	_	20720
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
odomethane						CAS # 74-88-4		1	
Second Quarter 2008	UJ	U J	U J	U	U	U	1	-	8260B
Methyl methacrylate			II.	1	1	CAS # 80-62-6		1	1
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
Methyl methane sulfonate			1		ı	CAS # 66-27-3		1	
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
2-Methylnaphthalene						CAS # 91-57-6			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Methyl parathion						CAS # 298-00-0			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
4-Methyl-2-pentanone						CAS # 108-10-1			
Second Quarter 2008	U	U	U	U	U	U	5	-	8260B
2-Methylphenol						CAS # 95-48-7			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
3 & 4-Methylphenol						CAS # 106-44-5			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Methyl tert-butyl ether						CAS # 1634-04-4			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
Dibromomethane	1	I	I .	1	I	CAS # 74-95-3		1	1
Second Quarter 2008	U J	U J	U J	U	U	U	1	-	8260B
Methylene chloride						CAS # 75-09-2		1	1
Second Quarter 2008	U	U	U	U	U	U	1	5	8260B
Fourth Quarter 2008	U	U	U	U	U	U	1	5	8260B
Naphthalene				1		CAS # 91-20-3			
Second Quarter 2008	UJ	UJ	UJ	UJ	UJ	U J	1	-	8260B



Target Analyte Monitoring Results - HWMU-5 Point of Compliance Wells

Radford Army Ammunition Plant, Radford, Virginia

 $Upgradient\ well = 5W8B$

Analyte/Quarter	5W8B Q	5W5B Q	5W7B Q	5WC21 Q	5WC22 Q	5WC23 Q	QL	GPS	Method
1,4-Naphthoquinone				1		CAS # 130-15-4			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
1-Naphthylamine						CAS # 134-32-7			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
2-Naphthylamine						CAS # 91-59-8			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
o-Nitroaniline						CAS # 88-74-4			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Fourth Quarter 2008	U	U	U	U	U	U	10	-	8270C
m-Nitroaniline						CAS # 99-09-2			
Second Quarter 2008	U	U	U	U	U	U	20	-	8270C
p-Nitroaniline						CAS # 100-01-6			
Second Quarter 2008	U	U	U	U	U	U	20	20	8270C
Fourth Quarter 2008	U	U	U	U	U	U	20	20	8270C
Nitrobenzene	-					CAS # 98-95-3			1
Second Quarter 2008	U	U	U	U	U	U	10	10	8270C
Fourth Quarter 2008	U	U	U	U	U	U	10	10	8270C
o-Nitrophenol						CAS # 88-75-5			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
p-Nitrophenol	Ū		, ,	ŭ	J	CAS # 100-02-7			02.00
Second Quarter 2008	U	U	U	U	U	U	10		8270C
4-Nitroguinoline-1-oxide	Ü			Ŭ	Ü	CAS # 56-57-5	10		02700
Second Quarter 2008	U	U	U	U	U	U U	50	_	8270C
	U	-	U	U	U	CAS # 924-16-3	30		02700
N-Nitrosodi-n-butylamine Second Quarter 2008	U	U	U	U	U	U	10		00700
	U	U	U	U	U	CAS # 55-18-5	10	-	8270C
N-Nitrosodiethylamine			I	1		1	- 10		
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
N-Nitrosodimethylamine			T	T	I	CAS # 62-75-9		1	
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
N-Nitrosodiphenylamine			1	T.	I .	CAS # 86-30-6	1	1	1
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
N-Nitrosodipropylamine					1	CAS # 621-64-7		1	
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
N-Nitrosomethylethylamine)					CAS # 10595-95	-6		
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
N-Nitrosomorpholine						CAS # 59-89-2			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
N-Nitrosopiperidine						CAS # 100-75-4		•	
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
N-Nitrosopyrrolidine				•		CAS # 930-55-2		'	
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
5-Nitroso-o-toluidine						CAS # 99-55-8			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Parathion			1	1	I .	CAS # 56-38-2			-1
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Pentachlorobenzene			1		<u>I</u>	CAS # 608-93-5			1
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Pentachloroethane						CAS # 76-01-7		1	
Second Quarter 2008	UJ	U J	UJ	UJ	UJ	UJ	1	1	8260B



Target Analyte Monitoring Results - HWMU-5 Point of Compliance Wells

Radford Army Ammunition Plant, Radford, Virginia

 $Upgradient \ well = 5W8B$

5W8B Q	5W5B Q	5W7B Q	5WC21 Q	5WC22 Q	5WC23 Q	QL	GPS	Method
					CAS # 82-68-8			
U	U	U	U	U	U	10	-	8270C
					CAS # 87-86-5			
U	U	U	U	U	U	20	-	8270C
					CAS # 62-44-2			
U	U	U	U	U	U	10	-	8270C
					CAS # 85-01-8			
U	U	U	U	U	U	10	-	8270C
					CAS # 108-95-2			
U	U	U	U	U	U	10	-	8270C
cs					CAS # C-020			
U	U	U	U	U	U	5	-	9065
					CAS # 298-02-2			
U	U	U	U	U	U	20	-	8270C
					CAS # 109-06-8			
U	U	U	U	U	U	10	-	8270C
					CAS # 23950-58	-5		
U	U	U	U	U	U	10	-	8270C
					CAS # 71-23-8			
UJ	U J	UJ	U	U	U	1000	-	8260B
					CAS # 67-63-0			
U	U	U	U	U	U	1000	-	8260B
				_	_			32002
U.J.	U J	U J	U		1	10	-	8260B
				-	_			32002
Ш	Ш	U	U		1	1	-	8260B
- C		J	J		-	·		02002
Ш	H	П	11	T.	1	10	l -	8270C
O		U	0			10		02700
11	Ш	11	11		1	20	_	8270C
U	0	U	U	-	-	20		02700
11	Ш	11	11	T.	1	10	_	8270C
U	0	U	U	-	-	10		6270C
11	11	- 11	- 11		1	2.5	1 .	8151A
U	0	U	U			2.5		6131A
			1 11		1			00000
U	U	U	U				-	8260B
		l	1	1	1		T	20720
	U	U	U			10	-	8270C
		I	1		1		T	04544
	U	U	U			2.5	-	8151A
		1				1	1	
U	U	U	U			10	-	8270C
					1		1	05
U	U	U	U			1	-	8260B
		1	T.			1	1	1
UJ	U J	U J	U	U	U	1	-	8260B
					CAS # 127-18-4			
	U U U U U U U U U U U U U U U U U U U	U U	U U U U Icic acid U U U U U	U U	U U U U U U U U U U U U U U U U U U U	CAS # 82-86-8 U U U U U U U U U U CAS # 87-86-5 U U U U U U U U U CAS # 87-86-5 U U U U U U U U CAS # 88-86-5 U U U U U U U U CAS # 88-86-5 U U U U U U U U CAS # 88-86-6 U U U U U U U U CAS # 108-95-2 U U U U U U U U CAS # 108-95-2 U U U U U U U U CAS # 109-06-8 U U U U U U U U CAS # 71-23-8 U U U U U U U U CAS # 71-23-8 U U U U U U U U CAS # 107-12-0 U U U U U U U CAS # 108-65-1 U U U U U U U U CAS # 108-65-1 U U U U U U U U CAS # 108-65-1 U U U U U U U U CAS # 108-65-1 U U U U U U U U CAS # 108-65-1 U U U U U U U U CAS # 108-65-1 U U U U U U U U CAS # 108-65-1 U U U U U U U U CAS # 108-65-1 U U U U U U U U CAS # 108-65-1 U U U U U U U U CAS # 108-65-1 U U U U U U U U CAS # 108-65-1 U U U U U U U U U CAS # 108-65-1 U U U U U U U U U CAS # 38-72-1 U U U U U U U U U CAS # 38-72-1 U U U U U U U U CAS # 38-89-24-1 U U U U U U U U U CAS # 38-89-24-1 U U U U U U U U U CAS # 38-89-24-1 U U U U U U U U U CAS # 38-76-5 U U U U U U U U U CAS # 38-76-5 U U U U U U U U U CAS # 38-76-5 U U U U U U U U U U CAS # 38-76-5 U U U U U U U U U U CAS # 38-76-5 U U U U U U U U U U CAS # 38-76-5 U U U U U U U U U U CAS # 38-76-5 U U U U U U U U U U U CAS # 38-76-5 U U U U U U U U U U U CAS # 38-76-5 U U U U U U U U U U U CAS # 38-76-5	CAS # 82-88-8 U U U U U U U U U U 10 CAS # 87-86-5 U U U U U U U U U 20 CAS # 87-86-5 U U U U U U U U U 10 CAS # 80-44-2 U U U U U U U U 10 CAS # 80-44-2 U U U U U U U U 10 CAS # 80-44-2 U U U U U U U U 10 CAS # 108-95-2 U U U U U U U U U 5 CAS # 298-02-2 U U U U U U U U U 10 CAS # 298-02-2 U U U U U U U U 10 CAS # 298-02-2 U U U U U U U U 10 CAS # 298-02-8 U U U U U U U U 10 CAS # 298-03-8-5 U U U U U U U U U 10 CAS # 71-23-8 U U U U U U U U U 10 CAS # 109-66-8 U U U U U U U U 10 CAS # 71-23-8 U U U U U U U U U 10 CAS # 109-65-1 U U U U U U U U U 10 CAS # 109-65-1 U U U U U U U U U 10 CAS # 109-65-1 U U U U U U U U U 20 CAS # 109-65-1 U U U U U U U U U 20 CAS # 109-65-1 U U U U U U U U U 20 CAS # 109-65-1 U U U U U U U U U 20 CAS # 109-65-1 U U U U U U U U U 10 CAS # 109-65-1 U U U U U U U U U 10 CAS # 109-65-1 U U U U U U U U U U 20 CAS # 34-59-7 U U U U U U U U U U 20 CAS # 36-89-24-5 U U U U U U U U U U 10 CAS # 36-89-24-5 U U U U U U U U U U 10 CAS # 36-89-24-5 U U U U U U U U U U 2.5 CAS # 36-89-24-5 U U U U U U U U U U 2.5 CAS # 36-80-20-6 U U U U U U U U U U U 2.5 CAS # 36-80-20-6 U U U U U U U U U U U 2.5 CAS # 36-80-20-6 U U U U U U U U U U U 2.5	CAS # 82-68-8 U



Upgradient well = 5W8B

Analyte/Quarter	5W8B Q	5W5B Q	5W7B Q	5WC21 Q	5WC22 Q	5WC23 Q	QL	GPS	Method
Tetrahydrofuran						CAS # 109-99-9			
Second Quarter 2008	U	U	U	U	U	U	5	-	8260B
2,3,4,6-Tetrachlorophenol						CAS # 58-90-2		•	
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Toluene						CAS # 108-88-3			
Second Quarter 2008	UJ	U J	UJ	U	U	U	1	1000	8260B
Fourth Quarter 2008	U	U	U	U	U	U	1	1000	8260B
o-Toluidine						CAS # 95-53-4		•	
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Toxaphene						CAS # 8001-35-2	1		
Second Quarter 2008	U	U	U	U	U	U	1	-	8081A
1,2,3-Trichlorobenzene					I	CAS # 87-61-6			
Second Quarter 2008	UJ	U J	U J	UJ	UJ	U J	1	-	8260B
1,2,4-Trichlorobenzene					I	CAS # 120-82-1			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
1,1,1-Trichloroethane					I	CAS # 71-55-6			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
1,1,2-Trichloroethane						CAS # 79-00-5			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
Trichloroethene						CAS # 79-01-6			
Second Quarter 2008	U	7.8	U	U	2.7	2.9	1	5	8260B
Fourth Quarter 2008	U	14	U	1.3	3	3	1	5	8260B
Trichlorofluoromethane						CAS # 75-69-4		1	
Second Quarter 2008	UJ	U J	UJ	U	U	U	1	-	8260B
2,4,5-Trichlorophenol					I	CAS # 95-95-4			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
2,4,6-Trichlorophenol						CAS # 88-06-2			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
1,2,3-Trichloropropane						CAS # 96-18-4			1
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
1,1,2-Trichloro-1,2,2-Trifluc	roethane					CAS # 76-13-1			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
O,O,O-Triethyl phosphorot	hioate					CAS # 126-68-1			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
1,2,4-Trimethylbenzene						CAS # 95-63-6			
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
1,3,5-Trimethylbenzene						CAS # 108-67-8			1
Second Quarter 2008	U	U	U	U	U	U	1	-	8260B
sym-Trinitrobenzene						CAS # 99-35-4			
Second Quarter 2008	U	U	U	U	U	U	10	-	8270C
Vinyl acetate			<u> </u>	1	<u> </u>	CAS # 108-05-4		1	1
Second Quarter 2008	UJ	U J	U J	UJ	UJ	U J	5	-	8260B
Vinyl chloride			<u> </u>	1	<u> </u>	CAS # 75-01-4		1	1
Second Quarter 2008	UJ	U J	U J	UJ	UJ	U J	1	-	8260B
Xylenes (Total)				1		CAS # 1330-20-7	•		
Second Quarter 2008	U	U	U	U	U	U	3	10,000	8260B
	U	U	U	U	U	U	3	10,000	8260B

Target Analyte Monitoring Results - HWMU-5 Point of Compliance Wells

Radford Army Ammunition Plant, Radford, Virginia

 $Upgradient \ well = 5W8B$

All Results in ug/L.

Analyte/Quarter	5W8B Q	5W5B Q	5W7B Q	5WC21 Q	5WC22 Q	5WC23 Q	QL	GPS	Method
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Definitions:

The following definitions apply to results reported for Appendix IX monitoring events.

All Appendix IX monitoring results for compliance wells are reported to the detection limit.

Appendix IX Monitoring Events: Fourth Quarter 2003, Second Quarter 2004, Second Quarter 2005,
Third Quarter 2006, Second Quarter 2007, Second Quarter 2008

QL Denotes permit required quantitation limit.

U denotes not detected at or above the detection limit.

UA denotes not detected at or above the adjusted detection limit.

J Denotes result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above the detection limit and detection limit and QL are estimated. When used with "UA" (i.e., "UAJ"), denotes analyte not detected at or above adjusted detection limit and and adjusted detection limit and OL are estimated.

UN Denotes analyte concentration is less than the quantitation limit and/or five times the blank concentration. Not reliably detected due to blank contamination. This qualifier used only for Appendix IX monitoring event when compliance well results are reported to at or above the project detection limit.

R Denotes result rejected.

Q Denotes data validation qualifier. X Denotes mass spectral confirmation not obtained-result suspect.

Background Denotes background concentrations listed in Appendix F to Attachment 2 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002), where applicable.

CAS# Denotes Chemical Abstract Services registration number.

GPS Denotes Groundwater Protection Standards listed in Appendix G to Attachment 2 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002).

NS denotes not sampled. NA denotes not analyzed.

"-" denotes not detected (pre-2nd Quarter 2003) or not available / not sampled (beginning 2nd Quarter 2003).

The following definitions apply to results reported for non-Appendix IX monitoring events. All non-Appendix IX monitoring results for compliance wells are reported to at or above the quantitation limit.

QL Denotes permit required quantitation limit.

U Denotes analyte not detected at or above QL.

UA Denotes analyte not detected at or above adjusted sample QL.

J Denotes result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above QL and QL is estimated. When used with "UA" (i.e., "UAJ"), denotes analyte not detected at or above adjusted QL and adjusted QL is estimated.

R Denotes result rejected.

Q Denotes data validation qualifier.

Background Denotes background concentrations listed in Appendix F to Attachment 2 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002), where applicable. **CAS#** Denotes Chemical Abstract Services registration number.

GPS Denotes Groundwater Protection Standards listed in Appendix G to Attachment 2 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002).

Verification events:

Verification event 12/12/03 and 6/22/2004, 3/23/05, 08/03/2005, and 9/26/2006 (original results reported). 07/17/2008. Verification results reported except where noted.



APPENDIX A-3

HWMU-5 2008 LABORATORY ANALYTICAL RESULTS PLUME MONITORING WELLS

Target Analyte Monitoring Results At Or Above Permit Quantitation Limit HWMU-5 Plume Monitoring Wells

Radford Army Ammunition Plant, Radford, Virginia

All Results in ug/L.

 $Upgradient \ well = 5W8B$

Analyte/Quarter/CAS #	5W8B Q	5W9A Q	5W10A Q	5W11A Q	S5W5 Q	S5W7 Q	QL B	ackground	Method
Antimony						CAS#	7440-36-	0	
Second Quarter 2008	U	U	U	U	U	U	1	3	6020
Fourth Quarter 2008	U	U	U	U	U	U	1	3	6020
Arsenic						CAS#	7440-38-	-2	
Second Quarter 2008	U	U	U	U	U	U	10	1	6020
Fourth Quarter 2008	U	U	U	U	U	U	10	1	6020
Barium						CAS#	7440-39-	.3	
Second Quarter 2008	115	61.5	52.5	108	26.6	72.8	10	172.87	6020
	112	61.3	49.4	137	39.5	78.6	10	172.87	6020
Fourth Quarter 2008		01.0	70.7	107			7440-41-		0020
Beryllium	U	U	U	U	U	U CAS#	1	0.7	6020
Second Quarter 2008									
Fourth Quarter 2008	U	U	U	U	U	U	1	0.7	6020
Cadmium	1						7440-43-		
Second Quarter 2008	U	U	U	U	U	U	1	1.45	6020
Fourth Quarter 2008	U	U	U	U	U	U	1	1.45	6020
Chromium						CAS#	7440-47-	.3	
Second Quarter 2008	U	U	U	U	U	U	5	5	6020
Fourth Quarter 2008	U	U	U	U	U	U	5	5	6020
Cobalt						CAS#	7440-48-	4	
Second Quarter 2008	1.3 J	U	U	U	U	U	5	7	6020
Fourth Quarter 2008	U	U	U	U	U	U	5	7	6020
Copper						CAS#	7440-50-	-8	
Second Quarter 2008	U	U	U	U	U	U	5	18	6020
Fourth Quarter 2008	U	U	U	U	U	U	5	18	6020
Lead						CAS#	7439-92-	-1	
Second Quarter 2008	U	U	U	U	U	1.1	1	10	6020
Fourth Quarter 2008	U	U	U	U J	U	U	1	10	6020
Mercury							7439-97-		
<u> </u>	U	U	U	U	U	U	2	0.9	7470A
Second Quarter 2008	U	U	U	U	U	U	2	0.9	7470A
Fourth Quarter 2008	U	0	0	0	0		7440-02-		7470A
Nickel	1								2000
Second Quarter 2008	U	U	U	U	U	U	10	106	6020
Fourth Quarter 2008	U	U	U	U	U	U	10	106	6020
Selenium	1						7782-49-		
Second Quarter 2008	U	U	U	U	U	U	10	1	6020
Fourth Quarter 2008	U	U	U	U	U	U	10	1	6020
Silver						CAS#	7440-22-	4	
Second Quarter 2008	U	U	U	U	U	U	2	2.3	6020
Fourth Quarter 2008	U	U	U	U	U	U	2	2.3	6020
Thallium						CAS#	7440-28-	0	
Second Quarter 2008	U	U	U	U	U	U	1	2	6020
Fourth Quarter 2008	U	U	U	U J	U	U	1	2	6020
Vanadium						CAS#	7440-62-	-2	
Second Quarter 2008	U	U	U	U	U	U	10	17	6020
Fourth Quarter 2008	U	U	U	U	U	U	10	17	6020
Zinc						CAS#	7440-66-	-6	
	5 J	U	U	U	U	U	10	75	6020
Second Quarter 2008	U	U	U	U	U	U	10	75 75	6020
Fourth Quarter 2008	9	J		-	-			13	0020
Acetone	11 1	11 1	11 .	11 1			67-64-1	00	00000
Second Quarter 2008	U J	U J	U J	U J	U J	U J	10	89	8260B
Fourth Quarter 2008	U	U	U	U	U	U	10	89	8260B

Target Analyte Monitoring Results At Or Above Permit Quantitation Limit HWMU-5 Plume Monitoring Wells

Radford Army Ammunition Plant, Radford, Virginia

All Results in ug/L.

 $Upgradient \ well = 5W8B$

Au Resuus in ug/L.						10			
Analyte/Quarter/CAS #	5W8B Q	5W9A Q	5W10A Q	5W11A Q	S5W5 Q	S5W7 Q	QL Bo	ackground	Method
bis(2-Ethylhexyl)phthalate						CAS#	117-81-7		
Second Quarter 2008	U	U	U	U	U	U	6	10	8270C
Fourth Quarter 2008	U	U	U	U	U	U	6	10	8270C
2-Butanone						CAS#	78-93-3		
Second Quarter 2008	U	U	U J	U J	U	U	10	21.3	8260B
Fourth Quarter 2008	U	U	U	U	U	U	10	21.3	8260B
Chloroform						CAS#	67-66-3		
Second Quarter 2008	U	U	U J	U J	U	U	1	0.5	8260B
Fourth Quarter 2008	U	U	U	U	U	U	1	0.5	8260B
Dichlorodifluoromethane						CAS#	75-71-8		
Second Quarter 2008	U	U	U J	U J	U	U	1	1	8260B
Fourth Quarter 2008	UJ	U J	U J	U J	U J	U J	1	1	8260B
1,2-Dichloroethane						CAS#	107-06-2		
Second Quarter 2008	U	U	U	U	U	U	1	0.1	8260B
Fourth Quarter 2008	U	U	U	U	U	U	1	0.1	8260B
Diethyl ether						CAS#	60-29-7		
Second Quarter 2008	U J	U J	U	U	U J	U J	12	12	8260B
Fourth Quarter 2008	U	U	U	U	U	U	12	12	8260B
Diethyl phthalate						CAS#	84-66-2		
Second Quarter 2008	U	U	U	U	U	U	10	5	8270C
Fourth Quarter 2008	U	U	U	U	U	U	10	5	8270C
2,4-Dinitrotoluene						CAS#	121-14-2		
Second Quarter 2008	U	U	U	U	U	U	10	0.18	8270C
Fourth Quarter 2008	U	U	U	U	U	U	10	0.18	8270C
2,6-Dinitrotoluene						CAS #	606-20-2		
Second Quarter 2008	U	U	U	U	U	U	10	0.08	8270C
Fourth Quarter 2008	U	U	U	U	U	U	10	0.08	8270C
Methylene chloride						CAS#	75-09-2		
Second Quarter 2008	U	U	U	U	U	U	1	0.7	8260B
Fourth Quarter 2008	U	U	U	U	U	U	1	0.7	8260B
o-Nitroaniline						CAS#	88-74-4		
Second Quarter 2008	U	U	U	U	U	U	10	20	8270C
Fourth Quarter 2008	U	U	U	U	U	U	10	20	8270C
p-Nitroaniline						CAS#	100-01-6		
Second Quarter 2008	U	U	U	U	U	U	20	20	8270C
Fourth Quarter 2008	U	U	U	U	U	U	20	20	8270C
Nitrobenzene						CAS#	98-95-3		
Second Quarter 2008	U	U	U	U	U	U	10	10	8270C
Fourth Quarter 2008	U	U	U	U	U	U	10	10	8270C
Toluene							108-88-3		
Second Quarter 2008	UJ	U J	U	U	U J	U J	1	0.1	8260B
	U	U	U	U	U	U	1	0.1	8260B
Fourth Quarter 2008 Trichloroethene							79-01-6		
	U	U	U	U	U	U CAS#	1	0.8	8260B
Second Quarter 2008	U	U	U	U	U	U	1	0.8	8260B
Fourth Quarter 2008	0		-	-			1330-20-2		J200D
Xylenes (Total)	U	U	U	U	U	U CAS#	3	0.1	8260B
Second Quarter 2008	U	U	U	U	U	U	3		8260B
Fourth Quarter 2008	U	U	U	U	U	U	3	0.1	0200B

Target Analyte Monitoring Results At Or Above Permit Quantitation Limit HWMU-5 Plume Monitoring Wells

Radford Army Ammunition Plant, Radford, Virginia

All Results in ug/L. Upgradient well = 5W8B

Analyte/Quarter/CAS# 5W8B Q 5W9A Q 5W10A Q 5W11A Q S5W5 Q S5W7 Q QL Background Method

Definitions:

All plume monitoring well results reported to at or above the permit quantitation limit except for the upgradient well during the Appendix IX monitoring event.

During the Appendix IX monitoring event, results for the upgradient well are reported to the detection limit.

Q Denotes data validation qualifier.

QL Denotes permit required quantitation limit.

U Denotes analyte not detected at or above QL.

UA Denotes analyte not detected at or above adjusted sample QL.

J Denotes result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above QL and QL is estimated. When used with "UA" (i.e., "UAJ"), denotes analyte not detected at or above adjusted QL and adjusted QL is estimated.

UN Denotes analyte concentration is less than the quantiation limit and five times the blank concentration.

Not reliably detected due to blank contemination. This qualifies used only for Amendix IV monitoring event when

Not reliably detected due to blank contamination. This qualifier used only for Appendix IX monitoring event when compliance well results are reported to at or above the project detection limit.

R Denotes result rejected.

Background Denotes background concentrations listed in Appendix F to Attachment 2 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002).

CAS# Denotes Chemical Abstract Services registration number.

GPS Denotes groundwater protection standard.

NS denotes not sampled.

NA denotes not analyzed. "-" denotes not detected (pre-2nd Quarter 2003) or not available / not sampled (beginning 2nd Quarter 2003).

Appendix IX Monitoring Events: Fourth Quarter 2003, Second Quarter 2004, Second Quarter 2005, Third Quarter 2006, Second Quarter 2007, Second Quarter 2008

APPENDIX A-4
ESTABLISHED BACKGROUND VALUES AND COMPUTATIONS FOR HWMU-5

flow line vectors over the Potentiometric Surface Map, measuring their lengths, calculating the head differential over the distances measured, and dividing the head differential by the length of the flow line vectors. The three calculated gradients were then averaged to a single value. Using this method, the average groundwater hydraulic gradient across the site based on First Quarter 1999 groundwater elevations was calculated to be 0.017 ft/ft. Historical slug test data for the site yielded an average hydraulic conductivity of 5.25 x 10⁻⁵ ft/second. This value is consistent with literature values for karst carbonate rock and for clayey, silty sand and gravel alluvium and residuum (Domenico and Schwartz, 1990).

The estimated groundwater velocity across the site was calculated to be approximately 0.193 ft/day or 70.4 ft/year, based on the following:

- an average hydraulic conductivity of 5.25 x 10⁻⁵ ft/second;
- an average hydraulic gradient of 0.017 ft/ft; and
- an assumed effective porosity of 0.40, based on a representative range of porosities for karst carbonate rock, weathered residuum, and clayey, silty sand and gravel alluvium (Domenico and Schwartz, 1990).

The actual groundwater flow velocities in the carbonate bedrock may vary as much as one to two orders of magnitude from the velocity presented above, depending on water level conditions and the distribution of karst conduits.

3.3 HWMU-5 GROUNDWATER MONITORING ANALYTE LIST

The groundwater monitoring analyte list for HWMU-5 is presented in Table 1 (Appendix B). The list represents the subset of the constituents listed in Appendix VIII of 40 CFR Part 261 that previously have been detected in the groundwater and/or that are reasonably expected to be in or derived from waste contained in HWMU-5. As discussed in Section 3.5.2 below, 11 inorganic constituents, three volatile organic constituents, and two explosive/propellant constituents have been detected in the groundwater monitoring network for HWMU-5 at statistically significant concentrations above the Unit's calculated background concentrations.

The concentration limits established for the hazardous constituents also are listed in **Table 1**. The concentration limits represent either background concentrations calculated for the constituents in this GWQAR, Maximum Concentrations of Constituents for Ground-water Protection listed in Table 1 of 40 CFR 264.94, USEPA Drinking Water Standard Maximum Contaminant Levels (MCLs), or alternate concentration limits (ACLs) established by the VDEQ (July 1998).

As Alliant discussed with the VDEQ in the past, the reliability of previous laboratory analytical data - particularly dissolved metals data - appeared to be questionable in some cases. In an April 9, 1996 letter to C. Jake (Alliant), the VDEQ agreed that only total metals concentrations in groundwater would be measured, as described in a USEPA Region III guidance on groundwater sampling in karst terrain. Therefore, all references to metals concentrations in this GWQAR refer to total metals concentrations.

3.4 HWMU-5 GROUNDWATER BACKGROUND CONCENTRATIONS

Background concentrations were calculated for each constituent in the groundwater monitoring program using the analytical data from First Quarter 1996 through First Quarter 1999 for upgradient well 5W8B. The background concentration calculations were based on site wide 95% confidence, 95% coverage upper prediction intervals. The calculated background

concentrations are listed in Table 2 (Appendix B). The background concentrations were used to construct the outermost closing contours on the Isoconcentration Maps (Appendix A).

3.5 HWMU-5 STATISTICAL ANALYSIS

Statistical evaluations for HWMU-5 are performed annually and submitted to the VDEQ in accordance with the annual reporting requirements specified in 40 CFR 265.94. As part of this GWQAR, statistical evaluations were performed on First Quarter 1999 analytical data in accordance with the procedures and guidance provided in the following documents:

- Title 40 of the Code of Federal Regulations, 40 CFR 264.97 and 264.98;
- VDEQ Guidance for statistical analysis titled "Data Analysis Plan," undated;
- Interim Final Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, USEPA, April 1989;
- Addendum to Interim Final Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, USEPA, July 1992; and
- Statistical Methods for Groundwater Monitoring, Gibbons, R.D., 1994.

Statistical threshold values were computed for the 40 constituents for which HWMU-5 is currently monitored based on the concentrations of those constituents in upgradient (background) well 5W8B. All data starting with First Quarter 1996 to First Quarter 1999 were used for this purpose. The 1996 through 1999 monitoring data have been submitted previously to the VDEQ by Alliant in quarterly monitoring reports; therefore, the data are not listed in this GWQAR. Statistical comparisons were performed for the First Quarter 1999 data set. Comparison statistical analyses were performed for all constituents which were detected in any downgradient well during that event.

3.5.1 Background Data and Statistical Comparisons

Statistical analyses were performed using the analytical results from upgradient well 5W8B as background data. Based on the percentage of non-detects and the distribution of the background data, methods of statistical comparisons varied. Background average, standard deviation and other descriptive statistical data were computed for all constituents and are presented in Appendix C.

The constituents listed below were 100% non-detected in the background data. The background threshold levels (BTLs) for these constituents were established as equal to their detection limits (DL). Detections of these constituents in the downgradient wells during First Quarter 1999 were compared to these BTLs.

Backgro	und Threshold Leve	el (BTL) = Detection	on Limit (DL)	······································
Parameter	Sample Size	% Non-Detects	DL (μg/l)	BTL (μg/l)
Antimony	13	100	3	3
Arsenic .	13	100	1	1
Selenium	13	100	1	1
Benzene	13	100	0.1	0.1
Chloromethane	13	100	0.3	0.3
1,2-Dichloroethane	13	100	0.1	0.1
Tetrachloroethene	13	100	0.1	0.1
Toluene	13	100	0.1	0.1
trans-1,2-Dichloroethene	13	100	0.1	0.1

Backgrou	nd Threshold Leve	el (BTL) = Detecti	on Limit (DL)	
Parameter	Sample Size	% Non-Detects	DL (μg/l)	BTL (μg/l)
1,1,2-Trichloroethane	13	100	0.5	0.5
Trichlorofluoromethene	13	100	0.5	0.5
Vinyl chloride	13	100	0.1	0.1
Xylenes (total)	13	100	0.1	0.1
Bis (2-ethylhexyl) phthalate	13	100	10	10
Di-n-butyl phthalate	9	100	5	. 5
Diethyl phthalate	13	100	5	5
Diphenylamine	13	100	10	10
2,6-Dinitrotoluene	13	100	0.08	0.08

Non-parametric prediction intervals were computed for all of the constituents for which the data from background well 5W8B satisfied one of the following two criteria, per VDEQ regulations and guidance as well as USEPA guidance:

- Percentage of non-detects was greater than or equal to 50 and less than 100; or
- Percentage of non-detects was less than 50, but data was not normally distributed in original or log-transformed mode.

The background threshold levels for these constituents were set as equal to their upper prediction limits (UPLs). The background and relevant statistical data for these constituents are summarized below. The confidence level and false positive rate were calculated based on the number of background data points available and number of future comparisons. For all constituents, the confidence level was determined to be equal to 0.920, and the false positive rate was equal to 0.080. Since the upper control limit of a non-parametric interval cannot be adjusted for multiple comparisons and inadequate number of background data, the number of resampling events required was adjusted to account for the high error rates inherent in those situations. The number of confirmation resamples required for all constituents is 2. The background and relevant statistical data for these constituents are summarized below. Associated statistical computations are presented in Appendix C.

BTL = Upper Prediction Li	mit of Non-parame	tric Prediction In	terval w/false p	positive rate=0.067
Parameter	Sample Size	% Non-Detects	DL (μg/l)	BTL (µg/l)
Beryllium	13	54	0.2	0.7
Cobalt	13	46	1	7
Copper	13	54	1	18
Lead	13	69	1	10
Mercury	13	85	0.2	0.9
Nickel	13	69	15	106
Silver	13	85	0.2	2.3
Thallium	13	85	1	2
Vanadium	13	62	4	17
Zinc	13	38	5	75
Acetone	13	92	10.0	89
Chloroform	13	77	0.3	0.5
Methylene chloride	13	92	0.7	0.7
Methylethyl ketone	13	92	1.1	21.3
Trichloroethene	13	85	0.1	0.8
2,4-Dinitrotoluene	13	92	0.08	0.18
Total Organic Carbon	13	69	1,000	253,000
Total Organic Halides	13	46	5	13.4

The following constituents exhibited normally distributed background data with less than 25% non-detects. One sided parametric prediction intervals were computed on the background data for all of these constituents. The UPLs for these constituents were set as their respective BTLs, with one exception. For pH, a two-sided parametric prediction interval was computed; therefore, the BTL for pH consisted of a range between the lower prediction limit (LPL) and the upper prediction limit. The background concentration calculations were based on a site wide 95% confidence, 95% coverage upper prediction intervals. When adjusted for multiple comparisons of the background data, the minimum required false positive rate was below 1% (0.01). A 99% confidence level (0.01 false positive rate) was used for all individual comparisons, which with the most conservative assumptions provided a site-wide false positive rate of >0.05 for all constituents. The background and relevant statistical data for these constituents are summarized below. The prediction interval computations for these constituents are presented in Appendix C.

	ediction Interval (vidual comparison oH = LPL – UPL o	is false positive r	ate=0.01)	positive rate>0.05
			DL	BTL
Parameter	Sample Size	% Non-Detects	(μ g/l)	(μg/l)
Barium	13	0	2	172.87
Cadmium	13	23	0.1	1.45
Specific Conductivity	8	0	1 μS/cm	450 μS/cm
pН	8	0	0.1 pH units	2.79 - 7.47 pH units

3.5.2 Results of Statistical Comparisons

The following table lists the constituents which were detected during the First Quarter 1999 event at concentrations exceeding their respective background threshold levels (BTLs), and the downgradient wells in which they were detected.

Parameter	Monitoring Well(s)
Arsenic	S5W5
Beryllium	5W7B, 5WC21, S5W5
Cadmium	5WC21
Cobalt	5W5B, 5W7B, 5WC21, 5WC22, S5W7, 5W11A
Copper	5W7B, 5WC21
Lead	5W7B, S5W5
Nickel	5WC21
Selenium	5W5B
Silver	5W5B
Vanadium	5W5B, 5W7B, S5W5
Zinc	5W7B, 5WC21, 5W11A
Chloroform	5WC21
Trichloroethene	5W5B, 5WC21, 5WC22, 5WC23, 5W10A
Xylenes (total)	5W5B
2,4-Dinitrotoluene	5W5B, 5W7B, 5WC21, 5WC22, 5WC23
2,6-Dinitrotoluene	5W5B, 5W7B, 5WC21, 5WC22, 5WC23, 5W9A
Specific Conductivity	5W5B, 5W7B, 5WC21, 5WC22, 5WC23, S5W7, 5W9A, 5W11A
рH	5WC23, 5W10A, 5W11A

TABLE 2 HWMU-5 CALCULATED BACKGROUND VALUES

	Background Concentration
Constituent	(μg/l unless otherwise noted)
Antimony	3
Arsenic	1
Barium	172.87
Beryllium	0.7
Cadmium	1.45
Cobalt	7
Copper	18
Lead	10
Mercury	0.9
Nickel	106
Selenium	1
Silver	2.3
Thallium	2
Vanadium	17
Zinc	75
Acetone	89
Benzene	0.1
Chloroform	0.5
Chloromethane	0.3
1,2-Dichloroethane	0.1
Methylene chloride	0.7
Methylethylketone	21.3
Tetrachloroethene	0.1
Toluene	0.1
trans-1,2-Dichloroethene	0.1
1,1,2-Trichloroethane	0.5
Trichloroethene	0.8
Trichlorofluoromethane	0.5
Vinyl chloride	0.1
Xylenes (total)	0.1
Bis (2-ethylhexyl) phthalate	10
Di-n-butylphthalate	5
Diethyl phthalate	5
Diphenylamine	10
2,4-Dinitrotoluene	0.18
2,6-Dinitrotoluene	0.08
Total Organic Carbon	253,000
Total Organic Halides	13.4
Specific Conductivity	450 μS/cm
pH	2.79 to 7.47 pH units

Appendix IX Constituents Detected Since Permit Issuance HWMUs 5, 7, 10, and 16 Radford Army Ammunition Plant

Unit	Quarter Initially Detected	Constituent	Background Calculated or QL?	Background (ug/L)	GPS Required? (261 Appendix VIII)	Proposed GPS (ug/L)	Source
		Chromium	QL	5	yes	100	USEPA MCL
		Diethyl Ether	QL	12	no	NA	NA
HMWU-5	Fourth Quarter 2003	2-Nitroaniline	QL	20	no	NA	NA
HIVIVV U-3		4-Nitroaniline	QL	20	yes	20	Background/QL
		Nitrobenzene	QL	10	yes	10	Background/QL
	Third Quarter 2006	Dichlorodifluoromethane	QL	1	yes	125.2	VDEQ ACL
HWMU-7	Third Quarter 2003	Copper	Calculated	49	no	NA	NA
HVVIVIU-7	Second Quarter 2004	Zinc	Calculated	217	no	NA	NA
	First Quarter 2003	Cobalt	QL	5	no	NA	NA
HWMU-10	Second Quarter 2003	Vanadium	QL	10	no	NA	NA
	Second Quarter 2005	Acetone	QL	10	no	NA	NA
	Second Quarter 2005	2-Propanol	QL	50	no	NA	NA
		Chloroethane	Calculated	20.7	yes	20.7	Background/QL
	Second Quarter 2003	Diethyl Ether	Calculated	75.5	no	NA	NA
HWMU-16		Dimethyl Ether	Calculated	17.0	no	NA	NA
	Third Quarter 2003	Methylene Chloride	Calculated	13.95	no*	NA	NA
	Second Quarter 2004	1,1,2-Trichloro-1,2,2-trifluoroethane	Calculated	1.2	no*	NA	NA

- HWMU-5: The additional Appendix IX constituents detected in the downgradient point of compliance wells were not detected above their respective Quantitation Limits (QLs) in the upgradient well. As a result, background concentrations for those constituents were set as equal to their respective QLs. In accordance with the Permit (Condition V.J.1.g.), GPS are proposed for those additional Appendix IX constituents that are listed in Appendix VIII of 40 CFR Part 261 (chromium, 4-nitroaniline, nitrobenzene, and dichlorodifluoromethane). No GPS are proposed for the additional Appendix IX constituents that are not listed in Appendix VIII of 40 CFR Part 261 (diethyl ether and 2-nitroaniline).
- HWMU-7: Background concentrations for the additional Appendix IX constituents detected in the downgradient point of compliance wells (copper and zinc) were previously calculated and submitted to the VDEQ in the August 1998 *Groundwater Quality Assessment Report for HWMU-7* prepared by ERM, Inc. In accordance with the Permit (Condition V.J.2.g.), no GPS are proposed for the additional Appendix IX constituents (copper and zinc), as they are not listed in Appendix VIII of 40 CFR Part 261.
- HWMU-10: The additional Appendix IX constituents detected in the downgradient point of compliance wells were not detected above their respective Quantitation Limits (QLs) in the upgradient well. As a result, background concentrations for those constituents were set as equal to their respective QLs. In accordance with the Permit (Condition V.J.3.g.), no GPS are proposed for the additional Appendix IX constituents (cobalt, vanadium, acetone, and 2-propanol), as they are not listed in Appendix VIII of 40 CFR Part 261.
- HWMU-16: Background concentrations for additional Appendix IX constituents chloroethane, diethyl ether, dimethyl ether, and methylene chloride were calculated using data collected from upgradient well 16C1 during the period from Third Quarter 2003 through Third Quarter 2004. The background concentration for additional Appendix IX constituent 1,1,2-trichloro-1,2,2-trifluoroethane was calculated using data collected from upgradient well 16C1 during the period from Second Quarter 2004 through Third Quarter 2006. In accordance with the Permit (Condition V.J.4.g.), GPS are proposed for additional Appendix IX constituents that are listed in Appendix VIII of 40 CFR Part 261 (chloroethane). No GPS are proposed for the additional Appendix IX constituents that are not listed in Appendix VIII of 40 CFR Part 261 (diethyl ether and dimethyl ether).

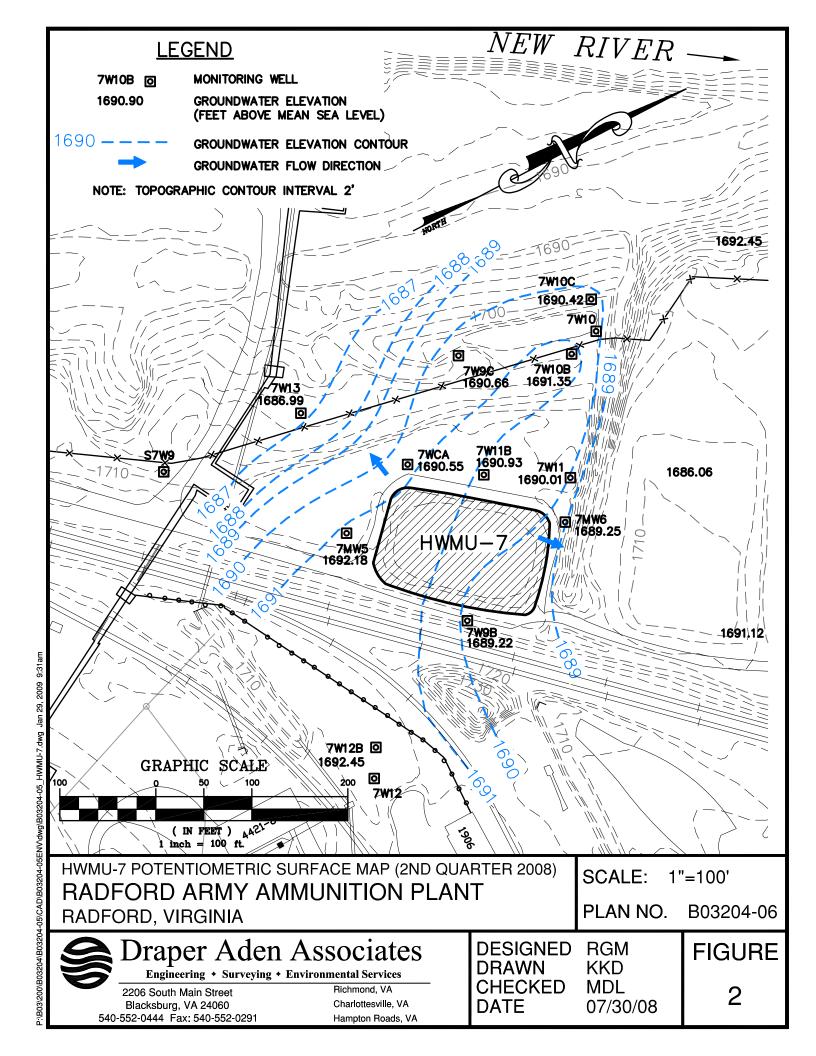
 *Methylene chloride and 1,1,2-trichloro-1,2,2-trifluoroethane should not be added to the Groundwater Monitoring List for HWMU-16, as these constituents were only detected in the upgradient well for the Unit, and not in the downgradient point of compliance wells.

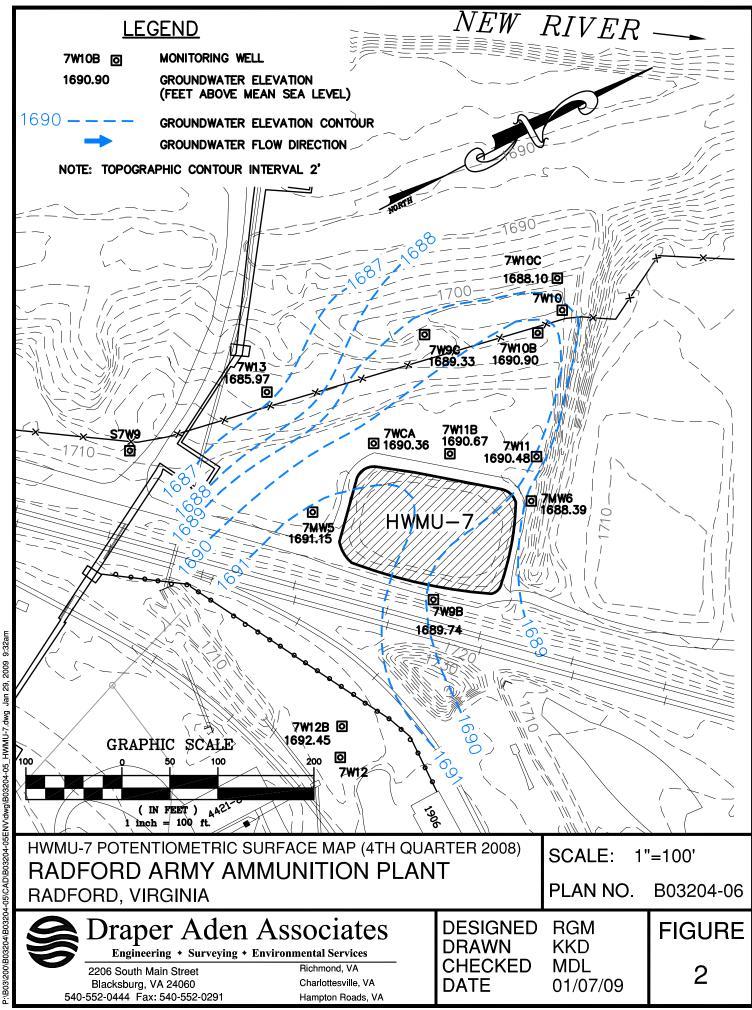
APPENDIX B

HWMU-7

APPENDIX B-1

HWMU-7 POTENTIOMETRIC SURFACE MAPS SECOND QUARTER 2008 FOURTH QUARTER 2008





APPENDIX B-2

HWMU-7 2008 LABORATORY ANALYTICAL RESULTS POINT OF COMPLIANCE WELLS

 $Upgradient\ well = 7W12B$

Analtye/Quarter	7W12B Q	7MW6 Q	7WCA Q	7W11B Q	QL	GPS	Background	Method
Antimony						C	'AS#	7440-36-0
Second Quarter 2008	U	U	U	U N	1	6	1	6020
Fourth Quarter 2008	U	U	U	U	1	6	1	6020
Arsenic						C	'AS#	7440-38-2
Second Quarter 2008	U	U	U	U	10	10	10	6020
Fourth Quarter 2008	U	U	U	U	10	10	10	6020
Barium						C	AS#	7440-39-3
Second Quarter 2008	39.7	21.4	28.6	45	10	2000	41	6020
Fourth Quarter 2008	34 J	19.1 J	25.5 J	38.9 J	10	2000	41	6020
Beryllium						C	AS#	7440-41-7
Second Quarter 2008	U	U	U	U	1	-		6020
Cadmium						C	'AS#	7440-43-9
Second Quarter 2008	U	U	U	U	1	5	1	6020
Fourth Quarter 2008	U	U	U	U	1	5	1	6020
Chromium					•		AS#	7440-47-3
Second Quarter 2008	8.5	U	U	U	5	100	9.9	6020
Fourth Quarter 2008	7.4	U	U	U	5	100	9.9	6020
					J		AS#	7440-48-4
Cobalt Second Quarter 2008	U	U	5.8	U	_	ı	5	6020
Fourth Quarter 2008	U	U	5.5	U	5 5	156.65	5	6020
	U	U	3.3	U	Э	156.65		7440-50-8
Copper Second Quarter 2008	1.7 J	U	1.0	2.2 J	_	1	<i>AS #</i> 5	1
	U U		1.6 J		5	1300	5	6020
Fourth Quarter 2008	U	U	U	U	5	1300	-	6020
Lead		1		1	II.	1	CAS#	7439-92-1
Second Quarter 2008	U	U	0.21 J	U	1	15	1	6020
Fourth Quarter 2008	U	U	U	U	1	15	1	6020
Mercury		ı		T.	1		AS#	7439-97-6
Second Quarter 2008	U	U	U	U	0.2	2	2	7470A
Fourth Quarter 2008	U	U	U	U	2	2	2	7470A
Nickel						C	'AS#	7440-02-0
Second Quarter 2008	U	U	15.8	2.1 J	10	313	10	6020
Fourth Quarter 2008	U	U	18.1	U	10	313	10	6020
Selenium						C	AS#	7782-49-2
Second Quarter 2008	U	U	U	U	10	50	10	6020
Fourth Quarter 2008	U	U	U	U	10	50	10	6020
Silver						C	AS#	7440-22-4
Second Quarter 2008	U	U	U	U	2	78.25	2	6020
Fourth Quarter 2008	U	U	U	U	2	78.25	2	6020
Thallium	l .					C	AS#	7440-28-0
Second Quarter 2008	U	U	U	U	1	2	1	6020
Fourth Quarter 2008	UJ	U J	UJ	υJ	1	2	1	6020
Tin	ll .	1		1	1	C	'AS#	7440-31-5
Second Quarter 2008	U	U	U	U	5	-		6020
Vanadium		<u>I</u>	<u> </u>	l .	l .	C	AS#	7440-62-2
Second Quarter 2008	U	U	U	U	10		1	6020

 $Upgradient \ well = 7W12B$

Analtye/Quarter	7W12B Q	7MW6 Q	7WCA Q	7W11B Q	QL	GPS	Background	Method
Zinc						C	CAS#	7440-66-6
Second Quarter 2008	7.5 J	8.6 J	6.7 J	4.9 J	10	4695	10.9	6020
Fourth Quarter 2008	U	11.1	12.1	U	10	4695	10.9	6020
Sulfide						C	CAS#	18496-25-8
Second Quarter 2008	U	U	U	U	1000	-		9034
Cyanide						C	CAS#	57-12-5
Second Quarter 2008	U	U	U	U	20	200	20	9010B
Fourth Quarter 2008	U	U	U	U	10	200	20	9012A/9010 B
Acenaphthene						C	CAS#	83-32-9
Second Quarter 2008	U	U	U	U	10	-		8270C
Acenaphthylene						C	CAS#	208-96-8
Second Quarter 2008	U	U	U	U	10	-		8270C
Acetone		1		1		C	CAS#	67-64-1
Second Quarter 2008	U	U	U	U	5	-		8260B
Acetonitrile		1		1		•	CAS#	75-05-8
Second Quarter 2008	U	U	U	U	100	_		8260B
Acetophenone			_		.00	(CAS#	98-86-2
Second Quarter 2008	U	U	U	U	10		115 "	8270C
2-Acetylaminofluorene		ŭ	ŭ	ŭ	10		CAS#	53-96-3
Second Quarter 2008	UJ	U J	UJ	UJ	00	-	Α5 π	8270C
	0.3	0 3	0 3	0 3	30		740.4	107-02-8
Acrolein	1	1		1			CAS#	1
Second Quarter 2008	UJ	U J	U J	U J	10	-		8260B
Acrylonitrile	1	T.	I	T.	ı	ι	CAS#	107-13-1
Second Quarter 2008	U	U	U	U	1	-		8260B
Aldrin						C	CAS#	309-00-2
Second Quarter 2008	U	U	U	U	0.025	-		8081A
Allyl chloride						C	CAS#	107-05-1
Second Quarter 2008	U	U	U	U	1	-		8260B
4-Aminobiphenyl					•	C	CAS#	92-67-1
Second Quarter 2008	U	U	U	U	10	-		8270C
Aniline						C	CAS#	62-53-3
Second Quarter 2008	U	U	U	U	10	-		8270C
Anthracene						C	CAS#	120-12-7
Second Quarter 2008	U	U	U	U	10	-		8270C
Aramite		1		1		(CAS#	140-57-8
Second Quarter 2008	U	U	U	U	10	_		8270C
Benzene		<u> </u>		<u> </u>			CAS#	71-43-2
Second Quarter 2008	U	U	U	U	1			8260B
	Ŭ		Ŭ		'		CAS#	56-55-3
Benzo[a]anthracene Second Quarter 2008	U	U	U	U	10		.ε . ι.ο π	1
	U	U	U	U	10	-	746 #	8270C 205-99-2
Benzo[b]fluoranthene	1	1		1			CAS#	1
Second Quarter 2008	U	U	U	U	10	-		8270C
Benzo[k]fluoranthene		1	1	1	ı	C	CAS#	207-08-9
Second Quarter 2008	U	U	U	U	10	-		8270C
Benzo[ghi]perylene							CAS#	191-24-2
Second Quarter 2008	U	U	U	U	10	-		8270C

Analtye/Quarter	7W12B Q	7MW6 Q	7WCA Q	7W11B Q	QL	GPS	Background	Method
Benzo(a)pyrene						C	'AS#	50-32-8
Second Quarter 2008	U	U	U	U	10	-		8270C
1,4-Benzenediamine						C	AS#	106-50-3
Second Quarter 2008	U	U	U	U	50	-		82700
Benzyl alcohol	1	I	I	1	1	C	AS#	100-51-6
Second Quarter 2008	U	U	U	U	10	-		82700
alpha-BHC						C	AS#	319-84-6
Second Quarter 2008	U	U	U	U	0.025	-		8081 <i>A</i>
beta-BHC						C	AS#	319-85-7
Second Quarter 2008	U	U	U	U	0.025	-		8081 <i>A</i>
delta-BHC						C	AS#	319-86-8
Second Quarter 2008	U	U	U	U	0.025	-		8081 <i>A</i>
gamma-BHC				1		•	AS#	58-89-9
Second Quarter 2008	U	U	U	U	0.025	-		8081A
bis(2-Chloroethoxy)metha	ane					·	AS#	111-91-1
Second Quarter 2008	U	U	U	U	10	-		8270C
bis(2-Chloroethyl)ether				1		•	AS#	111-44-4
Second Quarter 2008	U	U	U	U	10	-		8270C
bis(2-Chloro-1-methylethy	vI)ether					•	AS#	108-60-1
Second Quarter 2008	U	U	U	U	10	-		8270C
bis(2-Ethylhexyl)phthalate	e	<u> </u>	<u> </u>	I		•	AS#	117-81-7
Second Quarter 2008	U	U	U	U	6	6	6	82700
Fourth Quarter 2008	U	U	U	U	6	6	6	82700
Bromobenzene						C	AS#	108-86-1
Second Quarter 2008	U	U	U	U	1	_		8260E
Bromochloromethane						C	'AS#	74-97-5
Second Quarter 2008	U	U	U	U	1	_		8260E
Bromodichloromethane						('AS#	75-27-4
Second Quarter 2008	U	U	U	U	1	_		8260E
Bromoform						0	AS#	75-25-2
Second Quarter 2008	U	U	U	U	1			8260E
4-Bromophenyl phenyl et	_		_	_		-	AS#	101-55-3
Second Quarter 2008	U	U	U	U	10		115 "	82700
n-Butyl alcohol	Ŭ	Ŭ	Ŭ		10		AS#	71-36-3
Second Quarter 2008	U	U	U	U	200			8260E
			<u> </u>		200		AS#	75-65-0
tert-Butyl alcohol Second Quarter 2008	UJ	U J	U J	UJ	20		11.5 11	8260E
	- 0		, , , , , , , , , , , , , , , , , , ,		20		CAS#	104-51-8
n-Butylbenzene Second Quarter 2008	U	U	U	U	1		11.5 11	8260E
	J	Ŭ	Ŭ		'		CAS#	135-98-8
Sec-Butylbenzene Second Quarter 2008	U	U	U	U	4	-	A3#	8260E
	J	Ü	J	J	1		'A C #	98-06-6
tert-Butylbenzene	11	ш	11				CAS#	T.
Second Quarter 2008	U	U	U	U	1		7AC#	8260E 85-68-7
Butyl benzyl phthalate	T II	11	- 11	11	40		AS#	1
Second Quarter 2008	U	U	U	U	10	3130	10	8270C
Fourth Quarter 2008	U	U	U	U	10	3130	10	8270C

Analtye/Quarter	7W12B Q	7MW6 Q	7WCA Q	7W11B Q	QL	GPS	Background	Method
Carbon disulfide						(CAS#	75-15-0
Second Quarter 2008	U	U	U	U	1	-		8260B
Carbon tetrachloride						(CAS#	56-23-5
Second Quarter 2008	U	U	U	U	1	-		8260B
Chlordane						(CAS#	57-74-9
Second Quarter 2008	U	U	U	U	0.25	-		8081A
p-Chloroaniline						(CAS#	106-47-8
Second Quarter 2008	U	U	U	U	10	-		8270C
Chlorobenzene						(CAS#	108-90-7
Second Quarter 2008	U	U	U	U	1	-		8260B
Chlorobenzilate						-	CAS#	510-15-6
Second Quarter 2008	U	U	U	U	20	_		8270C
p-Chloro-m-cresol							CAS#	59-50-7
Second Quarter 2008	U	U	U	U	10	-		8270C
Chloroethane	Ŭ	Ŭ	Ŭ	Ŭ	10		CAS#	75-00-3
Second Quarter 2008	U	U	U	U	1	-	/11.J II	8260B
		J	<u> </u>		'		CAS#	67-66-3
Chloroform Second Quarter 2008	U	1.5	U	U			.Δ. 3 π	8260B
	U	1.5	U	U	1		7 A G #	110-75-8
2-Chloroethyl vinyl ether	1				_		CAS#	1
Second Quarter 2008	UJ	U J	U J	U J	5	-		8260B
2-Chloronaphthalene	1	I	I	I	1		CAS#	91-58-7
Second Quarter 2008	U	U	U	U	10	-		8270C
2-Chlorophenol	1	1	1	1	1	(CAS#	95-57-8
Second Quarter 2008	U	U	U	U	10	-		8270C
4-Chlorophenyl phenyl et	her					(CAS#	7005-72-3
Second Quarter 2008	U	U	U	U	10	-		8270C
Chloroprene						(CAS#	126-99-8
Second Quarter 2008	U	U	U	U	1	-		8260B
2-Chlorotoluene						(CAS#	95-49-8
Second Quarter 2008	U	U	U	U	1	-		8260B
4-Chlorotoluene	'					(CAS#	106-43-4
Second Quarter 2008	U	U	U	U	1	-		8260B
Chrysene						(CAS#	218-01-9
Second Quarter 2008	U	U	U	U	10	-		8270C
Cyclohexane	1	I .		I .	I .	(CAS#	110-82-7
Second Quarter 2008	U	U	U	U	2	-		8260B
2,4-Dichlorophenoxyacet	ic acid				<u> </u>	(CAS#	94-75-7
Second Quarter 2008	U	U	U	U	5	-		8151
4,4'-DDD						(CAS#	72-54-8
Second Quarter 2008	U	U	U	U	0.025			8081A
4,4'-DDE	-	-	-	-	5.020		CAS#	72-55-9
Second Quarter 2008	U	U	U	U	0.025			8081A
		J	<u> </u>		0.023		CAS#	50-29-3
4,4'-DDT Second Quarter 2008	U	U	U	U	0.005		.Δ. 3 π	8081A
	U	U	U	U	0.025	-	7A C #	
Diallate	1	l		1			CAS#	2303-16-4
Second Quarter 2008	U	U	U	U	10	-		8270C

Analtye/Quarter	7W12B Q	7MW6 Q	7WCA Q	7W11B Q	QL	GPS	Background	Method
Dibenz(a,h)anthracene						(CAS#	53-70-3
Second Quarter 2008	U	U	U	U	10	-		8270C
Dibenzofuran						(CAS#	132-64-9
Second Quarter 2008	U	U	U	U	10	-		8270C
Dibromochloromethane						(CAS#	124-48-1
Second Quarter 2008	U	U	U	U	1	-		8260B
1,2-Dibromo-3-chloropro	pane	1				(CAS#	96-12-8
Second Quarter 2008	U	U	U	U	1	-		8260B
1,2-Dibromoethane						(CAS#	106-93-4
Second Quarter 2008	U	U	U	U	1	-		8260B
Di-n-butyl phthalate						(CAS#	84-74-2
Second Quarter 2008	U	U	U	U	10	-		8270C
1,2-Dichlorobenzene	1	1	II.			•	CAS#	95-50-1
Second Quarter 2008	U	U	U	U	1	-		8260B
1,3-Dichlorobenzene	1	1	I .			(CAS#	541-73-1
Second Quarter 2008	U	U	U	U	1	-		8260B
1,4-Dichlorobenzene	1	1	I .			•	CAS#	106-46-7
Second Quarter 2008	U	U	U	U	1	-		8260B
3,3'-Dichlorobenzidine						(CAS#	91-94-1
Second Quarter 2008	U	U	U	U	10	-		8270C
trans-1,4-Dichloro-2-bute	ne	1	II.			•	CAS#	110-57-6
Second Quarter 2008	U	U	U	U	1	-		8260B
Dichlorodifluoromethane) }					(CAS#	75-71-8
Second Quarter 2008	U	U	U	U	1	-		8260B
1,1-Dichloroethane						(CAS#	75-34-3
Second Quarter 2008	U	U	U	U	1	-		8260B
1,2-Dichloroethane						(CAS#	107-06-2
Second Quarter 2008	U	U	U	U	1	-		8260B
1,1-Dichloroethene						(CAS#	75-35-4
Second Quarter 2008	U	U	U	U	1	-		8260B
cis-1,2-Dichloroethene			I .			•	CAS#	156-59-2
Second Quarter 2008	U	U	U	U	1	-		8260B
trans-1,2-Dichloroethene		1	I .				CAS#	156-60-5
Second Quarter 2008	U	U	U	U	1	-		8260B
2,4-Dichlorophenol			<u>I</u>			-	CAS#	120-83-2
Second Quarter 2008	U	U	U	U	10	-		8270C
2,6-Dichlorophenol						-	CAS#	87-65-0
Second Quarter 2008	U	U	U	U	10	-		8270C
1,2-Dichloropropane		1	1				CAS#	78-87-5
Second Quarter 2008	U	U	U	U	1	-		8260B
1,3-Dichloropropane							CAS#	142-28-9
Second Quarter 2008	U	U	U	U	1	-		8260B
2,2-Dichloropropane		1					CAS#	594-20-7
Second Quarter 2008	U	U	U	U	1	_		8260E
1,1-Dichloropropene		1					CAS#	563-58-6
.,. Diomoropropene						•		

 $Upgradient \ well = 7W12B$

Analtye/Quarter	7W12B Q	7MW6 Q	7WCA Q	7W11B Q	QL	GPS	Background	Method
cis-1,3-Dichloropropene						(CAS# 1	0061-01-5
Second Quarter 2008	U	U	U	U	1	-		8260B
trans-1,3-Dichloropropen	ie	1	I.	1	1	(CAS# 1	0061-02-6
Second Quarter 2008	U	U	U	U	1	-		8260B
Dieldrin						(CAS#	60-57-1
Second Quarter 2008	U	U	U	U	0.025	-		8081A
Diethyl ether	_					(CAS#	60-29-7
Second Quarter 2008	U	U	U	U	2	-		8260B
Diethyl phthalate						(CAS#	84-66-2
Second Quarter 2008	U	U	U	U	10	-		8270C
O,O-Diethyl O-2-pyrazinyl	<u> </u>					(CAS#	297-97-2
Second Quarter 2008	U	U	U	U	10	-		8270C
Dimethoate						(CAS#	60-51-5
Second Quarter 2008	U	U	U	U	20	-		8270C
Dimethyl ether				1		(CAS#	115-10-6
Second Quarter 2008	U	U	U	U	2	-		8260B
o-(Dimethylamino)azober	nzene					(CAS#	60-11-7
Second Quarter 2008	U	U	U	U	10	_		8270C
7,12-Dimethylbenz[a]anth	racene					(CAS#	57-97-6
Second Quarter 2008	U	U	U	U	20	_		8270C
3,3'-Dimethylbenzidine							CAS#	119-93-7
Second Quarter 2008	U	U	U	U	20	_		8270C
a,a-Dimethylphenethylam	nine					(CAS#	122-09-8
Second Quarter 2008	U	U	U	U	50			8270C
2,4-Dimethylphenol			_		00	(CAS#	105-67-9
Second Quarter 2008	U	U	U	U	10		115 "	8270C
Dimethyl phthalate			_				CAS#	131-11-3
Second Quarter 2008	U	U	U	U	10	_		8270C
m-Dinitrobenzene		Ü	ŭ	ŭ	10		CAS#	99-65-0
Second Quarter 2008	U	U	U	U	10			8270C
	0	O	- O	J	10		CAS#	534-52-1
4,6-Dinitro-o-cresol Second Quarter 2008	U	U	U	U	00		A5#	8270C
	U	U	U	U	20		CAS#	51-28-5
2,4-Dinitrophenol Second Quarter 2008	U	U	U	U	40	1	10	8270C
Fourth Quarter 2008	U J	U J	n n	n 1	10	31.3	10	8270C 8270C
	0 0	0 0	0 0	0 0	10	31.3		121-14-2
2,4-Dinitrotoluene Second Quarter 2008	U	U	1.2 J	U	40	1	CAS #	8270C
Fourth Quarter 2008	U	U	U U	U	10	31.3	10	8270C
	U	U	U	U	10	31.3	CAS#	606-20-2
2,6-Dinitrotoluene	U	11	11	11	40	1	1	1
Second Quarter 2008 Fourth Quarter 2008	U	U	U U	U	10	15.65	10 10	8270C 8270C
	U	U	U	U	10	15.65		88-85-7
Second Quarter 2009	111		11	11		1	CAS#	I
Second Quarter 2008	U	U	U	U	2.5	-	746#	8151 117-84-0
Di-n-octyl phthalate	1 11	11	11	1 11		T.	CAS#	Ti .
Second Quarter 2008	U	U	U	U	10	-	746#	8270C
1,4-Dioxane	1	I				1	CAS#	123-91-1
Second Quarter 2008	U	U	U	U	200	-		8260B

Analtye/Quarter	7W12B Q	7MW6 Q	7WCA Q	7W11B Q	QL	GPS	Background	Method
Diphenylamine						(CAS#	122-39-4
Second Quarter 2008	U	U	U	U	10	-		8270C
Disulfoton	"	1	l	"		(CAS#	298-04-4
Second Quarter 2008	U	U	U	U	10	-		8270C
Endosulfan I	"	1	l	"		(CAS#	959-98-8
Second Quarter 2008	U	U	U	U	0.025	-		8081A
Endosulfan II	"	1	l	"		(CAS#	33213-65-9
Second Quarter 2008	U	U	U	U	0.025	-		8081A
Endosulfan sulfate						(CAS#	1031-07-8
Second Quarter 2008	U	U	U	U	0.025	-		8081A
Endrin						(CAS#	72-20-8
Second Quarter 2008	U	U	U	U	0.025	-		8081A
Ethyl acetate	1	1	II.	1	l .	(CAS#	141-78-6
Second Quarter 2008	UJ	U J	U J	U J	2	-		8260B
Endrin aldehyde	1	1	I .	1	1	(CAS#	7421-93-4
Second Quarter 2008	U	U	U	U	0.025	-		8081A
Ethanol	1	1	I .	1	1	(CAS#	64-17-5
Second Quarter 2008	U	U	U	U	200	-		8260B
Ethylbenzene						(CAS#	100-41-4
Second Quarter 2008	U	U	U	U	1	-		8260B
Ethyl methacrylate	1	1	I	1	l .	(CAS#	97-63-2
Second Quarter 2008	U	U	U	U	1	-		8260B
Ethyl methanesulfonate						(CAS#	62-50-0
Second Quarter 2008	U	U	U	U	10	-		8270C
Ethylene oxide						(CAS#	75-21-8
Second Quarter 2008	U	U	U	U	20	-		8260B
Famphur				1		(CAS#	52-85-7
Second Quarter 2008	U	U	U	U	10	-		8270C
Fluoranthene				1		(CAS#	206-44-0
Second Quarter 2008	U	U	U	U	10	-		8270C
Fluorene			<u>I</u>	1	<u> </u>	(CAS#	86-73-7
Second Quarter 2008	U	U	U	U	10	-		8270C
Heptachlor		1	I .	1	<u> </u>	(CAS#	76-44-8
Second Quarter 2008	U	U	U	U	0.025	-		8081A
Heptachlor epoxide			<u>I</u>	1	<u> </u>	(CAS#	1024-57-3
Second Quarter 2008	U	U	U	U	0.025	-		8081A
Hexachlorobenzene				1	1	(CAS#	118-74-1
Second Quarter 2008	U	U	U	U	10	-		8270C
Hexachlorobutadiene		1	1			(CAS#	87-68-3
Second Quarter 2008	UJ	U J	U J	U J	1	-		8260B
Hexachlorocyclopentadio	ene				<u> </u>	(CAS#	77-47-4
Second Quarter 2008	UJ	U J	U J	U J	20	-		8270C
Hexachloroethane		1			<u> </u>		CAS#	67-72-1
Second Quarter 2008	U	U	U	U	1	_		8260B
Hexachlorophene							CAS#	70-30-4
Second Quarter 2008	U	U	U	U	500		_	8270C
		Ĭ			300	-	1	32,30

Analtye/Quarter	7W12B Q	7MW6 Q	7WCA Q	7W11B Q	QL	GPS	Background	Method
Hexachloropropene							CAS#	188871-7
Second Quarter 2008	U	U	U	U	10	-		82700
2-Hexanone						(CAS#	591-78-6
Second Quarter 2008	U	U	U	U	5	-		8260E
Indeno[1,2,3-cd]pyrene		1					CAS#	193-39-5
Second Quarter 2008	U	U	U	U	10	-		82700
Isobutyl alcohol		1					CAS#	78-83-1
Second Quarter 2008	UJ	U J	U J	U J	125	-		8260E
Isodrin		1					CAS#	465-73-6
Second Quarter 2008	U	U	U	U	10	-		82700
Isophorone							CAS#	78-59-1
Second Quarter 2008	U	U	U	U	10	-		82700
Isopropylbenzene						(CAS#	98-82-8
Second Quarter 2008	U	U	U	U	1	-		8260E
Isopropylether	-1	l .	I .	1	<u> </u>	(CAS#	108-20-3
Second Quarter 2008	U	U	U	U	1	-		8260E
4-Isopropyltoluene		l .	I .	1		(CAS#	99-87-6
Second Quarter 2008	U	U	U	U	1	-		8260E
Isosafrole		1	1		<u> </u>		CAS#	120-58-1
Second Quarter 2008	U	U	U	U	10	-		82700
Kepone		1	<u>I</u>	1			CAS#	143-50-0
Second Quarter 2008	U	U	U	U	10	-		82700
Methacrylonitrile							CAS#	126-98-7
Second Quarter 2008	U	U	U	U	10	-		8260E
Methapyrilene							CAS#	91-80-5
Second Quarter 2008	U	U	U	U	10			82700
Methoxychlor							CAS#	72-43-5
Second Quarter 2008	U	U	U	U	0.025	_		8081 <i>A</i>
Bromomethane					0.020		CAS#	74-83-9
Second Quarter 2008	U	U	U	U	1	_		8260E
Chloromethane		<u> </u>		1			CAS#	74-87-3
Second Quarter 2008	U	U	U	U	1		- -	8260E
3-Methylcholanthrene	-	-	-		'	-	CAS#	56-49-5
Second Quarter 2008	U	U	U	U	10			82700
2-Butanone	-	_	_		10		CAS#	78-93-3
Second Quarter 2008	U	U	U	U	5			8260E
Iodomethane		_			J		CAS#	74-88-4
Second Quarter 2008	U	U	U	U	1		U110 #	8260E
			J		'		CAS#	80-62-6
Methyl methacrylate Second Quarter 2008	U	U	U	U	1	-	υπιο π	8260E
		J	J		ı		CAS#	66-27-3
Methyl methane sulfonat Second Quarter 2008	1	11	11	11	10		CAS#	1
	U	U	U	U	10	-	CAS#	91-57-6
2-Methylnaphthalene Second Quarter 2008	U	U	U	U	10		CAS#	82700
	U	U	U	U	10	-	CAS#	298-00-0
Methyl parathion	11	1 11					CAS#	1
Second Quarter 2008	U	U	U	U	10	-		82700

 $Upgradient \ well = 7W12B$

Analtye/Quarter	7W12B Q	7MW6 Q	7WCA Q	7W11B Q	QL	GPS	Background	Method
4-Methyl-2-pentanone						C	CAS#	108-10-1
Second Quarter 2008	U	U	U	U	5	-		8260B
2-Methylphenol						C	CAS#	95-48-7
Second Quarter 2008	U	U	U	U	10	-		8270C
3 & 4-Methylphenol						C	CAS#	106-44-5
Second Quarter 2008	U	U	U	U	10	-		8270C
Methyl tert-butyl ether						(CAS#	1634-04-4
Second Quarter 2008	U	U	U	U	1	-		8260B
Dibromomethane						(CAS#	74-95-3
Second Quarter 2008	U	U	U	U	1	-		8260B
Methylene chloride						(CAS#	75-09-2
Second Quarter 2008	U	U	U	U	1	-		8260B
Naphthalene						(CAS#	91-20-3
Second Quarter 2008	UJ	U J	U J	U J	1	_		8260B
1,4-Naphthoguinone							CAS#	130-15-4
Second Quarter 2008	U	U	U	U	10	-		8270C
1-Naphthylamine					.0		CAS#	134-32-7
Second Quarter 2008	U	U	U	U	10		115 "	8270C
2-Naphthylamine	J			ŭ	10		CAS#	91-59-8
Second Quarter 2008	U	U	U	U	10		Α5 π	8270C
	O .	U	0	O	10		CAS#	88-74-4
o-Nitroaniline Second Quarter 2008	U	U	U	U	40	-	A3#	8270C
	U	U	U	U	10		740#	99-09-2
m-Nitroaniline	1	1					CAS#	1
Second Quarter 2008	U	U	U	U	20	-	7.40 #	8270C
p-Nitroaniline	1	1				(CAS#	100-01-6
Second Quarter 2008	UJ	U J	U J	U J	20	-		8270C
Nitrobenzene	1	1		l			CAS#	98-95-3
Second Quarter 2008	U	U	U	U	10	-		8270C
o-Nitrophenol	1	T.		I	ı		CAS#	88-75-5
Second Quarter 2008	U	U	U	U	10	-		8270C
p-Nitrophenol	1	1		ı		C	CAS#	100-02-7
Second Quarter 2008	U	U	U	U	10	50	20	8270C
Fourth Quarter 2008	U	U	U	U	10	50	20	8270C
4-Nitroquinoline-1-oxide						C	CAS#	56-57-5
Second Quarter 2008	U	U	U	U	50	-		8270C
N-Nitrosodi-n-butylamine						C	CAS#	924-16-3
Second Quarter 2008	U	U	U	U	10	-		8270C
N-Nitrosodiethylamine					•	C	CAS#	55-18-5
Second Quarter 2008	U	U	U	U	10	-		8270C
N-Nitrosodimethylamine						C	CAS#	62-75-9
Second Quarter 2008	U	U	U	U	10	-		8270C
N-Nitrosodiphenylamine	1	1		1	ı	(CAS#	86-30-6
Second Quarter 2008	U	U	U	U	10	-		8270C
N-Nitrosodipropylamine	1	<u>I</u>	<u> </u>	I .	l .	(CAS#	621-64-7
Second Quarter 2008	U	U	U	U	10	-		8270C
N-Nitrosomethylethylamin	ne	1		1	<u> </u>	(CAS#	0595-95-6
	-							

Analtye/Quarter	7W12B Q	7MW6 Q	7WCA Q	7W11B Q	QL	GPS	Background	Method
N-Nitrosomorpholine							CAS#	59-89-2
Second Quarter 2008	U	U	U	U	10	-		82700
N-Nitrosopiperidine						(CAS#	100-75-4
Second Quarter 2008	U	U	U	U	10	-		82700
N-Nitrosopyrrolidine						(CAS#	930-55-2
Second Quarter 2008	U	U	U	U	10	-		82700
5-Nitroso-o-toluidine							CAS#	99-55-8
Second Quarter 2008	U	U	U	U	10	-		82700
Parathion							CAS#	56-38-2
Second Quarter 2008	U	U	U	U	10	-		82700
Pentachlorobenzene							CAS#	608-93-5
Second Quarter 2008	U	U	U	U	10	-		82700
Pentachloroethane							CAS#	76-01-7
Second Quarter 2008	UJ	U J	U J	U J	1	-		8260E
Pentachloronitrobenzer	ne						CAS#	82-68-8
Second Quarter 2008	U	U	U	U	10	-		82700
Pentachlorophenol					-		CAS#	87-86-5
Second Quarter 2008	U	U	U	U	20	-		82700
Phenacetin							CAS#	62-44-2
Second Quarter 2008	U	U	U	U	10	_		8270C
Phenanthrene							CAS#	85-01-8
Second Quarter 2008	U	U	U	U	10	_		82700
Phenol			_				CAS#	108-95-2
Second Quarter 2008	U	U	U	U	10	_		82700
Total Recoverable Phen			_	_	10		CAS#	C-020
Second Quarter 2008	U	U	U	U	5			9065
Phorate			_	_	Ü		CAS#	298-02-2
Second Quarter 2008	U	U	U	U	20		CAS #	82700
2-Picoline	- C	Ü	ŭ	ŭ	20		CAS#	109-06-8
Second Quarter 2008	U	U	U	U	10			82700
Pronamide	- C	Ü	ŭ	ŭ	10		CAS # 2	3950-58-5
Second Quarter 2008	U	U	U	U	10	`	LAG #	82700
	Ü	J	J	Ŭ	10		CAS#	71-23-8
1-Propanol Second Quarter 2008	U	U	U	U	1000	•	U110 #	8260E
	J	J	J	U	1000		CAS#	67-63-0
2-Propanol Second Quarter 2008	U	U	U	U	1000	-	υ πιο π	8260E
	U	U	U	U	1000		CAS#	107-12-0
Propionitrile Second Quarter 2008	U	U	U	U	10		<i>ν</i> ης #	8260E
	U	U	U	U	10	-	CAS#	103-65-1
n-Propylbenzene	- 11	11	11	Ш			CAS#	1
Second Quarter 2008	U	U	U	U	1	-	CA C #	8260E
Pyrene	1 11						CAS#	129-00-0
Second Quarter 2008	U	U	U	U	10	-	G + G #	82700
Pyridine	1	I	1	ı	<u> </u>		CAS#	110-86-1
Second Quarter 2008	U	U	U	U	20	-		82700
Safrole		1	II		I	(CAS#	94-59-7
Second Quarter 2008	U	U	U	U	10	-		82700

Analtye/Quarter	7W12B Q	7MW6 Q	7WCA Q	7W11B Q	QL	GPS	Background	Method
Silvex							CAS#	93-72-1
Second Quarter 2008	U	U	U	U	2.5	-		8151
Styrene					1		CAS#	100-42-5
Second Quarter 2008	U	U	U	U	1	-		8260E
Sulfotep							CAS#	3689-24-5
Second Quarter 2008	U	U	U	U	10	-		82700
2,4,5-Trichlorophenoxy	acetic acid						CAS#	93-76-5
Second Quarter 2008	U	U	U	U	2.5	-		8151
1,2,4,5-Tetrachlorobenz	zene						CAS#	95-94-3
Second Quarter 2008	U	U	U	U	10	-		82700
1,1,1,2-Tetrachloroetha	ne						CAS#	630-20-6
Second Quarter 2008	U	U	U	U	1	-		8260E
1,1,2,2-Tetrachloroetha	ne						CAS#	79-34-5
Second Quarter 2008	U	U	U	U	1	-		8260E
Tetrachloroethene						1	CAS#	127-18-4
Second Quarter 2008	U	U	U	U	1	-		8260E
Tetrahydrofuran				1		1	CAS#	109-99-9
Second Quarter 2008	U	U	U	U	5	-		8260E
2,3,4,6-Tetrachloropher		<u> </u>	<u> </u>	1			CAS#	58-90-2
Second Quarter 2008	U	U	U	U	10	-		82700
Toluene							CAS#	108-88-3
Second Quarter 2008	U	U	U	U	1	-		8260E
o-Toluidine			_		•		CAS#	95-53-4
Second Quarter 2008	U	U	U	U	10	_		82700
Toxaphene			_		10		CAS#	8001-35-2
Second Quarter 2008	U	U	U	U	1		CALS #	8081 <i>A</i>
1,2,3-Trichlorobenzene			_		•		CAS#	87-61-6
Second Quarter 2008	UJ	U J	U J	UJ	1	· ·	CAS #	8260E
1,2,4-Trichlorobenzene		0 0	0 0				CAS#	120-82-1
Second Quarter 2008	UJ	U J	U J	UJ	1			8260E
1,1,1-Trichloroethane	0 0	0 0	0 0	0 0	'		CAS#	71-55-6
Second Quarter 2008	U	U	U	U	1		CAS #	8260E
1.1.2-Trichloroethane	<u> </u>	J	J		'	L -	CAS#	79-00-5
Second Quarter 2008	U	U	U	U	1		C110 #	8260E
	3	J	J		ı		CAS#	79-01-6
Trichloroethene Second Quarter 2008	U	U	U	U	4	-	CAD π	8260E
		U	U	U	1		CAS#	75-69-4
Trichlorofluoromethane Second Quarter 2008	U	U	U	U	4		UAD#	8260E
	J	U	U	U	1	-	CAC#	95-95-4
2,4,5-Trichlorophenol	TI.	11	11	Lu	4.0	1	CAS#	1
Second Quarter 2008	U	U	U	U	10	-	CA C #	82700
2,4,6-Trichlorophenol	1.0			I		1	CAS#	88-06-2
Second Quarter 2008	U	U	U	U	10	-	G+G "	82700
1,2,3-Trichloropropane	1	I	1	1		T	CAS#	96-18-4
Second Quarter 2008	U	U	U	U	1	-		8260E
1,1,2-Trichloro-1,2,2-Tri			II	1		1	CAS#	76-13-1
Second Quarter 2008	U	U	U	U	1	-		8260E

Target Analyte Monitoring Results - HWMU-7 Point of Compliance Wells Radford Army Ammunition Plant, Radford, Virginia Upgradient well = 7W12B

Analtye/Quarter	7W12B Q	7MW6 Q	7WCA Q	7W11B Q	QL	GPS	Background	Method		
O,O,O-Triethyl phospho	orothioate					(CAS#	126-68-1		
Second Quarter 2008	U	U	U	U	10	-		8270C		
,2,4-Trimethylbenzene CAS #										
Second Quarter 2008	U	U	U	U	1	-		8260B		
1,3,5-Trimethylbenzene	CAS#	108-67-8								
Second Quarter 2008	U	U	U	U	1	-		8260B		
sym-Trinitrobenzene	sym-Trinitrobenzene CAS#									
Second Quarter 2008	U	U	U	U	10	-		8270C		
Vinyl acetate						(CAS#	108-05-4		
Second Quarter 2008	U	U	U	U	5	-		8260B		
Vinyl chloride						(CAS#	75-01-4		
Second Quarter 2008	U	U	U	U	1	-		8260B		
Xylenes (Total)		•		•		(CAS#	1330-20-7		
Second Quarter 2008	U	U	U	U	3	-		8260B		

Target Analyte Monitoring Results - HWMU-7 Point of Compliance Wells Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 7W12B

All Results in ug/L.

1 7 10					~ ~	~~~		
Analtye/Quarter	17W12R ()	7MW6 ()	7WCA Q	7WIIR O	OI.	GPS	Background	Method
indiffer Educates	, ,,,,,,,,	7111110 2	7 11 021 2	/ // IID Q	22	OI D	Duckground	michiou

Definitions:

The following definitions apply to results reported for Appendix IX monitoring events.

All Appendix IX monitoring results for compliance wells are reported to the detection limit.

QL Denotes permit required quantitation limit.

U denotes not detected at or above the detection limit.

UA denotes not detected at or above the adjusted detection limit.

J Denotes result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above the detection limit and detection limit and QL are estimated. When used with "UA" (i.e., "UAJ"), denotes analyte not detected at or above adjusted detection limit and and adjusted detection limit and QL are estimated.

UN Denotes analyte concentration is less than the quantitation limit and/or five times the blank concentration. Not reliably detected due to blank contamination. This qualifier used only for Appendix IX monitoring event when compliance well results are reported to at or above the project detection limit.

R Denotes result rejected.

O Denotes data validation qualifier.

Background Denotes background concentrations listed in Appendix F to Attachment 3 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002), where applicable.

CAS# Denotes Chemical Abstract Services registration number.

GPS Denotes groundwater protection standard.

The following definitions apply to results reported for non-Appendix IX monitoring events. All non-Appendix IX monitoring results for compliance wells are reported to at or above the quantitation limit.

QL Denotes permit required quantitation limit.

U Denotes analyte not detected at or above QL.

UA Denotes analyte not detected at or above adjusted sample QL.

J Denotes result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above QL and QL is estimated. When used with "UA" (i.e., "UAJ"), denotes analyte not detected at or above adjusted QL and adjusted QL is estimated.

R Denotes result rejected.

Q Denotes data validation qualifier.

Background Denotes background concentrations listed in Appendix F to Attachment 3 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002), where applicable.

CAS# Denotes Chemical Abstract Services registration number.

GPS Denotes groundwater protection standard.

Notes:

-Appendix IX Groundwater Monitoring Events:

Third Quarter 2003, Second Quarter 2004, Second Quarter 2005, Third Quarter 2006, Second Quarter 2007, Second Quarter 2008

All Appendix IX results evaluated and reported to detection limit.

29/29/2003: Verification sampling event for 7MW6, 7W11B, 7W12B, 7WCA (copper and zinc). Verification results reported in this table for copper and zinc. 6/21-22/2004: Verification sampling event for 7MW6, 7W11B, 7W12B, 7WCA.

Verification results reported in this table for chloroform (7W12B).

3/23/2005: Verification sampling event for 7MW6. Verification results reported in this table for bis(2-e thylhexyl)phthalate).

-7/26/2005: Verification sampling event for 7MW6, 7W11B, 7W12B, 7WCA (ethyl acetate), 7W11B (beta-BHC), and 7MW6 (alpha-BHC). All verification results reported as not detected. Verification results reported.

-Sept 2006: Verification sampling event for 7W12B and 7W11B 3Q2006 for chloroform. Initial results reported in this table for chloroform (7W11B, 7W12B).

July 17, 2008: Verification sampling event for 7W13 arsenic and cobalt. 7W9C cobalt



APPENDIX B-3

HWMU-7 2008 LABORATORY ANALYTICAL RESULTS PLUME MONITORING WELLS

Target Analyte Monitoring Results At or Above Permit Quantitation Limit HWMU 7 Plume Monitoring Wells

Radford Army Ammunition Plant, Radford, Virginia

All Results in ug/L.

 $Upgradient \ well = 7W12B$

Analyte/Quarter	7W12B Q	7W9C Q	7W10B Q	7W10C Q	7W13 Q	QL	Background	GPS	Method	CAS#
Antimony										
Second Quarter 2008	U	UN	U	U	U	1	1	6	6020	7440-36-
Fourth Quarter 2008	U	U	U	U	U	1	1	6	6020	7440-36-
Arsenic										
Second Quarter 2008	U	U	U	U	U	10	10	10	6020	7440-38-
Fourth Quarter 2008	U	U	U	U	U	10	10	10	6020	7440-38-
Barium										
Second Quarter 2008	39.7	26.6	83.2	51.8	14.1	10	41	2000	6020	7440-39-
Fourth Quarter 2008	34 J	21.8J	84.7 J	48.5 J	13.2 J	10	41	2000	6020	7440-39-
	0.0	21.00	0 0	10.0 0	10.2 0			2000	0020	
Cadmium	U	U	U	U	U	1	1	5	6020	7440-43-
Second Quarter 2008	U	U						5		
Fourth Quarter 2008	U	U	U	U	U	1	1	5	6020	7440-43-
Chromium	1					T -	1 1			
Second Quarter 2008	8.5	U	U	U	U	5	9.9	100	6020	7440-47-
Fourth Quarter 2008	7.4	U	U	U	U	5	9.9	100	6020	7440-47-
Cobalt										
Second Quarter 2008	U	U	U	U	5.8	5	5	156.65	6020	7440-48-
Fourth Quarter 2008	U	U	U	U	12	5	5	156.65	6020	7440-48-
Copper										
Second Quarter 2008	1.7 J	U	U	U	U	5	5	1300	6020	7440-50-
Fourth Quarter 2008	U	U	U	U	U	5	5	1300	6020	7440-50-
Lead						1	1			
Second Quarter 2008	U	U	U	U	U	1	1	15	6020	7439-92-
Fourth Quarter 2008	U	U	U	U	U	1	1	15	6020	7439-92-
Mercury										
Second Quarter 2008	U	U	U	U	U	0.2	2	2	7470A	7439-97-
Fourth Quarter 2008	U	U	U	U	U	2	2	2	7470A	7439-97-
Nickel										
Second Quarter 2008	U	U	U	U	U	10	10	313	6020	7440-02-
Fourth Quarter 2008	U	U	U	U	U	10	10	313	6020	7440-02
	Ü		Ü		J	10	10	010	0020	7440 02
Selenium	U	U	U	U	U	10	10	50	6020	7782-49-
Second Quarter 2008	U	U	U		U					
Fourth Quarter 2008	U	U	U	U	U	10	10	50	6020	7782-49-
Silver	1 1					1	1 - 1			
Second Quarter 2008	U	U	U	U	U	2	2	78.25	6020	7440-22-
Fourth Quarter 2008	U	U	U	U	U	2	2	78.25	6020	7440-22-
Thallium										
Second Quarter 2008	U	U	U	U	U	1	1	2	6020	7440-28-
Fourth Quarter 2008	UJ	UJ	UJ	UJ	UJ	1	1	2	6020	7440-28-
Zinc										
Second Quarter 2008	7.5 J	U	U	U	U	10	10.9	4695	6020	7440-66-
Fourth Quarter 2008	U	U	U	U	U	10	10.9	4695	6020	7440-66-
Cyanide						1				
Second Quarter 2008	U	U	U	U	U	20	20	200	9010B	57-12-5
Fourth Quarter 2008	U	U	U	U	U	10	20	200	9012A/9010B	57-12-5
bis(2-Ethylhexyl)ph	thalate									
Second Quarter 2008	U	U	UJ	U	U	6	6	6	8270C	117-81-
Fourth Quarter 2008	U	U	U	U	U	6	6	6	8270C	117-81-
Butyl benzyl phthal		-	-	-	_	1	-			
	U	U	UJ	U	U	10	10	3130	8270C	85-68-7
Second Quarter 2008										
Fourth Quarter 2008	U	U	U	U	U	10	10	3130	8270C	85-68-7

Target Analyte Monitoring Results At or Above Permit Quantitation Limit **HWMU 7 Plume Monitoring Wells**

Radford Army Ammunition Plant, Radford, Virginia

All Results in ug/L.

Upgradient well = 7W12B

Analyte/Quarter	7W12B Q	7W9C Q	7W10B Q	7W10C Q	7W13 Q	QL	Background	GPS	Method	CAS#
2,4-Dinitrophenol										
Second Quarter 2008	U	U	UJ	U	U	10	10	31.3	8270C	51-28-5
Fourth Quarter 2008	UJ	UJ	UJ	U J	UJ	10	10	31.3	8270C	51-28-5
2,4-Dinitrotoluene										
Second Quarter 2008	U	U	UJ	U	U	10	10	31.3	8270C	121-14-2
Fourth Quarter 2008	U	U	U	U	U	10	10	31.3	8270C	121-14-2
2,6-Dinitrotoluene										
Second Quarter 2008	U	U	UJ	U	U	10	10	15.65	8270C	606-20-2
Fourth Quarter 2008	U	U	U	U	U	10	10	15.65	8270C	606-20-2
p-Nitrophenol										
Second Quarter 2008	U	U	UJ	U	U	10	20	50	8270C	100-02-
Fourth Quarter 2008	U	U	U	U	U	10	20	50	8270C	100-02-

Definitions:

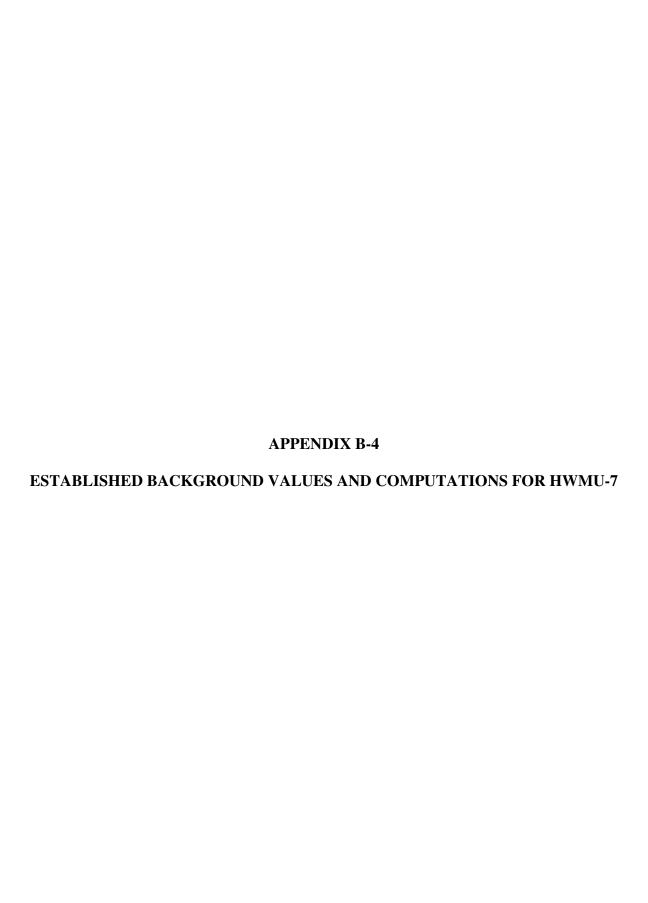
All plume monitoring well results reported to at or above the permit quantitation limit except for the upgradient well during the Appendix IX monitoring Event. During this event, results for the upgradient well are reported to the detection limit.

- O Denotes data validation qualifier.
- **OL** Denotes permit required quantitation limit.
- U Denotes analyte not detected at or above QL.
- UA Denotes analyte not detected at or above adjusted sample QL.
- J Denotes result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above QL and QL is estimated. When used with "UA" (i.e., "UAJ"), denotes analyte not detected at or above adjusted QL and adjusted QL is estimated.
- UN Denotes analyte concentration is less than the quantitation limit and five times the blank concentration. Not reliably detected due to blank contamination. This qualifier used only for Appendix IX monitoring event when compliance well results are reported to at or above the project detection limit.
- R Denotes result rejected.
- Background Denotes background concentrations calculated using 2nd Quarter 2003 through 4th Quarter 2007 data from the upgradient well 7W12B.
- CAS# Denotes Chemical Abstract Services registration number. GPS Denotes groundwater protection standard.

Notes:

- -January 2005: Verification sampling event for 7MW13 4Q2004 arsenic. Verification results reported in this table for arsenic (7W13).

 -March 2006: Verification sampling event for 7MW13 1Q2006 arsenic. Verification results reported in this table for arsenic (7W13).
- -July 2006: Verification sampling event for 7MW13 2Q2006 arsenic. Verification results reported in this table for arsenic (7W13).
- Sept 2006: Verification sampling event for 7W12B 3Q2006 chloroform. Initial results reported in this table for chloroform (7W12B).
- July 17, 2007: Verification sampling event for 7W13 arsenic-verification event result reported, highest of four quadruplicate results, 7W13 cobalt-original result reported. 7W9C cobalt- Verification result reported.
- Dec 17, 2008: Verification sampling event for 7W13. cobalt-Original result reported.



CONSTITUENT BACKGROUND VALUES FOR THE GROUNDWATER MONITORING PROGRAM

HWMU-7 RADFORD ARMY AMMUNITION PLANT RADFORD, VIRGINIA

Prepared for:

Alliant Techsystems Inc.
Radford Army Ammunition Plant
Route 114
Radford, Virginia 24141-0100

Prepared by:

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December 2007 DAA Job No. B03204-101

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RADFORD ARMY AMMUNITION PLANT – HWMU-7 CALCULATION OF CONSTITUENT BACKGROUND VALUES

Draper Aden Associates recalculated background values for the plume monitoring well constituents of the groundwater monitoring program for Hazardous Waste Management Unit No. 7 (HWMU-7) located at the Radford Army Ammunition Plant (Radford AAP) in Radford, Virginia. Background values were calculated for all plume monitoring well constituents.

The background values for HWMU-7 plume monitoring well constituents were calculated using the analytical data for upgradient well 7W12B using data from Second Quarter 2003 through Second Quarter 2007 (available most recent data with one exception-cyanide includes 4th Quarter 2007 data). Inter-well upper prediction limits (UPL) were calculated on the background data for the target parameters in accordance with the facility permit and VHWMR (40 CFR 264.97(h)). Where applicable, the background value calculations were based on site-wide 95% confidence, 95% coverage upper prediction intervals. The calculated background values for all target constituents are listed on **Table 1**.

Background Data and Background Value Calculations

The constituents listed below were 100% non-detected (<LOQ) in the background well. The background values for these constituents were established as equal to their quantitation limits (QL).

Bac	kground Value =	Quantitation Lin	ait (QL)	, <u>, , , , , , , , , , , , , , , , , , </u>
Constituent	Sample Size	% Non-Detects	QL (µg/l)	Background Value (μg/l)
Antimony	17	100	1	1
Arsenic	17	100	10	10
Cadmium	17	100	1	1
Cobalt	17	100	5	5
Copper	16	100	5	5
Lead	17	100	1	1
Mercury	17	100	2	2
Nickel	17	100	10	10
Selenium	17	100	10	10
Silver	17	100	2	2
Thallium	17	100	1	1
Cyanide	18	100	20	20
Bis(2-ethylhexyl)phthalate	17	100	6	6
Butyl benzyl phthalate	17	100	10	10
2,4-Dinitrophenol	17	100	10	10
2,4-Dinitrotoluene	17	100	10	10
2,6-Dinitrotoluene	17	100	10	10
p-Nitrophenol	17	100	10	10

Non-parametric prediction intervals were computed for the constituents for which the data from upgradient well 7W-12B satisfied one of the following two criteria, per VDEQ regulations and guidance as well as USEPA guidance:

- Percentage of non-detects was greater than or equal to 50 and less than 100; or
- Percentage of non-detects was less than 50, but data was not normally distributed in original or log-transformed mode.

Only one result for zinc was reported above its LOQ. The reported result (10.9 μ g/l) is the NUPL for zinc. The non-parametric prediction limit computation for chromium is presented in **Appendix A**.

Ba	ickground Valu	e = UPL of Non-p	arametr	ic Predict	tion Interval (NUPL)
			QL	NUPL	Background Value
Parameter	Sample Size	% Non-Detects	(µg/l)	(µg/l)	(μg/l)
Chromium	17	12	5	9.9	9.9
Zinc	14	93	10	10.9	10.9

The following constituent (barium) exhibited normally distributed background data with less than 0% non-detects. One sided parametric prediction interval was computed on the background data for barium. The background value for barium was set as equal to its UPL. The background concentration calculations were based on a site wide 95% confidence, 95% coverage upper prediction intervals. The background and relevant statistical data for barium is summarized below. The prediction interval computation is presented in **Appendix A**.

	Background Value = UPL of one-sided Prediction Interval										
	QL UPL Background Value										
Parameter	Sample Size	% Non-Detects	(µg/l)	(µg/l)	(μg/l)						
Barium	17	0	10	41.0	41.0						

TABLE 1

HWMU-7 CALCULATED BACKGROUND VALUES

Constituent	Background Value (μg/l unless otherwise noted)
Antimony	1
Arsenic	10
Barium	41.0
Cadmium	1
Chromium	9.9
Cobalt	5
Copper	5
Lead	1
Mercury	2
Nickel	10
Selenium	10
Silver	2
Thallium	1
Zinc	10.9
Cyanide	20
Bis(2-ethylhexyl)phthalate	6
Butyl benzyl phthalate	10
2,4-Dinitrophenol	10
2,4-Dinitrotoluene	10
2,6-Dinitrotoluene	10
p-Nitrophenol	10

APPENDIX A

HWMU-7
BACKGROUND VALUE CALCULATIONS
STATISTICAL COMPUTATIONS FOR BARIUM AND CHROMIUM

RAAP-HWMU-7 - Background Calculation - December 2007 17-Dec-07

Y2K Correction dates are as shown in table below.

Actual Event	Date Used in Stat Software
2003-Qtr2	8/1/1999
2003-Qtr3	8/2/1999
2003-Qtr4	8/3/1999
2004-Qtr1	8/4/1999
2004-Qtr2	8/5/1999
2004-Qtr3	8/6/1999
2004-Qtr4	8/7/1999
2005-Qtr1	8/8/1999
2005-Qtr2	8/9/1999
2005-Qtr3	8/10/1999
2005-Qtr4	8/11/1999
2006-Qtr1	8/12/1999
2006-Qtr2	8/13/1999
2006-Qtr3	8/14/1999
2006-Qtr4	8/15/1999
2007-Qtr1	8/16/1999
2007-Qtr2	8/17/1999

Notes:

1) Background data was computed for all target constituents using the 2Q 2003 - 2Q 2007 data for background well 7W12B. Background data was 100% <LOQ for all target parameters except barium, chromium and zinc. Zinc had only one reported result > LOQ.

Statistical computations using GRITS/STAT V5.0 performed only for barium and chromium, as applicable.

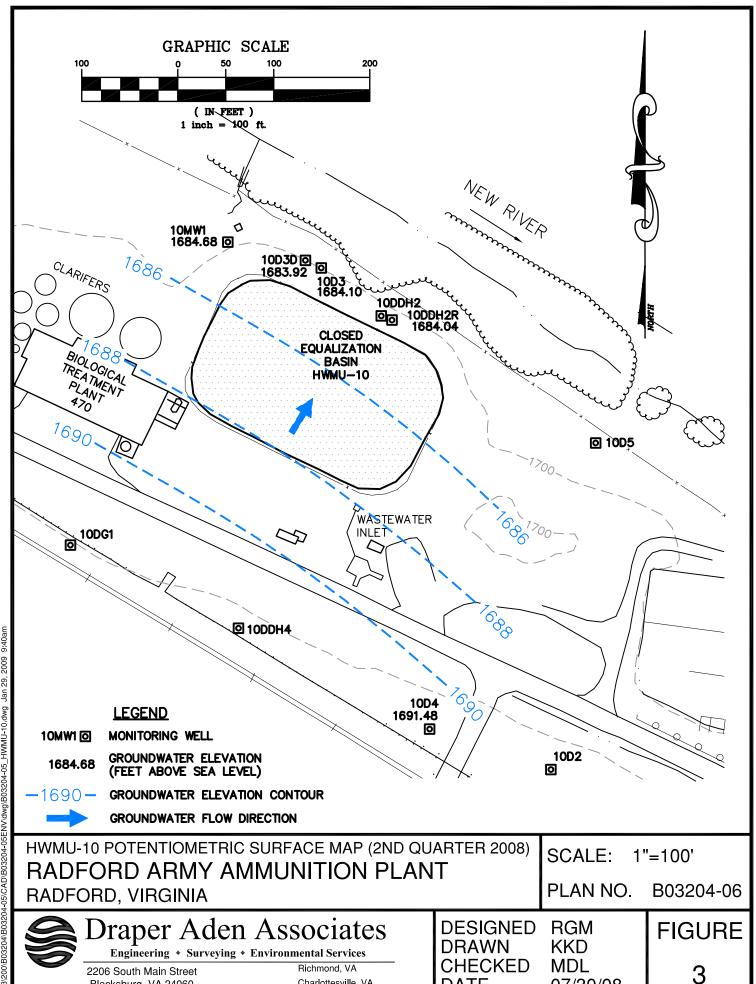
P/800/200/803204/803204-05/VORK/HWMU7 December 2007 Recalculation of Background/[HWMU7 StatDate correction December 2007 background recalculation of Background/[HWMU7 StatDate correction December 2007 background recalculation of Background/[HWMU7 December 2007 background/[HWMU7 December 2007 background/[HWMU7 December 2007 background/]

APPENDIX C

HWMU-10

APPENDIX C-1

HWMU-10 POTENTIOMETRIC SURFACE MAPS SECOND QUARTER 2008 FOURTH QUARTER 2008



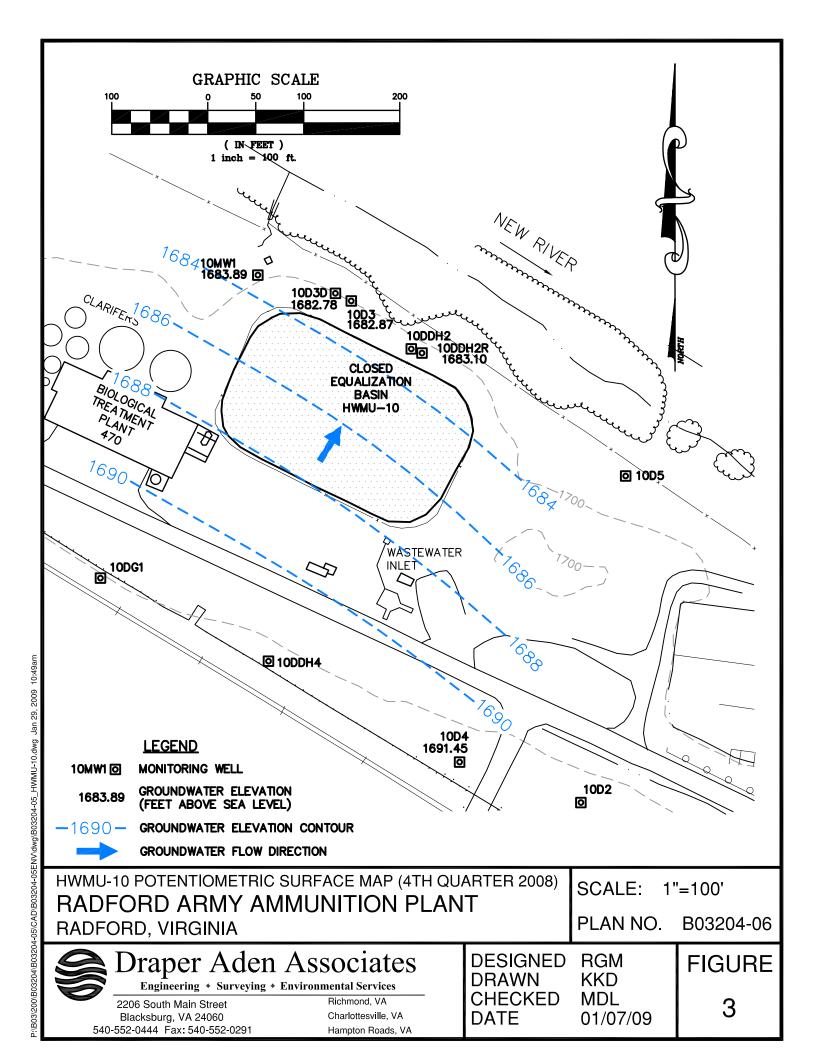
Charlottesville, VA

Hampton Roads, VA

DATE

07/30/08

Blacksburg, VA 24060 540-552-0444 Fax: 540-552-0291



APPENDIX C-2

HWMU-10 2008 LABORATORY ANALYTICAL RESULTS POINT OF COMPLIANCE WELLS

Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 10D4

Analyte/Quarter	10D4 Q	10D3 Q	10D3D Q	10DDH2R Q	10MW1 Q	QL	GPS	Method
Antimony				CAS #	7440-36-0			
Second Quarter 2008	U	U	U	U	U	1	-	6020
Arsenic	,			CAS #	7440-38-2	,		
Second Quarter 2008	U	U	U	U	U	10	50	6020
Fourth Quarter 2008	U	U	U	U	U	10	50	6020
Barium				CAS #	7440-39-3			
Second Quarter 2008	123 J	118 J	54.4 J	95.3 J	92.9 J	10	2000	6020
Fourth Quarter 2008	119	124	53.3	71.5	87.1	10	2000	6020
Beryllium				CAS#	7440-41-7			
Second Quarter 2008	U	U	U	U	U	1	-	6020
Cadmium				CAS #	7440-43-9			
Second Quarter 2008	U	U	U	U	U	1	-	6020
Chromium				CAS #	7440-47-3			
Second Quarter 2008	3.5 J	1.8 J	U	4 J	2.4 J	5	100	6020
Fourth Quarter 2008	U	U	U	U	U	5	100	6020
Cobalt		<u> </u>		CAS #	7440-48-4			
Second Quarter 2008	U	U	U	U	U	5	-	6020
Fourth Quarter 2008	U	U	U	U	U	5	-	6020
Copper				CAS #	7440-50-8			
Second Quarter 2008	1.2 J	1.1 J	U	U	U	5	1300	6020
Fourth Quarter 2008	U	U	U	U	U	5	1300	6020
Lead				CAS #	7439-92-1			
Second Quarter 2008	0.38 J	U	U	U	U	1	15	6020
Fourth Quarter 2008	UJ	UJ	UJ	UJ	UJ	1	15	6020
Mercury				CAS #	7439-97-6			
Second Quarter 2008	U	U	U	U	U	2	2	7470A
Fourth Quarter 2008	-	-	-	-	-	2	2	SW7470
Fourth Quarter 2008	U	U	U	U	U	2	2	7470A
Nickel		_		CAS #	7440-02-0			
Second Quarter 2008	U	U	U	U	U	10	313	6020
Fourth Quarter 2008	U	U	U	U	U	10	313	6020
Selenium				_	7782-49-2			
Second Quarter 2008	U	U	U	U	U	10	50	6020
Fourth Quarter 2008	U	U	U	U	U	10	50	6020
Silver					7440-22-4			3020
Second Quarter 2008	U	U	U	U	U	2	78.25	6020
Fourth Quarter 2008	U	U	U	U	U	2	78.25	6020
Thallium				_	7440-28-0	_	. 3.20	0020
Second Quarter 2008	UJ	U J	UJ	U J	UJ	1	-	6020
Tin		0 0	J 0		7440-31-5	'		3020
Second Quarter 2008	U	U	U	U U	U	5	-	6020
	U	U	U		7440-62-2	J	-	0020
Vanadium Second Quarter 2008	U	U	U	U U	U U	10		6000
	U	U	-	U	U	10	-	6020
Fourth Quarter 2008	U	U	U	_	7440-66-6	10	-	6020
Zinc		40 :	67 :	I		4.0	4005	
Second Quarter 2008	5 J	4.9 J	6.7 J	3.5 J	3.7 J	10	4695	6020
Fourth Quarter 2008	U	U	U	U	U	10	4695	6020
Sulfide				CAS #	18496-25-8			



Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 10D4

Analyte/Quarter	10D4 Q	10D3 Q	10D3D Q	10DDH2R Q	10MW1 Q	QL	GPS	Method
Cyanide				CAS #	57-12-5			
Second Quarter 2008	U	U	U	U	U	20	200	9014
Fourth Quarter 2008	U	U	U	U	U	20	200	9012A
Acenaphthene				CAS #	83-32-9			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Acenaphthylene				CAS #	208-96-8			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Acetone				CAS #	67-64-1			
Second Quarter 2008	U	U	18000	180 J	U	5	-	8260B
Fourth Quarter 2008	-	-	-	-	-	5	-	8260B
Fourth Quarter 2008	U	U	8600	U	U	5	-	8260B
Acetonitrile				CAS #	75-05-8			
Second Quarter 2008	U	U	U A	U	U	100	-	8260B
Acetophenone				CAS #	98-86-2			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
2-Acetylaminofluorene	_	-			53-96-3	,		•
Second Quarter 2008	U	U	U	U	U	30	-	8270C
Acrolein			_		107-02-8	30		52.50
Second Quarter 2008	UJ	UJ	U JA	U J	UJ	10	-	8260B
Acrylonitrile	5 0	5 0	O OA		107-13-1	10		02000
Second Quarter 2008	U	U	U A	U	U	1	_	8260B
Aldrin	U	U	UA	_	309-00-2	'	-	02000
Second Quarter 2008	U	U	U	U U	U	0.025	_	8081A
	U	U	U	_	107-05-1	0.025	-	0001A
Allyl chloride	U	U	11 4	U U	U	1	_	00000
Second Quarter 2008	U	U	U A	_	92-67-1	ı	-	8260B
4-Aminobiphenyl				1	1	40		20722
Second Quarter 2008	U	U	U	U	U 62-53-3	10	-	8270C
Aniline	1 11			ı	1	40		00700
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Anthracene	1	I	1	ı	120-12-7			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Aramite		I	1	1	140-57-8			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Benzene		1	1	1	71-43-2			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
Benzo[a]anthracene		1		1	56-55-3			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Benzo[b]fluoranthene				CAS #	205-99-2			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Benzo[k]fluoranthene				CAS #	207-08-9			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Benzo[ghi]perylene				CAS #	191-24-2			
Second Quarter 2008	U	U	U	U	U	10	=	8270C
Benzo(a)pyrene				CAS #	50-32-8			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
1,4-Benzenediamine	1	1	1	CAS #	106-50-3			
Second Quarter 2008	U	U	U	U	U	50	-	8270C
Benzyl alcohol		I .		CAS #	100-51-6			
Second Quarter 2008	U	U	U	U	U	10	_	8270C

Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 10D4

Analyte/Quarter	10D4 Q	10D3 Q	10D3D Q	10DDH2R Q	10MW1	Q QL	GPS	Method
alpha-BHC				CAS #	319-84-6			
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
beta-BHC				CAS #	319-85-7			
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
delta-BHC				CAS #	319-86-8			
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
gamma-BHC					58-89-9			
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
bis(2-Chloroethoxy)me	thane			CAS #	111-91-1			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
bis(2-Chloroethyl)ether		_			111-44-4			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
bis(2-Chloro-1-methyle					108-60-1			
Second Quarter 2008	U	U	U	U	U	10	_	8270C
bis(2-Ethylhexyl)phthal	_	ŭ	Ū		117-81-7	.0		02.00
Second Quarter 2008	U	U	U	U	U	6	_	8270C
Bromobenzene		- C			108-86-1			02.00
Second Quarter 2008	U	U	U A	U	U	1	_	8260B
Bromochloromethane		Ü	0 /	_	74-97-5	•		02002
Second Quarter 2008	U	U	U A	U	U	1	_	8260B
Bromodichloromethan		J	0 //	_	75-27-4	'		02000
Second Quarter 2008	U	U	U A	U	U	1	80	8260B
Fourth Quarter 2008	U	U	U	U	U	0.5	80	8260B
Bromoform	J	J	U		75-25-2	0.0	00	02000
Second Quarter 2008	U	U	U A	U	U	1	_	8260B
4-Bromophenyl phenyl	_	J	0 11	_	101-55-3	,		0200B
Second Quarter 2008	U	U	U	U	U	10	_	8270C
2-Butanone		J			78-93-3	10		02700
Second Quarter 2008	U	U	U A	U	U	5	691.08	8260B
Fourth Quarter 2008	U	U	U	U	U	5	691.08	8260B
n-Butyl alcohol		J			71-36-3	J	031.00	02000
Second Quarter 2008	U	U	U A	U	U	200		8260B
	0	U	0 7		75-65-0	200	_	02000
tert-Butyl alcohol Second Quarter 2008	UJ	UJ	U JA	U J	UJ	20		8260B
n-Butylbenzene	0 0	0 0	0 07		104-51-8	20	_	02000
Second Quarter 2008	U	U	U A	U U	U	1	1	8260B
sec-Butylbenzene	J	U	0 7		135-98-8	'	_	0200B
Second Quarter 2008	U	U	U A	U U	U	1	_	8260B
	U	U	UA		98-06-6	· ·	_	02001
tert-Butylbenzene Second Quarter 2008	U	U	U A	U U	U	1	-	92605
	U	U	UA	_	85-68-7	į	-	8260B
Butyl benzyl phthalate	11	11	111	I	1	10		90700
Second Quarter 2008 Carbon disulfide	U	U	U	U CAS #	U 75-15-0	10	-	8270C
	1.1	11	11 4	I	1			00000
Second Quarter 2008	U	U	U A	U CAS to	U 56-23-5	1	-	8260B
Carbon tetrachloride	1 11			1				20005
Second Quarter 2008	U	U	U A	U	U 57.74.0	1	-	8260B
Chlordane			T	1	57-74-9			
Second Quarter 2008	U	U	U	U	U A	0.25	-	8081A

Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 10D4

Second Quarter 2008 Chlorobenzene Second Quarter 2008 Chlorobenzilate Second Quarter 2008 Chloro-m-cresol Second Quarter 2008 Chloroethane Second Quarter 2008	U U	U	U A	U CAS #	U 108-90-7	10	-	8270C
Second Quarter 2008 Chlorobenzene Second Quarter 2008 Chlorobenzilate Second Quarter 2008 o-Chloro-m-cresol Second Quarter 2008 Chloroethane	U	U	U A	CAS #	_	10	-	8270C
Second Quarter 2008 Chlorobenzilate Second Quarter 2008 p-Chloro-m-cresol Second Quarter 2008 Chloroethane	U	U	1	U	108-90-7		l.	
Second Quarter 2008 Chloro-m-cresol Second Quarter 2008 Chloroethane	U	U	1					
Second Quarter 2008 D-Chloro-m-cresol Second Quarter 2008 Chloroethane	U		U	CAS #	U	1	-	8260B
Second Quarter 2008 D-Chloro-m-cresol Second Quarter 2008 Chloroethane	U		U		510-15-6			
Second Quarter 2008 Chloroethane		U		U	U	20	-	8270C
Second Quarter 2008 Chloroethane		U		CAS #	59-50-7			
			U	U	U	10	-	8270C
Second Quarter 2008				CAS #	75-00-3			
	U	U	U A	U	U	1	-	8260B
Chloroform				CAS #	67-66-3			
Second Quarter 2008	17	1.5	U A	U	3.7	1	80	8260B
Fourth Quarter 2008	-	1.8	1.6	U	4.8	0.5	80	8260B
Fourth Quarter 2008	22	-	-	-	-	0.5	80	8260B
2-Chloroethyl vinyl ether				CAS #	110-75-8			
Second Quarter 2008	U	U	U A	U	U	5	-	8260B
2-Chloronaphthalene				CAS #	91-58-7			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
2-Chlorophenol				CAS #	95-57-8			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
4-Chlorophenyl phenyl e	ther			CAS #	7005-72-3			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Chloroprene				CAS #	126-99-8			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
2-Chlorotoluene				CAS #	95-49-8			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
4-Chlorotoluene				CAS #	106-43-4			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
Chrysene				CAS #	218-01-9			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Cyclohexane				CAS #	71-36-3			
Second Quarter 2008	U	U	U A	U	U	2	-	8260B
2,4-Dichlorophenoxyace	tic acid			CAS #	94-75-7			
Second Quarter 2008	U	U	U	U	U	5	-	8151A
4,4'-DDD		_			72-54-8			
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
4.4'-DDE		_			72-55-9			
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
4.4'-DDT				_	50-29-3	0.020		
Second Quarter 2008	U	U	U	U	U	0.025	_	8081A
Diallate					2303-16-4	0.020		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Dibenz(a,h)anthracene				_	53-70-3			32,00
Second Quarter 2008	U	U	U	U	U	10	_	8270C
Dibenzofuran		3		_	132-64-9	10	-	02700
Second Quarter 2008	U	U	U	U	U	10	-	8270C
	J	J		_	124-48-1	10	-	02/00
Dibromochloromethane Second Quarter 2008	U	U	U A	U U	U	1	-	8260B

Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 10D4

Analyte/Quarter	10D4 Q	10D3 Q	10D3D Q	10DDH2R Q	10MW1 Q	QL	GPS	Method
1,2-Dibromo-3-chloropr	opane			CAS #	96-12-8			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
1,2-Dibromoethane				CAS #	106-93-4			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
Di-n-butyl phthalate				CAS #	84-74-2			
Second Quarter 2008	U	U	U	U	UN	10	-	8270C
1,2-Dichlorobenzene				CAS #	95-50-1			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
1,3-Dichlorobenzene				CAS #	541-73-1			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
1,4-Dichlorobenzene				CAS #	106-46-7			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
3,3'-Dichlorobenzidine		- C	0 //		91-94-1	•		02002
Second Quarter 2008	U	U	U	U	U	10	-	8270C
trans-1,4-Dichloro-2-but		U	Ü		110-57-6	10		02700
Second Quarter 2008	U	U	U A	U	U	1	_	8260B
Dichlorodifluoromethan		U	UA		75-71-8	'	-	02001
Second Quarter 2008	U	U	U A	U U	U U	1	_	8260B
	U	U	U A		75-34-3	ı	-	82006
1,1-Dichloroethane	1 11			1	1	4		00000
Second Quarter 2008	U	U	U A	U	U 107-06-2	1	-	8260B
1,2-Dichloroethane	1				1			2222
Second Quarter 2008	U	U	U A	U	U 75.05.4	1	-	8260B
1,1-Dichloroethene	1	l	1		75-35-4			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
cis-1,2-Dichloroethene	1	I	T		156-59-2		ı	
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
trans-1,2-Dichloroethen	1	<u> </u>			156-60-5	1	1	
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
2,4-Dichlorophenol	1	1	1		120-83-2			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
2,6-Dichlorophenol		1		CAS #	87-65-0			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
1,2-Dichloropropane				CAS #	78-87-5			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
1,3-Dichloropropane				CAS #	142-28-9			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
2,2-Dichloropropane				CAS #	594-20-7			
Second Quarter 2008	UJ	UJ	U JA	UJ	UJ	1	-	8260B
1,1-Dichloropropene				CAS #	563-58-6			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
cis-1,3-Dichloropropene	,		1	CAS #	10061-01-5			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
trans-1,3-Dichloroprope	ne	1	I.	CAS #	10061-02-6			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
Dieldrin	1	I .	1	CAS #	60-57-1			
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
Diethyl ether	1	1	1		60-29-7	-		-
- · · · · · · · · · · · · · · · · · · ·	1							

Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 10D4

Analyte/Quarter	10D4 Q	10D3 Q	10D3D Q	10DDH2R Q	10MW1 Q	QL	GPS	Method
Diethyl phthalate				CAS #	84-66-2			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
O,O-Diethyl O-2-pyrazin	yl			CAS #	297-97-2		,	
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Dimethoate	1			CAS #	60-51-5	1		
Second Quarter 2008	U	U	U	U	U	20	-	8270C
Dimethyl ether	1			CAS #	115-10-6		,	
Second Quarter 2008	U	U	U A	U	U	2	-	8260B
p-(Dimethylamino)azob	enzene			CAS #	60-11-7	1		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
7,12-Dimethylbenz[a]an	thracene			CAS #	57-97-6	1		
Second Quarter 2008	U	U	U	U	U	20	-	8270C
3,3'-Dimethylbenzidine				CAS #	119-93-7			
Second Quarter 2008	U	U	U	U	U	20	-	8270C
a,a-Dimethylphenethyla	mine			CAS #	122-09-8			
Second Quarter 2008	U	U	U	U	U	50	-	8270C
2,4-Dimethylphenol				CAS #	105-67-9			
Second Quarter 2008	UJ	U J	U J	U J	UJ	10	-	8270C
Dimethyl phthalate				CAS #	131-11-3			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
m-Dinitrobenzene				CAS #	99-65-0			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
4,6-Dinitro-o-cresol				CAS #	534-52-1			
Second Quarter 2008	U	U	U	U	U	20	-	8270C
2,4-Dinitrophenol				CAS #	51-28-5			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
2,4-Dinitrotoluene				CAS #	121-14-2			
Second Quarter 2008	U	U	U	U	U	10	31.3	8270C
Fourth Quarter 2008	U	U	U	U	U	10	31.3	8270C
Fourth Quarter 2008	-	-	-	-	-	10	31.3	8270C
2,6-Dinitrotoluene				CAS #	606-20-2		l.	
Second Quarter 2008	U	U	U	U	U	10	15.65	8270C
Fourth Quarter 2008	U	U	U	U	U	10	15.65	8270C
Fourth Quarter 2008	-	-	-	-	-	10	15.65	8270C
Dinoseb				CAS #	88-85-7		l.	
Second Quarter 2008	U	U	U	U	U	2.5	-	8151A
Di-n-octyl phthalate				CAS #	117-84-0		l.	
Second Quarter 2008	U	U	U	U	U	10	-	8270C
1,4-Dioxane				CAS #	123-91-1		<u> </u>	
Second Quarter 2008	U	U	U A	U	U	200	-	8260B
Diphenylamine				CAS #	122-39-4			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Disulfoton				CAS #	298-04-4			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Endosulfan I				CAS #	959-98-8			
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
Endosulfan II			1		33213-65-9			
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A



Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 10D4

Analyte/Quarter	10D4 Q	10D3 Q	10D3D Q	10DDH2R Q	10MW1 Q	QL	GPS	Method
Endosulfan sulfate				CAS #	1031-07-8			
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
Endrin				CAS #	72-20-8			
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
Ethyl acetate				CAS #	75-25-2			
Second Quarter 2008	U	U	U A	U	U	2	-	8260B
Endrin aldehyde				CAS #	7421-93-4			
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
Ethanol				CAS #	60-29-7			
Second Quarter 2008	U	U	U A	U	U	200	-	8260B
Ethylbenzene				CAS #	100-41-4			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
Ethyl methacrylate				CAS #	97-63-2			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
Ethyl methanesulfonate	-1	I	1	CAS #	62-50-0			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Ethylene oxide				CAS #	75-21-8			
Second Quarter 2008	U	U	U A	U	U	20	-	8260B
Famphur				CAS #	52-85-7			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Fluoranthene				CAS #	206-44-0			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Fluorene				CAS #	86-73-7			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Heptachlor					76-44-8	-		
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
Heptachlor epoxide				CAS #	1024-57-3			
Second Quarter 2008	U	U	U	U	U	0.025	_	8081A
Hexachlorobenzene					118-74-1			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Hexachlorobutadiene		_			87-68-3	-		
Second Quarter 2008	U	U	U A	U	U	1	_	8260B
Hexachlorocyclopentad	iene			CAS #	77-47-4			
Second Quarter 2008	UJ	UJ	UJ	UJ	U J	20	_	8270C
Hexachloroethane					67-72-1	-		
Second Quarter 2008	U	U	U A	U	U	1	_	8260B
Hexachlorophene					70-30-4	-		
Second Quarter 2008	U	U	U	U	U	500	_	8270C
Hexachloropropene					188871-7			
Second Quarter 2008	U	U	U	U	U	10	_	8270C
2-Hexanone	J	Ü			591-78-6	10		02700
Second Quarter 2008	U	U	U A	U	U	5	_	8260B
Indeno[1,2,3-cd]pyrene	1 ,				193-39-5	J		02000
Second Quarter 2008	U	U	U	U	U	10		8270C
Isobutyl alcohol	J	J			78-83-1	10		02700
				C.15 #				
	11 .1	[1 .1	11 .14	[1]	11 .1	125	_	8260B
Second Quarter 2008	UJ	U J	U JA	U J	U J	125	-	8260B

Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 10D4

Analyte/Quarter	10D4 Q	10D3 Q	10D3D Q	10DDH2R Q	10MW1	Q QL	GPS	Method
Isophorone				CAS #	78-59-1			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Isopropylbenzene				CAS #	98-82-8		<u> </u>	
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
Isopropylether				CAS #	108-20-3		<u> </u>	
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
4-Isopropyltoluene				CAS #	99-87-6			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
Isosafrole				CAS #	120-58-1			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Kepone				CAS #	143-50-0			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Methacrylonitrile				CAS #	126-98-7			
Second Quarter 2008	U	U	U A	U	U	10	-	8260B
Methapyrilene	1	<u> </u>	1	CAS #	91-80-5			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Methoxychlor				CAS #	72-43-5			
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
Bromomethane				CAS #	74-83-9			
Second Quarter 2008	UJ	U J	U JA	UJ	UJ	1	-	8260B
Chloromethane					74-87-3			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
3-Methylcholanthrene				_	56-49-5			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
lodomethane					74-88-4			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
Methyl methacrylate				_	80-62-6			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
Methyl methane sulfona		Ū	0 //		66-27-3			02002
Second Quarter 2008	U	U	U	U	U	10	_	8270C
2-Methylnaphthalene	Ū	Ü	J		91-57-6	10		02700
Second Quarter 2008	U	U	U	U	U	10	_	8270C
Methyl parathion	J	J			298-00-0	10		02700
Second Quarter 2008	U	U	U	U	U	10	_	8270C
4-Methyl-2-pentanone	U	J			108-10-1	10		02700
Second Quarter 2008	U	U	U A	U	U	5	_	8260B
2-Methylphenol	U	J	0 //		95-48-7			0200B
Second Quarter 2008	U	U	U	U	U	10	_	8270C
3 & 4-Methylphenol	U	U			106-44-5	10		02700
Second Quarter 2008	U	U	U	U	U	10	-	8270C
	U	U	U		1634-04-4	10	-	02700
Methyl tert-butyl ether Second Quarter 2008	U	U	U A	U U	U	1	-	9260B
Dibromomethane	U	U	U A		74-95-3	1	-	8260B
Second Quarter 2008	11	11	11 ^	1	74-93-3	1		90600
	U	U	U A	U CAS#	75-09-2	1	-	8260B
Methylene chloride	11	11	11 4	1	1			00005
Second Quarter 2008	U	U	U A	U CAS #	U 01 20 2	1	-	8260B
Naphthalene	1 ,.		I	1	91-20-3			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B

Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 10D4

Analyte/Quarter	10D4 Q	10D3 Q	10D3D Q	10DDH2R Q	10MW1 Q	QL	GPS	Method
1,4-Naphthoquinone				CAS #	130-15-4			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
1-Naphthylamine				CAS #	134-32-7		I.	
Second Quarter 2008	U	U	U	U	U	10	-	8270C
2-Naphthylamine				CAS #	91-59-8			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
o-Nitroaniline				CAS #	88-74-4			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
m-Nitroaniline					99-09-2		Į.	
Second Quarter 2008	U	U	U	U	U	20	-	8270C
p-Nitroaniline					100-01-6			
Second Quarter 2008	U	U	U	U	U	20	-	8270C
Nitrobenzene	J	J	J		98-95-3			02700
Second Quarter 2008	U	U	U	U	U	10	-	8270C
	U	U	U		88-75-5	10	_	02700
o-Nitrophenol Second Quarter 2008	U	U	U	U U	U	10	_	8270C
	U	U	U		100-02-7	10	-	6270C
p-Nitrophenol Second Quarter 2008			1 11	1	1 1	10	_	00700
	U	U	U	U	U 56-57-5	10	-	8270C
4-Nitroquinoline-1-oxide	l	I	1		1 1			20722
Second Quarter 2008	U	U	U	U	U	50	-	8270C
N-Nitrosodi-n-butylamine	1	l	1	I	924-16-3			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
N-Nitrosodiethylamine	I	I	1	I	55-18-5		1	
Second Quarter 2008	U	U	U	U	U	10	-	8270C
N-Nitrosodimethylamine	II.	II.	1	ı	62-75-9		1	
Second Quarter 2008	U	U	U	U	U	10	-	8270C
N-Nitrosodiphenylamine	1	1		CAS #	86-30-6			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
N-Nitrosodipropylamine				CAS #	621-64-7			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
N-Nitrosomethylethylami	ine			CAS #	10595-95-6			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
N-Nitrosomorpholine				CAS #	59-89-2			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
N-Nitrosopiperidine				CAS #	100-75-4			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
N-Nitrosopyrrolidine				CAS #	930-55-2			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
5-Nitroso-o-toluidine			1	CAS #	99-55-8			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Parathion				CAS #	56-38-2		1	
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Pentachlorobenzene	I .	I .	1	CAS #	608-93-5			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Pentachloroethane			1	_	76-01-7	-		
Second Quarter 2008	UJ	U J	U JA	U J	U J	1	-	8260B
Pentachloronitrobenzene		3 0	5 0/1		82-68-8	·		02000
	-			2.20 "	-			

Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 10D4

Analyte/Quarter	10D4 Q	10D3 Q	10D3D Q	10DDH2R Q	10MW1 Q	QL	GPS	Method
Pentachlorophenol				CAS #	87-86-5			
Second Quarter 2008	U	U	U	U	U	20	-	8270C
Phenacetin				CAS #	62-44-2			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Phenanthrene				CAS #	85-01-8			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Phenol				CAS #	108-95-2			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Total Recoverable Pher	nolics			CAS #	C-020			
Second Quarter 2008	U	U	U	U	U	5	-	9065
Phorate				CAS #	298-02-2			
Second Quarter 2008	U	U	U	U	U	20	-	8270C
2-Picoline		_			109-06-8			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Pronamide					23950-58-5			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
1-Propanol				_	71-23-8			02,00
Second Quarter 2008	U	U	U A	U U	U	1000	_	8260B
2-Propanol	U	U	0 7	_	67-63-0	1000	_	02000
Second Quarter 2008	U	U	40000	6300	U	1000		8260B
Fourth Quarter 2008	U	U	25000	U	U	1000	-	8260B
	U	U	23000		107-12-0	100	-	02000
Propionitrile Second Quarter 2008	U	U	U A	U U	U	10	_	8260B
	U	U	UA	_	103-65-1	10	-	6200B
n-Propylbenzene	11	U	11 4	U U	1			00000
Second Quarter 2008	U	U	U A	_	129-00-0	1	-	8260B
Pyrene	11	- 11				10		00700
Second Quarter 2008	U	U	U	U CAS #	110-86-1	10	-	8270C
Pyridine	1 11		I			00		00700
Second Quarter 2008	U	U	U	U	94-59-7	20	-	8270C
Safrole	1		1					20722
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Silvex	1		T		93-72-1			
Second Quarter 2008	U	U	U	U	U	2.5	-	8151A
Styrene	1	1	1		100-42-5	1 1	1	
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
Sulfotep		1	1	1	3689-24-5	1		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
2,4,5-Trichlorophenoxy	acetic acid				93-76-5			
Second Quarter 2008	U	U	U	U	U	2.5	-	8151A
1,2,4,5-Tetrachlorobenz	ene			CAS #	95-94-3			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
1,1,1,2-Tetrachloroetha	ne			CAS #	630-20-6			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
1,1,2,2-Tetrachloroetha	ne			CAS #	79-34-5			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
Tetrachloroethene	1			CAS #	127-18-4		<u> </u>	
Second Quarter 2008	UJ	U J	U JA	U J	UJ	1	-	8260B
Tetrahydrofuran	1	1	1	CAS #	109-99-9	1		
Second Quarter 2008	U	U	U A	U	U	5	_	8260B



Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 10D4

Analyte/Quarter	10D4 Q	10D3 Q	10D3D Q	10DDH2R Q	10MW1 Q	QL	GPS	Method
2,3,4,6-Tetrachloropher	nol			CAS #	58-90-2			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Toluene				CAS #	108-88-3			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
o-Toluidine				CAS #	95-53-4			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Toxaphene				CAS #	8001-35-2			
Second Quarter 2008	U	U	U	U	U	1	-	8081A
1,2,3-Trichlorobenzene				CAS #	87-61-6			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
1,2,4-Trichlorobenzene				CAS #	120-82-1			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
1,1,1-Trichloroethane		l .		CAS #	71-55-6			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
1,1,2-Trichloroethane		I .	1	CAS #	79-00-5			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
Trichloroethene					79-01-6			
Second Quarter 2008	U	U	U A	U	U	1	5	8260B
Fourth Quarter 2008	U	U	U	U	U	0.5	5	8260B
Trichlorofluoromethane)			CAS #	75-69-4			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
2,4,5-Trichlorophenol				CAS #	95-95-4			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
2,4,6-Trichlorophenol				CAS #	88-06-2			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
1,2,3-Trichloropropane				_	96-18-4			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
1,1,2-Trichloro-1,2,2-Tri	fluoroetha	ne		CAS #	76-13-1			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
O,O,O-Triethyl phospho	rothioate	_			126-68-1			
Second Quarter 2008	U	U	U	U	U	10	-	8270C
1,2,4-Trimethylbenzene					95-63-6			
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
1,3,5-Trimethylbenzene					108-67-8	<u> </u>		
Second Quarter 2008	U	U	U A	U	U	1	-	8260B
sym-Trinitrobenzene		Ū	0 /1		99-35-4	· ·		02002
Second Quarter 2008	U	U	U	U	U	10	_	8270C
Vinyl acetate		J	J		108-05-4	10		32700
Second Quarter 2008	UJ	UJ	U JA	U J	U J	5	_	8260B
Vinyl chloride	0 0	5 0	O UA		75-01-4	<u> </u>		02000
Second Quarter 2008	UJ	UJ	U JA	U J	UJ	1	-	8260B
	UJ	UJ	U JA		1330-20-7	1	-	02000
Xylenes (Total)	11	U	11 ^	I	1	2	10000	9060B
Second Quarter 2008	U		U A	U	U	3	10000	8260B
Fourth Quarter 2008	U	U	U	U	U	0.5	10000	8260B

Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 10D4All Results in ug/L.

Analyte/Quarter 10D4 O 10D3 O 10D3D Q 10DDH2R Q 10MW1 Q OL**GPS** Method

Definitions:

QL Denotes permit required quantitation limit.

U Denotes analyte not detected at or above QL.

UA Denotes analyte not detected at or above adjusted sample QL.

J Denotes associated result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above QL and QL is estimated. When used with "UA" (i.e., "UAJ"), denotes analyte not detected at or above adjusted QL and adjusted QL is estimated.

UN Denotes analyte concentration is less than the quantiation limit and five times the blank concentration. Not reliably detected due to blank contamination. This qualifier used only for Appendix IX monitoring event when results are reported to at or above the detection limit.

R Denotes result rejected.

Q Denotes data validation qualifier.

CAS# Denotes Chemical Abstract Services registration number.

GPS Denotes Groundwater Protection Standards listed in Appendix G to Attachment 4 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002). $For cobalt, vanadium, acetone \ and \ 2-propanol, \ these \ analytes \ are \ not \ listed \ in \ Appendix \ VIII \ to \ 40 \ CFR \ Part \ 261;$ therefore, GPSs will not be established for these constituents.

NS denotes not sampled.

NA denotes not analyzed.

"-" denotes not detected (pre-2nd Quarter 2003) or not available / not sampled (beginning 2nd Quarter 2003).

Appendix IX Monitoring Events:

First Quarter 2003, Second Quarter 2004, Second Quarter 2005,

Third Quarter 2006, Second Quarter 2007, Second Quarter 2008

For Appendix IX monitoring, compliance well results reported/evaluated to detection limit.

Verification events: 12/12/03, 06/17/04, 7/25/2005.

6/17/04. Verification event. Acetone: 10D3D was not detected during verification event. Verification event result reported.

7/25/05. Verification event. All wells: ethyl acetate. 10D3D: alpha-BHC, acetone and 2-propanol. All verification results: Not detected except for acetone and 2-propanol. Verification results presented in table.

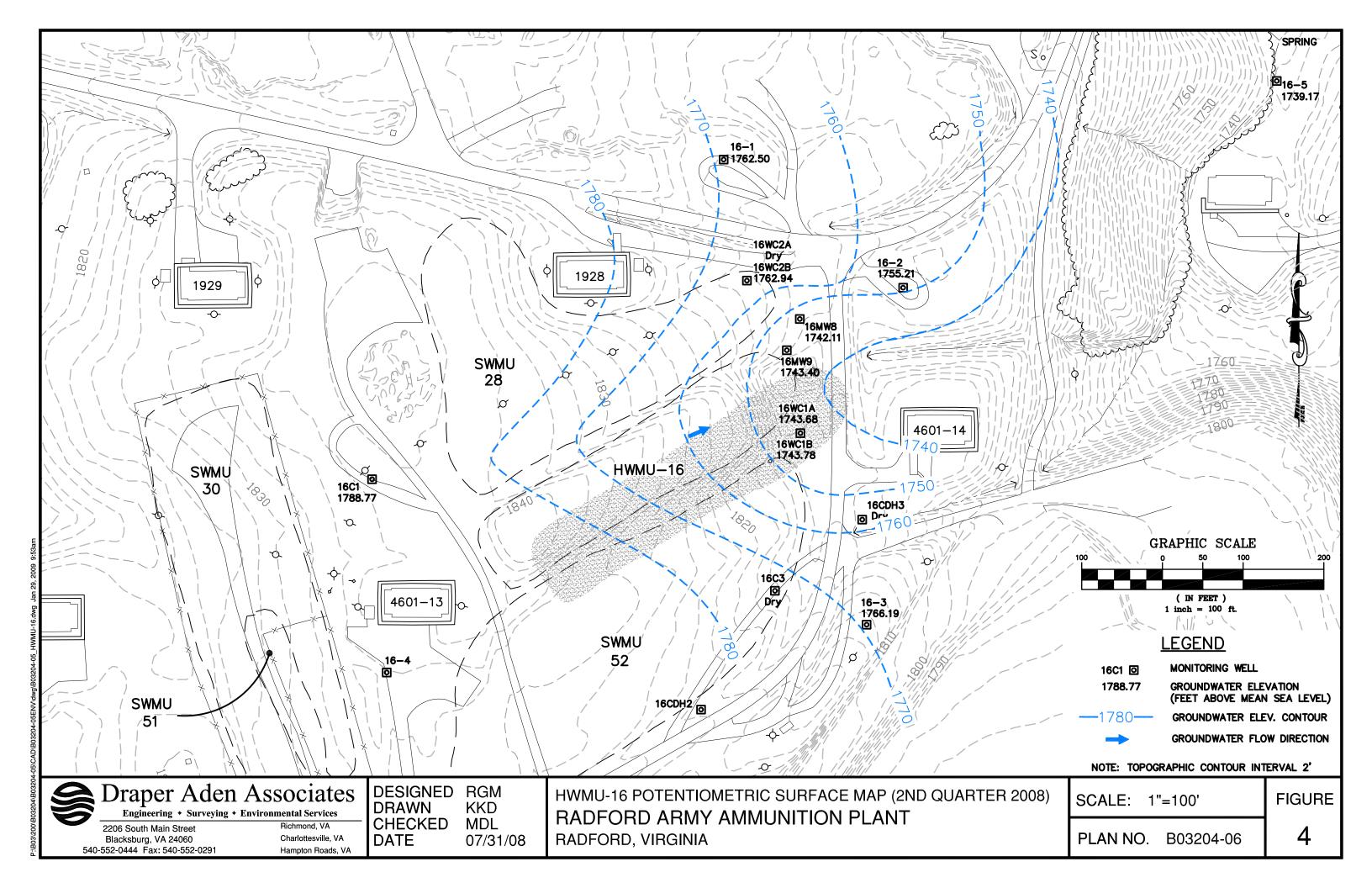
7/17/2008. Verification event. 10MW1. Technical chlordane, diethylphthalate. Verification results reported-all not detected.

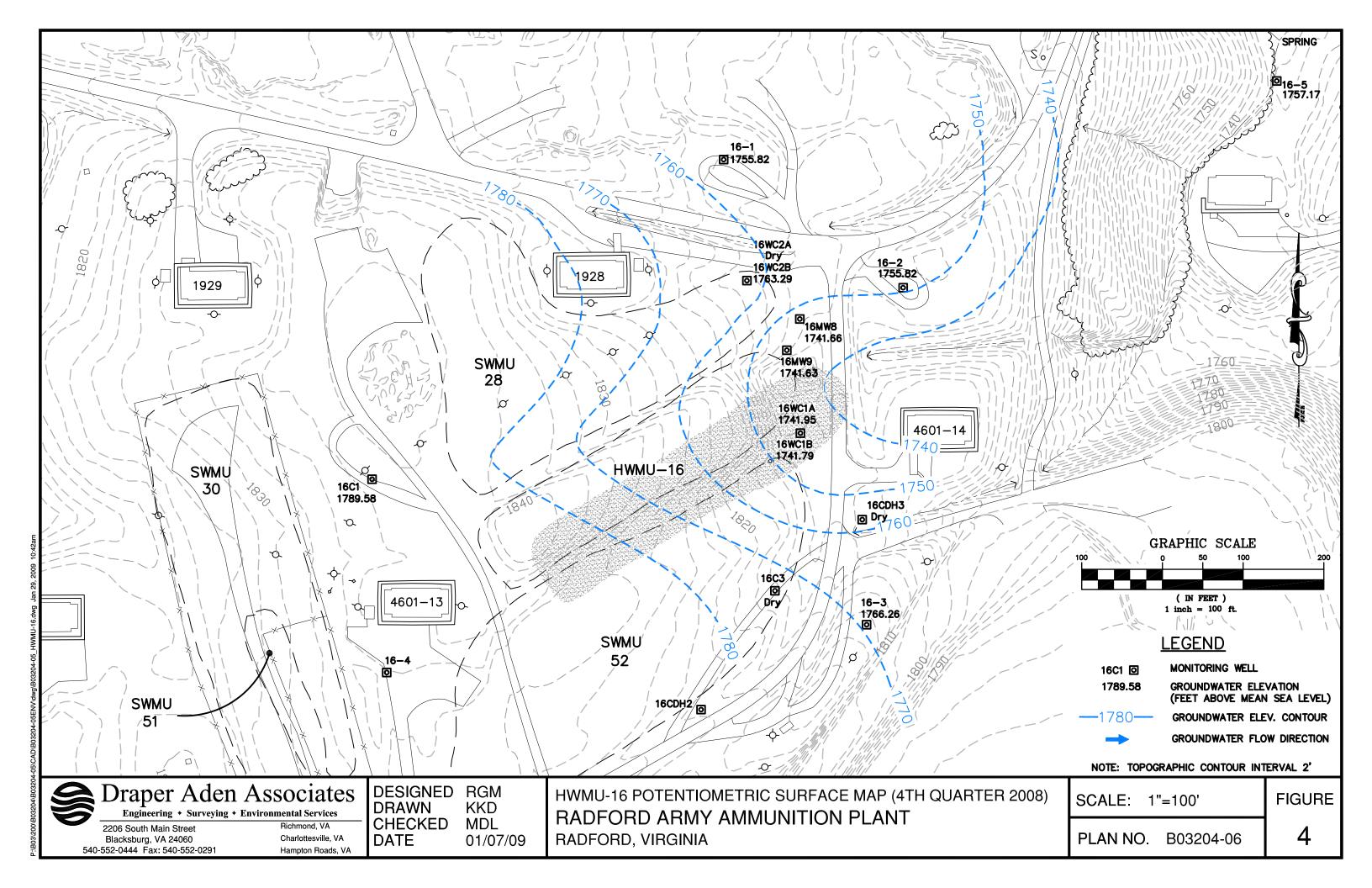
APPENDIX D

HWMU-16

APPENDIX D-1

HWMU-16 POTENTIOMETRIC SURFACE MAPS SECOND QUARTER 2008 FOURTH QUARTER 2008





APPENDIX D-2

HWMU-16 2008 LABORATORY ANALYTICAL RESULTS POINT OF COMPLIANCE WELLS

Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 16C1

Analtye/Quarter	16C1	16MW8	16MW9	16WC1A	16WC1B	OL	GPS	Method
Antimony			,	,	CAS#	7440-36-0		
Second Quarter 2008	U	U	U	U N	U	1	6	6020
Fourth Quarter 2008	U	U	U	U	U	1	6	6020
Arsenic					CAS#	7440-38-2		
Second Quarter 2008	U	U	U	U	U	10	50	6020
Fourth Quarter 2008	U	U	U	U	U	10	50	6020
					CAS#	7440-39-3		
Barium Second Quarter 2008	201 J	109 J	305 J	244 J	178 J	10	2000	6020
Fourth Quarter 2008	182 J	85.3 J	499 J	186 J	103 J	10	2000	6020
	102 0	00.0 0	499 0	100 0			2000	0020
Beryllium Second Quarter 2008	U	0.29 J	U	U	CAS#	7440-41-7 1	4	6020
Fourth Quarter 2008	U	U	U	U	U	1	4	6020
Cadmium					CAS#			
Second Quarter 2008	U	0.25 J	U	U	U	1	5	6020
Fourth Quarter 2008	U	U	U	U	U	1	5	6020
Chromium			-		CAS#	7440-47-3	-	
Second Quarter 2008	U	1.4 J	U	U	2 J	5	100	6020
Fourth Quarter 2008	U	U	U	U	U	5	100	6020
Cobalt					CAS#	7440-48-4		
Second Quarter 2008	UJ	U J	1.8 J	28.8 J	U J	5	313	6020
Fourth Quarter 2008	U	U	U	28.1 J	U	5	313	6020
Copper					CAS#	7440-50-8		
Second Quarter 2008	U	3 J	U	2 J	U U	5	1300	6020
Fourth Quarter 2008	U	5.5	U	U	U	5	1300	6020
		0.0				7439-92-1	1000	
Lead Second Quarter 2008	U	0.64 J	U	0.38 J	0.24 J	7439-92-1 1	15	6020
Fourth Quarter 2008	U	U	U	U	U	1	15	6020
Mercury						7439-97-6		
Second Quarter 2008	U	U	U	U	0.66 J	0.2	2	7470
Fourth Quarter 2008	U	U	U	U	U	2	2	7470
Nickel					CAS#	7440-02-0		
Second Quarter 2008	UJ	6.6 J	7.2 J	8.8 J	U J	10	313	6020
Fourth Quarter 2008	U	U	10.4	U	U	10	313	6020
Selenium					CAS#	7782-49-2		
Second Quarter 2008	U	U	U	U	U	10	50	6020
Fourth Quarter 2008	U	U	U	U	U	10	50	6020
Silver					CAS#	7440-22-4		
Second Quarter 2008	U	2.2	U	U	U	2	78.25	6020
Fourth Quarter 2008	U	U	U	U	U	2	78.25	6020
		-	-	-				
Thallium Second Quarter 2008	U	U	U	U	CAS#	1	_	6020
								0020
Tin Second Quarter 2008	U	U	U	U	CAS#	<i>7440-31-5</i>	_	6020
	U	U	<u> </u>	U			-	0020
Vanadium Second Quarter 2008	U	U	U	U	<i>CAS #</i>	7440-62-2	100 55	0000
						10	109.55	6020
Fourth Quarter 2008	U	U	U	U	U	10	109.55	6020
Zinc					CAS#			
Second Quarter 2008	U	24.1	U	8.8 J	7 J	10	4695	6020
Fourth Quarter 2008	U	19.1	U	U	U	10	4695	6020
Sulfide					CAS#	18496-25-8		
Second Quarter 2008	U	U	U	U	U	1000	-	9034
Cyanide					CAS#	57-12-5		
		U	U	U	U	20	-	9014
Second Quarter 2008	U	U	O	U	U	20		0014
Second Quarter 2008 Acenaphthene	U					83-32-9		



Upgradient well = 16C1

Analtye/Quarter	16C1	16MW8	16MW9	16WC1A	16WC1B	<i>OL</i>	GPS	Method
Acenaphthylene	1001	101/11/10	101/11/19	IUWCIA		208-96-8	OI 5	Memou
Second Quarter 2008	U	U	U	U	U CAS#	10	_	8270C
Acetone	U	U	U	U	U CAS#	67-64-1 5	000 57	00000
Second Quarter 2008	U	U	U	U	U		223.57	8260B
Acetonitrile					CAS#	75-05-8		
Second Quarter 2008	U	U	U	U	U	100	-	8260B
Acetophenone					CAS#	98-86-2		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
2-Acetylaminofluorene					CAS#	53-96-3		
Second Quarter 2008	U	U	U	U	U	30	-	8270C
Acrolein					CAS#	107-02-8		
Second Quarter 2008	U J	UJ	U J	U J	U J	10	-	8260B
						107-13-1		
Acrylonitrile Second Quarter 2008	U	U	U	U	CAS#	107-13-1	_	8260B
-	U	<u> </u>	U	U			-	6260B
Aldrin					CAS#	309-00-2		
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
Allyl chloride				-		107-05-1		
Second Quarter 2008	U	U	U	U	U	1	-	8260B
4-Aminobiphenyl					CAS#	92-67-1		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Aniline					CAS#	62-53-3		
Second Quarter 2008	U	U	U	U	U	10	_	8270C
						120-12-7		
Anthracene	U	U	U	U	CAS#	10		00700
Second Quarter 2008	U	U	U	U			-	8270C
Aramite						140-57-8		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Benzene					CAS#	71-43-2		
Second Quarter 2008	U	U	U	U	U	1	-	8260B
Benzo[a]anthracene					CAS#	56-55-3		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Benzo[b]fluoranthene					CAS#	205-99-2		
Second Quarter 2008	U	U	U	U	U U	10		8270C
-								02700
Benzo[k]fluoranthene						207-08-9		20722
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Benzo[ghi]perylene					CAS#	191-24-2		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Benzo(a)pyrene					CAS#	50-32-8		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
1,4-Benzenediamine					CAS#	106-50-3		
Second Quarter 2008	U	U	U	U	U	50	-	8270C
	-	-	-	-				
Benzyl alcohol	U	U	U	U	U CAS#	100-51-6		90700
Second Quarter 2008	U	U	U	U		10	-	8270C
alpha-BHC						319-84-6		
Second Quarter 2008	U	U	U	U	U	0.025	<u> </u>	8081A
beta-BHC						319-85-7		
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
delta-BHC					CAS#	319-86-8		
Second Quarter 2008	U	U	U	U	U	0.025	=	8081A
gamma-BHC					CAS#	58-89-9		
Second Quarter 2008	U	U	U	U	U CAS#	0.025	_	8081A
	0		-	-			-	00017
bis(2-Chloroethoxy)methane					CAS#	111-91-1		05===
Second Quarter 2008	U	U	U	U	U	10	-	8270C
bis(2-Chloroethyl)ether					CAS#	111-44-4	-	
Second Quarter 2008	U	U	U	U	U	10	-	8270C
bis(2-Chloro-1-methylethyl)ether					CAS#	108-60-1		
Second Quarter 2008	U	U	U	U	U	10	-	8270C

Upgradient well = 16C1

Analtye/Ouarter	16C1	16MW8	16MW9	16WC1A	16WC1B	<i>OL</i>	GPS	Method
bis(2-Ethylhexyl)phthalate	1001	10.11110	10.11117	1011 0111		117-81-7	OI 5	Memou
Second Quarter 2008	U	U	U	U	U U	6	10	82700
Bromobenzene					CAS#	108-86-1		
Second Quarter 2008	U	U	U	U	U U	1	_	8260E
				<u> </u>				02002
Bromochloromethane	U	U	U	U	CAS#	74-97-5 1		8260E
Second Quarter 2008	U	0	U	U			-	02000
Bromodichloromethane					CAS#	75-27-4		2000
Second Quarter 2008	U	U	U	U	U	1	-	8260E
Bromoform					CAS#	75-25-2		
Second Quarter 2008	U	U	U	U	U	1	-	8260E
4-Bromophenyl phenyl ether					CAS#	101-55-3		
Second Quarter 2008	U	U	U	U	U	10	-	82700
2-Butanone					CAS#	78-93-3		
Second Quarter 2008	U	U	U	U	U	10	691.08	8260E
Fourth Quarter 2008	U	U	U	U	U	10	691.08	8260E
			-			71-36-3		
n-Butyl alcohol Second Quarter 2008	U	U	U	U J	U CAS#	200		8260E
	U	U	U	U J			-	82806
tert-Butyl alcohol					CAS#	75-65-0		
Second Quarter 2008	UJ	UJ	U J	UJ	U J	20	-	8260E
n-Butylbenzene					CAS#	104-51-8		
Second Quarter 2008	U	U	U	U	U	1	-	8260E
sec-Butylbenzene					CAS#	135-98-8		
Second Quarter 2008	U	U	U	U	U	1	-	8260E
tert-Butylbenzene					CAS#	98-06-6		
Second Quarter 2008	U	U	U	U	U	1	-	8260E
			-					
Butyl benzyl phthalate Second Quarter 2008	U	U	U	U	CAS#	10	_	82700
								02700
Carbon disulfide					CAS#			
Second Quarter 2008	U	U	U	U	U	1	-	8260E
Carbon tetrachloride					CAS#	56-23-5		
Second Quarter 2008	U	U	U	U	U	1	5	8260E
Fourth Quarter 2008	U	U	U	U	U	5	5	8260E
Chlordane					CAS#	57-74-9		
Second Quarter 2008	U	U	U	U	U U	0.25	_	8081
					CAC#	106-47-8		
p-Chloroaniline Second Quarter 2008	U	U	U	U	U CAS#	10	_	82700
		0	-	-				02700
Chlorobenzene					CAS#	108-90-7		
Second Quarter 2008	U	U	U	U	U	1	-	8260E
Chlorobenzilate					CAS#	510-15-6		
Second Quarter 2008	U	U	U	U	U	20	-	82700
p-Chloro-m-cresol					CAS#	59-50-7		
Second Quarter 2008	U	U	U	U	U	10	-	82700
Chloroethane					CAS#	75-00-3		
Second Quarter 2008	4.6	U	U	U	U CAS#	1	_	8260E
Fourth Quarter 2008								
	4 J	U	2 J	U	U	5	-	8260E
Chloroform			.,			67-66-3		
Second Quarter 2008	U	U	U	U	U	1	80	8260E
2-Chloroethyl vinyl ether	-					110-75-8	-	
Second Quarter 2008	UJ	UJ	U J	U J	U J	5	-	8260E
2-Chloronaphthalene					CAS#	91-58-7		
Second Quarter 2008	U	U	U	U	U	10	-	82700
2-Chlorophenol					CAC#	95-57-8		
Second Quarter 2008	U	U	U	U	U CAS#	10	_	82700
	U	J		<u> </u>			-	02/00
					CAS#	7005-72-3		
	, ,	1.1						
Second Quarter 2008	U	U	U	U	U	10	-	82700
4-Chlorophenyl phenyl ether Second Quarter 2008 Chloroprene	U	U	U	U	U CAS#	10 126-99-8	-	8270C



Upgradient well = 16C1

16C1	16MW8	16MW9	16WC1A	16WC1B	OL	GPS	Method
				CAS#	95-49-8		
U	U	U	U	U	1	-	8260B
				CAS#	106-43-4		
U	U	U	U	U	1	-	8260B
				CAS#	218-01-9		
U	Ш	U	Ш			_	8270C
					10		02700
							00000
U	U	U	U J			-	8260B
l							
U	U	U	U	U	5	-	8151A
				CAS#	72-54-8		
U	U	U	U	U	0.025	-	8081A
				CAS#	72-55-9		
- 11	11	11	11				8081A
							00017
U	U	U	U	U	0.025	-	8081A
				CAS#	2303-16-4		
U	U	U	U	U	10	=	8270C
				CAS#	53-70-3		
U	U	U	U	U U	10	-	8270C
	-	-	-				
							00700
U	U	U	U	U	10	-	8270C
				CAS#	124-48-1		
U	U	U	U	U	1	-	8260B
				CAS#	96-12-8		
U	U	U	U	U	1	_	8260B
							20000
U	U	U	U			-	8260B
U	U	U	U	U	10	-	8270C
				CAS#	95-50-1		
U	U	U	U	U	1	-	8260B
				CAS#	541-73-1		
- 11	11	11	11				8260B
					-		02000
U	U	U	U	U	1	-	8260B
-				CAS#	91-94-1		
U	U	U	U	U	10	-	8270C
				CAS#	110-57-6		
U	U	U	U			=	8260B
	-		-				32000
			11			40.5	
U	U	U	U	U		46.5	8260B
U	U	U	U	U	5	46.5	8260B
				CAS#	75-34-3		
6.6	U	2.2	1.4	1.6	1	296.08	8260B
							8260B
	<u> </u>	U	-			250.00	02000
U	U	U	U	U	1	5	8260B
				CAS#	75-35-4		
						_	
U	U	U	U	U	1	-	8260B
U	U	U	U			=	8260B
				CAS#	156-59-2	-	
U	U	U	U	CAS#	156-59-2 1	-	8260B 8260B
U	U	U	U	CAS#	156-59-2 1 156-60-5	-	8260B
				CAS#	156-59-2 1	-	
U	U	U	U	CAS#	156-59-2 1 156-60-5	-	8260B
		U U U U U U U U U U U U U U U U U U U	U U U U U U U U U U U U U U U U U U U	U U U U U U U U U U U U U U U U U U U	CAS# U U U U U U U U U	CAS# 95-49-8 U	CAS # 98-49-8

Upgradient well = 16C1

Analtye/Quarter	16C1	16MW8	16MW9	16WC1A	16WC1B	OL	GPS	Method
2,6-Dichlorophenol	1001	10111770	10111117	10110111	CAS#	87-65-0	O. D	Memor
Second Quarter 2008	U	U	U	U	U	10	-	8270C
					CAC#	78-87-5		
1,2-Dichloropropane Second Quarter 2008	U	U	U	U	CAS#	1	-	8260B
	-		-					02000
1,3-Dichloropropane					CAS#			
Second Quarter 2008	U	U	U	U	U	1	-	8260B
2,2-Dichloropropane						594-20-7		
Second Quarter 2008	U	U	U	υJ	U	1	-	8260B
1,1-Dichloropropene					CAS#	563-58-6		
Second Quarter 2008	U	U	U	U	U	1	-	8260B
cis-1,3-Dichloropropene					CAS#	10061-01-5		
Second Quarter 2008	U	U	U	U	U	1	-	8260B
						10061-02-6		
trans-1,3-Dichloropropene Second Quarter 2008	U	U	U	U	CAS#	1	_	8260B
	-							02000
Dieldrin					CAS#	60-57-1		
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
Diethyl ether					CAS#	60-29-7		
Second Quarter 2008	U	U	U	U J	U	12.5	-	8260B
Fourth Quarter 2008	31	U	13	U	U	5	-	8260B
Diethyl phthalate					CAS#	84-66-2		
Second Quarter 2008	U	U	U	U	U U	10	12,520	8270C
	-	-	-	-		297-97-2	,0_0	32, 30
O,O-Diethyl O-2-pyrazinyl	U	U	U	U	CAS#			00700
Second Quarter 2008	U	U	U	U		10	-	8270C
Dimethoate						60-51-5		
Second Quarter 2008	U	U	U	U	U	20	-	8270C
Dimethyl ether					CAS#	115-10-6		
Second Quarter 2008	8.1 J	U	2.7 J	1.6 J	U	12.5	-	8260B
Fourth Quarter 2008	UJ	UJ	UJ	UJ	U J	10	-	8260B
p-(Dimethylamino)azobenzene					CAS#	60-11-7		
Second Quarter 2008	U	U	U	U	U U	10	-	8270C
					- C+C //	57-97-6		
7,12-Dimethylbenz[a]anthracene Second Quarter 2008	U	U	U	U	CAS#	20	_	8270C
	U	<u> </u>	U				-	02/00
3,3'-Dimethylbenzidine					CAS#	119-93-7		
Second Quarter 2008	U	U	U	U	U	20	-	8270C
a,a-Dimethylphenethylamine					CAS#	122-09-8		
Second Quarter 2008	U	U	U	U	U	50	-	8270C
2,4-Dimethylphenol					CAS#	105-67-9		
Second Quarter 2008	U J	UJ	U J	U J	U J	10	-	8270C
Dimethyl phthalate					CAS#	131-11-3		
Second Quarter 2008	U	U	U	U	U U	10	-	8270C
m-Dinitrobenzene Second Quarter 2008	U	U	U	U	U CAS#	<i>99-65-0</i>		8270C
	-		-	0			-	02700
4,6-Dinitro-o-cresol						534-52-1		
Second Quarter 2008	U	U	U	U	U	20	-	8270C
2,4-Dinitrophenol						51-28-5		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
2,4-Dinitrotoluene					CAS#	121-14-2		
Second Quarter 2008	U	U	U	U	U	10	31.3	8270C
Fourth Quarter 2008	U	U	U	U	U	10	31.3	8270C
	-	-	-	-			- ***	
2,6-Dinitrotoluene	11	- 11	U	- 11	CAS#	606-20-2	15.05	00700
Second Quarter 2008	U	U		U		10	15.65	8270C
Fourth Quarter 2008	U	U	U	U	U	10	15.65	8270C
Dinoseb					CAS#	88-85-7	-	-
Second Quarter 2008	U	U	U	U	U	2.5	-	8151A
Di-n-octyl phthalate					CAS#	117-84-0		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
						-		

Upgradient well = 16C1

Analtye/Ouarter	16C1	16MW8	16MW9	16WC1A	16WC1B	OL	GPS	Method
1,4-Dioxane						123-91-1		
Second Quarter 2008	U	U	U	U	U	200	-	8260B
D <u>iphenylamine</u>					CAS#	122-39-4		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Disulfoton					CAS#	298-04-4		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Endosulfan I					CAS#	959-98-8		
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
Endosulfan II					CAS#	33213-65-9		
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
Endosulfan sulfate					CAS#	1031-07-8		
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
E <u>ndrin</u>					CAS#	72-20-8		
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
Ethyl acetate					CAS#	141-78-6		
Second Quarter 2008	U	U	U	U	U	2	-	8260B
Endrin aldehyde					CAS#	7421-93-4		
Second Quarter 2008	U	U	U	U	U	0.025	-	8081A
Ethanol					CAS#	64-17-5		
Second Quarter 2008	U	U	U	U J	U	200	-	8260B
Ethylbenzene					CAS#	100-41-4		
Second Quarter 2008	U	U	U	U	U	1	70	8260B
Fourth Quarter 2008	U	U	U	U	U	5	70	8260B
Ethyl methacrylate					CAS#	97-63-2		
Second Quarter 2008	U	U	U	U	U	1	-	8260B
Ethyl methanesulfonate					CAS#	62-50-0		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Ethylene oxide					CAS#	75-21-8		
Second Quarter 2008	U	U	U	U J	U	20	-	8260B
Famphur					CAS#	52-85-7		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Fluoranthene					CAS#	206-44-0		
Second Quarter 2008	U	U	U	U	U U	10	-	8270C
Fluorene								
Second Quarter 2008	U	U	U	U	CAS#	10	-	8270C
						76-44-8		02700
Heptachlor Second Quarter 2008	U	U	U	U	CAS#	0.025	_	8081A
					CAS#	1024-57-3		000171
Heptachlor epoxide Second Quarter 2008	U	U	U	U	U U	0.025	-	8081A
								000171
Hexachlorobenzene Second Quarter 2008	U	U	U	U	U CAS#	118-74-1 10		8270C
	-	0	0	0				02700
Hexachlorobutadiene Second Quarter 2008	U J	U J	U J	U J	U J	<i>87-68-3</i>	_	8260B
	0 0	0 0	0 0	0 0			-	02000
Hexachlorocyclopentadiene				11 1	CAS#	77-47-4		00700
Second Quarter 2008	U J	U J	UJ	U J	U J	20	-	8270C
Hexachloroethane					CAS#	67-72-1		2000
Second Quarter 2008	U	U	U	U	U	1	-	8260B
Hexachlorophene					CAS#	70-30-4		
Second Quarter 2008	U	U	U	U	U	500	-	8270C
Hexachloropropene					CAS#	1888-71-7		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
2-Hexanone					CAS#	591-78-6		
Second Quarter 2008	U	U	U	U	U	5	-	8260B
Indeno[1,2,3-cd]pyrene					CAS#	193-39-5		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Isobutyl alcohol					CAS#	78-83-1		
Second Quarter 2008	UJ	UJ	UJ	U J	U J	125	-	8260B

Upgradient well = 16C1

Analtye/Ouarter	16C1	16MW8	16MW9	16WC1A	16WC1B	OL	GPS	Method
Isodrin					CAS#	465-73-6		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
sophorone					CAS#	78-59-1		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
sopropylbenzene Second Quarter 2008	U	U	U	U	CAS#	1		8260B
	U	0	U	0				02000
sopropylether					CAS#			
Second Quarter 2008	U	U	U	U	U	1	-	8260E
1-Isopropyltoluene					CAS#	99-87-6		
Second Quarter 2008	U	U	U	U	U	1	-	8260E
sosafrole					CAS#	120-58-1		
Second Quarter 2008	U	U	U	U	U	10	_	82700
					G+0."	143-50-0		
Kepone 000000	- 11	U	U	U	CAS#			00700
Second Quarter 2008	U	U	U	U	U	10	-	82700
Methacrylonitrile					CAS#	126-98-7		
Second Quarter 2008	U	U	U	U	U	10	-	8260E
Methapyrilene					CAS#	91-80-5		
Second Quarter 2008	U	U	U	U	U	10	-	82700
Methoxychlor					CAC#	72-43-5		
Second Quarter 2008	U	U	U	U	U CAS#	0.025		8081 <i>A</i>
								00017
Bromomethane						74-83-9		
Second Quarter 2008	U	U	U	U	U	1	-	8260E
Chloromethane					CAS#	74-87-3		
Second Quarter 2008	U	U	U	U	U	1	2.11	8260E
Fourth Quarter 2008	U	U	U	U	U	5	2.11	8260E
3-Methylcholanthrene	U	U	U	U		<i>56-49-5</i>		00700
Second Quarter 2008	U	U	U	U	U		-	82700
odomethane					CAS#			
Second Quarter 2008	U	U	U	U	U	1	-	8260E
Methyl methacrylate					CAS#	80-62-6		
Second Quarter 2008	U	U	U	U	U	1	-	8260E
Methyl methane sulfonate					CAS#	66-27-3		
Second Quarter 2008	U	U	U	U	U U	10	_	82700
	-							02700
2-Methylnaphthalene						91-57-6		
Second Quarter 2008	U	U	U	U	U	10	-	82700
Methyl parathion					CAS#	298-00-0		
Second Quarter 2008	U	U	U	U	U	10	-	82700
1-Methyl-2-pentanone					CAS#	108-10-1		
Second Quarter 2008	U	U	U	U	U	5	-	8260E
	= = = = = = = = = = = = = = = = = = = =	-	-	-				
2-Methylphenol	D.		- 11			95-48-7		00700
Second Quarter 2008	U	U	U	U	U	10	-	82700
3 & 4-Methylphenol						m 108-39-4	p 106-44-	
Second Quarter 2008	U	U	U	U	U	10	-	82700
Methyl tert-butyl ether					CAS#	1634-04-4		
Second Quarter 2008	U	U	U	U	U U	1	-	8260E
						74-95-3		
Dibromomethane Second Quarter 2008	U	U	U	U	CAS#	1	_	8260E
	U	U	U	U			-	02000
Methylene chloride					CAS#	75-09-2		
Second Quarter 2008	5.3	U	U	U	U	1	-	8260E
Fourth Quarter 2008	6	U	U	U	U	5	-	8260E
Naphthalene					CAS#	91-20-3		
Second Quarter 2008	UJ	UJ	UJ	UJ	U J	1		8260E
	J 0		- 0	- 0				0200L
1,4-Naphthoquinone					CAS#	130-15-4		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
I-Naphthylamine				-	CAS#	134-32-7		
					CIII "			

Upgradient well = 16C1

Analtye/Ouarter	16C1	16MW8	16MW9	16WC1A	16WC1B		GPS	Method
2-Naphthylamine						91-59-8		
Second Quarter 2008	U	U	U	U	U	10	-	82700
o-Nitroaniline					CAS#	88-74-4		
Second Quarter 2008	U	U	U	U	U	10	-	82700
m-Nitroaniline					CAS#	99-09-2		
Second Quarter 2008	U	U	U	U	U U	20	_	82700
								02.00
o-Nitroaniline Second Quarter 2008	U	U	U	U	CAS#	100-01-6		00700
Second Quarter 2008	U	U	U	U	U	20		82700
Nitrobenzene					CAS#			
Second Quarter 2008	U	U	U	U	U	10	-	82700
o-Nitrophenol					CAS#	88-75-5		
Second Quarter 2008	U	U	U	U	U	10	-	82700
p-Nitrophenol					CAS#	100-02-7		
Second Quarter 2008	U	U	U	U	U U	10	-	82700
					G+G #	56-57-5		
1-Nitroquinoline-1-oxide Second Quarter 2008	U	U	U	U	CAS#	50		82700
	U		U				-	02/00
N-Nitrosodi-n-butylamine					CAS#	924-16-3		
Second Quarter 2008	U	U	U	U	U	10	-	82700
N-Nitrosodiethylamine						55-18-5	-	
Second Quarter 2008	U	U	U	U	U	10	-	82700
N-Nitrosodimethylamine					CAS#	62-75-9		
Second Quarter 2008	U	U	U	U	U	10	-	82700
N-Nitrosodiphenylamine					CAS#	86-30-6		
Second Quarter 2008	U	U	U	U	U	10	_	82700
								02.00
N-Nitrosodipropylamine						621-64-7		0070
Second Quarter 2008	U	U	U	U	U	10	-	82700
N-Nitrosomethylethylamine					CAS#	10595-95-6		
Second Quarter 2008	U	U	U	U	U	10	-	82700
N-Nitrosomorpholine					CAS#	59-89-2		
Second Quarter 2008	U	U	U	U	U	10	-	82700
N-Nitrosopiperidine					CAS#	100-75-4		
Second Quarter 2008	U	U	U	U	U	10	-	82700
N-Nitrosopyrrolidine					CAS#	930-55-2		
Second Quarter 2008	U	U	U	U	U CAS#	10	-	82700
			-					02700
5-Nitroso-o-toluidine					CAS#	99-55-8		
Second Quarter 2008	U	U	U	U	U	10	-	82700
Parathion	-				CAS#	56-38-2		
Second Quarter 2008	U	U	U	U	U	10	-	82700
Pentachlorobenzene					CAS#	608-93-5		
Second Quarter 2008	U	U	U	U	U	10	-	82700
Pentachloroethane					CAS#	76-01-7		
Second Quarter 2008	UJ	UJ	U J	U J	U J	1	_	8260E
								02001
Pentachloronitrobenzene		11	U	11		82-68-8		82700
Second Quarter 2008	U	U	U	U	U	10	-	82/00
Pentachlorophenol						87-86-5		
Second Quarter 2008	U	U	U	U	U	20		82700
Phenacetin					CAS#	62-44-2		
Second Quarter 2008	U	U	U	U	U	10	-	82700
Phenanthrene					CAS#	85-01-8		
Second Quarter 2008	U	U	U	U	U CAS#	10	-	82700
								02,00
Phenol						108-95-2		
Second Quarter 2008	U	U	U	U	U	10	-	82700
Total Recoverable Phenolics					CAS#	C-020	-	
		U	U	U	U	20	-	9065
Second Quarter 2008	U	U	O	Ü	U	20		
Second Quarter 2008 Phorate	U				CAS#	298-02-2		

Upgradient well = 16C1

Analtye/Quarter	16C1	16MW8	16MW9	16WC1A	16WC1B		GPS	Method
2-Picoline					CAS#	931-19-1		
Second Quarter 2008	U	U	U	U	U	10	-	82700
Pronamide					CAS#	23950-58-5		
Second Quarter 2008	U	U	U	U	U	10	-	82700
1-Propanol					CAS#	71-23-8		
Second Quarter 2008	U	U	U	U	U	1000	-	8260E
2-Propanol					CAS#	67-63-0		
Second Quarter 2008	UN	U	U	U	U	1000	-	8260E
						107-12-0		
Propionitrile Second Quarter 2008	U	U	U	U	U CAS#	107-12-0		8260E
		<u> </u>						0200L
n-Propylbenzene					CAS#	103-65-1		
Second Quarter 2008	U	U	U	U	U	1	-	8260E
Pyrene					CAS#	129-00-0		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Pyridine					CAS#	110-86-1		
Second Quarter 2008	U	U	U	U	U	20	-	8270C
Safrole					CAS#	94-59-7		
Second Quarter 2008	U	U	U	U	U CAS#	10	-	82700
		-	-	-				32.00
Silvex	U	- 11	11	- 11	<i>CAS #</i>	93-72-1		0151
Second Quarter 2008	U	U	U	U		2.5	-	8151 <i>A</i>
S <u>tyrene</u>					CAS#			
Second Quarter 2008	U	U	U	U	U	1	-	8260E
Sulfotep					CAS#	3689-24-5		
Second Quarter 2008	U	U	U	U	U	10	-	82700
2,4,5-Trichlorophenoxyacetic a	acid				CAS#	93-76-5		
Second Quarter 2008	U	U	U	U	U	5	-	8151 <i>A</i>
1 2 4 5 Totrochlorohonzono					CAE#	95-94-3		
1,2,4,5-Tetrachlorobenzene Second Quarter 2008	U	U	U	U	U CAS#	10	_	82700
		0	-					02700
1,1,1,2-Tetrachloroethane					CAS#			
Second Quarter 2008	U	U	U	U	U	1	=	8260E
1,1,2,2-Tetrachloroethane					CAS#	79-34-5		
Second Quarter 2008	U	U	U	U	U	1	-	8260E
Tetrachloroethene					CAS#	127-18-4		
Second Quarter 2008	U	U	U	U	U	1	5	8260B
Fourth Quarter 2008	U	U	U	U	U	5	5	8260E
Tetrahydrofuran	U		U			109-99-9 5		00005
Second Quarter 2008	U	U	U	U J	U		-	8260E
2,3,4,6-Tetrachlorophenol						58-90-2		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Toluene					CAS#	108-88-3		
Second Quarter 2008	U	U	U	U	U	1	1000	8260E
Fourth Quarter 2008	U	U	U	U	U	5	1000	8260E
	-	-	-	-			. 300	32302
o-Toluidine	U		U	U	CAS#			00700
Second Quarter 2008	U	U	U	U	U	10	-	82700
T <u>oxaphene</u>					CAS#	8001-35-2		
Second Quarter 2008	U	U	U	U	U	1	-	8081 <i>A</i>
1,2,3-Trichlorobenzene	-				CAS#	87-61-6	-	
Second Quarter 2008	UJ	UJ	UJ	U J	U J	1	-	8260E
1,2,4-Trichlorobenzene					CAS#	120-82-1		
Second Quarter 2008	U J	UJ	U J	U J	U J	1	-	8260E
	-	-	-	-				
1,1,1-Trichloroethane Second Quarter 2008	U	U	U	U	CAS#	<i>71-55-6</i>	200	8260E
							200	
Fourth Quarter 2008	U	U	U	U	U	5	200	8260E
1,1,2-Trichloroethane					CAS#	79-00-5		
	U	U	U	U	U	1	-	8260B

Upgradient well = 16C1

Analtye/Ouarter	16C1	16MW8	16MW9	16WC1A	16WC1B	OL	GPS	Method
Trichloroethene					CAS#	79-01-6		
Second Quarter 2008	U	U	U	U	U	1	5	8260B
Fourth Quarter 2008	U	U	U	U	U	5	5	8260B
Trichlorofluoromethane					CAS#	75-69-4		
Second Quarter 2008	U	U	U	U	U	1	469.5	8260B
Fourth Quarter 2008	U	U	U	U	U	5	469.5	8260B
2,4,5-Trichlorophenol					CAS#	95-95-4		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
2,4,6-Trichlorophenol					CAS#	88-06-2		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
1,2,3-Trichloropropane					CAS#	96-18-4		
Second Quarter 2008	U	U	U	U	U	1	-	8260B
1,1,2-Trichloro-1,2,2-Trifluoro	ethane				CAS#	76-13-1		
Second Quarter 2008	U	U	U	U	U	1	-	8260B
Fourth Quarter 2008	U	U	U	U	U	10	-	8260B
O,O,O-Triethyl phosphorothic	oate				CAS#	126-68-1		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
1,2,4-Trimethylbenzene					CAS#	95-63-6		
Second Quarter 2008	U	U	U	U	U	1	-	8260B
1,3,5-Trimethylbenzene					CAS#	108-67-8		
Second Quarter 2008	U	U	U	U	U	1	-	8260B
sym-Trinitrobenzene					CAS#	99-35-4		
Second Quarter 2008	U	U	U	U	U	10	-	8270C
Vinyl acetate					CAS#	108-05-4		
Second Quarter 2008	U	U	U	U J	U	5	-	8260B
Vinyl chloride					CAS#	75-01-4		
Second Quarter 2008	U	U	U	U	U	1	-	8260B
Xylenes (Total)					CAS#	1330-20-7		
Second Quarter 2008	U	U	U	U	U	3	10000	8260B
Fourth Quarter 2008	U	U	U	U	U	5	10000	8260B

 $Upgradient \ well = 16C1 \qquad \qquad All \ Results \ in \ ug/L.$

Analtye/Ouarter 16C1 16MW8 16MW9 16WC1A 16WC1B OL GPS Method

Definitions:

The following definitions apply to results reported for Appendix IX monitoring events.

All Appendix IX monitoring results for compliance wells are reported to the detection limit.

Appendix IX Monitoring Events: 3Q-2003, 2Q -2004, 2Q-2005, 3Q2006, 2Q2007, 2Q2008

QL Denotes permit required quantitation limit.

U denotes not detected at or above the detection limit.

UA denotes not detected at or above the adjusted detection limit.

J Denotes result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above the detection limit and detection limit and QL are estimated. When used with "UA" (i.e., "UAJ"), denotes analyte not detected at or above adjusted detection limit and and adjusted detection limit and QL are estimated.

UN Denotes analyte concentration is less than the quantitation limit and/or five times the blank concentration. Not reliably detected due to blank contamination. This qualifier used only for Appendix IX monitoring event when compliance well results are reported to at or above the project detection limit.

R Denotes result rejected.

Q Denotes data validation qualifier. X Denotes mass spectral confirmation not obtained-result suspect.

Background Denotes background concentrations listed in Appendix F to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002), where applicable. CAS# Denotes Chemical Abstract Services registration number.

GPS Denotes Groundwater Protection Standards listed in Appendix G to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002).

NS denotes not sampled. NA denotes not analyzed.

"-" denotes not detected (pre-2nd Quarter 2003) or not available / not sampled (beginning 2nd Quarter 2003).

The following definitions apply to results reported for non-Appendix IX monitoring events. All non-Appendix IX monitoring results for compliance wells are reported to at or above the quantitation limit.

QL Denotes permit required quantitation limit.

U Denotes analyte not detected at or above QL.

UA Denotes analyte not detected at or above adjusted sample QL.

J Denotes result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above QL and QL is estimated. When used with "UA" (i.e., "UAJ"), denotes analyte not detected at or above adjusted QL and adjusted QL is estimated.

R Denotes result rejected.

Q Denotes data validation qualifier.

Background Denotes background concentrations listed in Appendix F to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002), where applicable. **CAS#** Denotes Chemical Abstract Services registration number.

GPS Denotes Groundwater Protection Standards listed in Appendix G to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002).

NOTE:

Fourth Quarter 2008

Due to laboratory error all HWMU 16 samples were analyzed using Method 8260B 5 ml purge instead of a 25 ml purge which resulted in a higher QL. For these samples, all results were evaluated to the detection limit, which is comparable to the permit QL. Results below the laboratory QL but at or above the permit QL are reported and qualified as estimated.



APPENDIX D-3

HWMU-16 2008 LABORATORY ANALYTICAL RESULTS PLUME MONITORING WELLS

Target Analyte Monitoring Results At Or Above Permit Quantitation Limit HWMU-16 Plume Monitoring Wells

Radford Army Ammunition Plant, Radford, Virginia

All Results in ug/L.

Upgradient well = 16C1

Analtye/Quarter	16C1 Q	16-1 Q	16-2 Q	16-3 Q	16-5 Q	16WC2B Q	16SPRING Q	QL	Background	Metho
Antimony						CAS #7440	7-36-0			
Second Quarter 2008	U	U	U	U	U	1.4	U	1	3	6020
Fourth Quarter 2008	U	-	U	U	U	U	U	1	3	6020
Arsenic		I.				CAS # 7440)-38-2			
Second Quarter 2008	U	U	U	U	U	U	U	10	1	6020
Fourth Quarter 2008	U	-	U	U	U	U	U	10	1	6020
Barium						CAS # 7440)-39-3			
Second Quarter 2008	201 J	245	310	776	195	134	319	10	175.4	6020
Fourth Quarter 2008	182 J	-	303 J	647 J	182 J	112 J	240 J	10	175.4	6020
Beryllium						CAS #7440)-41-7			
Second Quarter 2008	U	U	U	U	U	U	U	1	0.7	6020
Fourth Quarter 2008	U	-	U	U	U	U	U	1	0.7	6020
Cadmium						CAS # 7440)-43-9			
Second Quarter 2008	U	U	U	U	U	U	U	1	0.2	6020
Fourth Quarter 2008	U	-	U	U	U	U	U	1	0.2	6020
Chromium						CAS # 7440)-47-3			
Second Quarter 2008	U	U	U	5	5.9	U	U	5	6.2	6020
Fourth Quarter 2008	U	-	U	U	U	U	U	5	6.2	6020
Cobalt						CAS #7440)-48-4			
Second Quarter 2008	U J	UJ	U J	U J	UJ	UJ	UJ	5	5	6020
Fourth Quarter 2008	U	-	U	U	U	U	U	5	5	6020
Copper						CAS # 7440)-50-8			
Second Quarter 2008	U	U	U	U	U	U	U	5	13	6020
Fourth Quarter 2008	U	-	U	U	U	U	U	5	13	6020
Lead						CAS # 7439)-92-1			
Second Quarter 2008	U	U	U	U	U	U	U	1	10	6020
Fourth Quarter 2008	U	-	U	U	1	U	U	1	10	6020
Mercury						CAS # 7439	D-97-6			
Second Quarter 2008	U	U	U	U	U	U	U	0.2	0.2	7470
Fourth Quarter 2008	U	-	U	U	U	U	U	2	0.2	7470 <i>i</i>
Nickel						CAS #7440	0-02-0			
Second Quarter 2008	U J	U	U	U	U	U	U	10	16	6020
Fourth Quarter 2008	U	-	U	U	U	U	U	10	16	6020
Selenium						CAS # 7782	2-49-2			
Second Quarter 2008	U	U	U	U	U	U	U	10	1	6020
Fourth Quarter 2008	U	-	U	U	U	U	U	10	1	6020
Silver						CAS # 7440)-22-4			
Second Quarter 2008	U	U	U	U	U	U	U	2	0.5	6020
Fourth Quarter 2008	U	-	U	U	U	U	U	2	0.5	6020
Vanadium		1		1		CAS #7440)-62-2		1	
Second Quarter 2008	U	U	U	U	U	U	U	10	151	6020
Fourth Quarter 2008	U	-	U	U	U	U	U	10	151	6020
Zinc						CAS #7440			1	
Second Quarter 2008	U	U	U	U	U	12.2	U	10	51	6020
3000a Quartor 2000	~		"	~			Ŭ		٥.	3020



Target Analyte Monitoring Results At Or Above Permit Quantitation Limit HWMU-16 Plume Monitoring Wells

Radford Army Ammunition Plant, Radford, Virginia

All Results in ug/L.

Upgradient well = 16C1

All Results in ug/L	16C1 Q	16.1.0	162.0	162.0	165.0	16WC2B 0	16SPRING Q		tt = 10C1 Background	Motha
Analtye/Quarter 2-Butanone	16C1 Q	16-1 Q	16-2 Q	16-3 Q	16-5 Q			QL	Background	Metho
Second Quarter 2008	U	U	U	U	l u	<i>CAS #78-9</i>	U U	10	1 11	8260E
Fourth Quarter 2008	U	_	U	U	U	U	U	10 10	1.1	8260E
Carbon tetrachloride			0	· ·	0	_		10	1	02001
	1	1	1	1 11	1	CAS #56-2	1		1 00	0000
Second Quarter 2008 Fourth Quarter 2008	U	U	U	U	U	U	U	1 5	0.2	8260E 8260E
Chloroethane	U	_	U	U	U			5	0.2	02000
		1	1	1	1	CAS #75-0				
Second Quarter 2008 Fourth Quarter 2008	4.6	U -	U	U	U	U	U	1 5	20.7	8260
	4 J	-	U	U	U	_		э	20.7	8260E
Dichlorodifluoromet	1	1	1	1	1	CAS # 75-7	1	1 .	1	l
Second Quarter 2008	U	U	U	U	U	U	U	1	46.5	8260
Fourth Quarter 2008	U	-	U	U	U	U	U	5	46.5	8260E
1,1-Dichloroethane	1	1	1	1	1	CAS # 75-3		n	1	î
Second Quarter 2008	6.6	U	U	U	U	U	U	1	9.5	8260
Fourth Quarter 2008	8	-	U	U	U	U	U	5	9.5	8260
Diethyl ether	<u> </u>		ii.	1	1	CAS #60-2	T:	n		ń
Second Quarter 2008	U	U	U	U J	U	U	U	12.5	75.5	8260
Fourth Quarter 2008	31	-	U	U	U	U	U	5	75.5	8260E
Dimethyl ether						CAS #115	10-6			
Second Quarter 2008	8.1 J	U	U	U J	1.9 J	U	U	12.5	17.0	8260
Fourth Quarter 2008	U J	-	UJ	UJ	U J	UJ	UJ	10	17.0	8260
2,4-Dinitrotoluene						CAS # 121-	14-2			
Second Quarter 2008	U	U	U	U	U	U	U	10	0.1	82700
Fourth Quarter 2008	U	-	U	U	U	U	U	10	0.1	82700
2,6-Dinitrotoluene						CAS #606-	20-2			
Second Quarter 2008	U	U	U	U	U	U	U	10	0.11	82700
Fourth Quarter 2008	U	-	U	U	U	U	U	10	0.11	82700
Ethylbenzene						CAS # 100-	41-4			
Second Quarter 2008	U	U	U	U	U	U	U	1	0.1	8260E
Fourth Quarter 2008	U	-	U	U	U	U	U	5	0.1	8260E
Chloromethane						CAS #74-8	7-3			
Second Quarter 2008	U	U	U	U	U	U	U	1	0.3	8260E
Fourth Quarter 2008	U	-	U	U	U	U	U	5	0.3	8260E
Methylene chloride			1		•	CAS #75-0	9-2			
Second Quarter 2008	5.3	U	U	U	U	U	U	1	13.95	82601
Fourth Quarter 2008	6	-	U	U	U	U	U	5	13.95	8260
Tetrachloroethene						CAS # 127-	18-4			
Second Quarter 2008	U	U	U	U	U	U	U	1	0.7	8260
Fourth Quarter 2008	U	-	U	U	U	U	U	5	0.7	8260
Toluene		1	1	1	1	CAS # 108-	88-3		1	1
Second Quarter 2008	U	U	U	U	U	U	U	1	0.1	82601
Fourth Quarter 2008	U	_	U	U	U	U	U	5	0.1	82601
1,1,1-Trichloroethan	e					CAS #71-5	T5-6		1	
Second Quarter 2008	U	U	U	U	U	U	U	1	9.2	8260E
Fourth Quarter 2008	U		U	U	U	U	U	5	1	8260E



Target Analyte Monitoring Results At Or Above Permit Quantitation Limit HWMU-16 Plume Monitoring Wells

Radford Army Ammunition Plant, Radford, Virginia

All Results in ug/L.

 $Upgradient \ well = 16C1$

Analtye/Quarter	16C1 Q	16-1 Q	16-2 Q	16-3 Q	16-5 Q	16WC2B Q	16SPRING Q	QL	Background	Method
Trichloroethene						CAS #79-0	1-6			
Second Quarter 2008	U	U	U	U	U	U	U	1	0.1	8260B
Fourth Quarter 2008	U	-	U	U	U	U	U	5	0.1	8260B
Trichlorofluorometh	nane					CAS # 75-6	9-4		,	
Second Quarter 2008	U	U	U	U	U	U	U	1	11.3	8260B
Fourth Quarter 2008	U	-	U	U	U	U	U	5	11.3	8260B
1,1,2-Trichloro-1,2,2	-Trifluoro	ethane				CAS #76-1	3-1		,	
Second Quarter 2008	U	U	U	U	U	U	U	1	1.2	8260B
Fourth Quarter 2008	U	-	U	U	U	U	U	10	1.2	8260B
Xylenes (Total)						CAS # 1330)-20-7		,	
Second Quarter 2008	U	U	U	U	U	U	U	3	0.2	8260B
Fourth Quarter 2008	U	-	U	U	U	U	U	5	0.2	8260B

Definitions

All plume monitoring well results reported to at or above the permit quantitation limit except for the upgradient well during the Appendix IX monitoring Event. During this event, results for the upgradient well are reported to the detection limit.

- **Q** Denotes data validation qualifier.
- QL Denotes permit required quantitation limit.
- U Denotes analyte not detected at or above QL.
- UA Denotes analyte not detected at or above adjusted sample QL.
- J Denotes result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above QL and QL is estimated. When used with "UA" (i.e., "UAJ"), denotes analyte not detected at or above adjusted QL and adjusted QL is estimated.
- UN Denotes analyte concentration is less than the quantiation limit and five times the blank concentration.
 Not reliably detected due to blank contamination. This qualifier used only for Appendix IX monitoring event when compliance well results are reported to at or above the project detection limit.
- R Denotes result rejected.

Background Denotes background concentrations listed in Appendix F to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002).

CAS# Denotes Chemical Abstract Services registration number.

GPS Denotes groundwater protection standard.

NS denotes not sampled. NA denotes not analyzed. "-"denotes not detected (pre-2nd Quarter 2003) or not available / not sampled (beginning 2nd Quarter 2003).

Notes:

4Q2004. No data for 16-1 8270C-semivolatiles. Well dry-insufficient sample volume.

4Q2006 - No data for 16-1; well dry.

4Q2008- No data for 16-1; well dry.

NOTE:

Fourth Quarter 2008

Due to laboratory error all HWMU 16 samples were analyzed using Method 8260B 5 ml purge instead of a 25 ml purge which resulted in a higher QL. For these samples, all results were evaluated to the detection limit, which is comparable to the permit QL. Results below the laboratory QL but at or above the permit QL are reported and qualified as estimated.



	APPENDIX D-4		
ESTABLISHED BACKGROUND	VALUES AND CO	MPUTATIONS FOR	HWMU-16

- It was not understood why the majority of fluorescein detections were considered false positive detections. The basis of this observation is unclear considering a lack of background and laboratory confirmation results.
- It was not apparent why certain samples were selected for laboratory confirmation and others were not. There was no apparent consistency in the selection of samples for laboratory confirmation.
- Samples were submitted for confirmation laboratory analyses three months or more
 following the collection of the samples in the field. No information was provided
 regarding the custody and/or storage of the samples. The samples were submitted to the
 analytical laboratory with incomplete chain-of-custody (COC), and the COC
 documentation was not completed by the laboratory.

In summary, the data from the study do not provide the basis for meaningful interpretation. Any attempt to formulate conclusions from the data as presented regarding the presence of preferred or predominant groundwater flow patterns is not warranted or recommended.

3.3 HWMU-16 GROUNDWATER MONITORING ANALYTE LIST

The groundwater monitoring analyte list for HWMU-16 is presented in Table 1 (Appendix B). The list represents the subset of the constituents listed in Appendix III of 40 CFR Part 261 that previously have been detected in the groundwater and/or that are reasonably expected to be in or derived from waste contained in HWMU-16. As discussed in Section 3.5.2 below, 12 inorganic constituents and two explosive/propellant constituents have been detected in the groundwater monitoring network for HWMU-16 at statistically significant concentrations above the Unit's calculated background concentrations. The inorganic constituents may be derived from the aquifer formation materials; however, the two explosive/propellant constituents (2,4-Dinitrotoluene and 2,6-Dinitrotoluene) are byproducts of wastes derived from explosives. Therefore, the two explosive/propellant constituents detected could only be from HWMU-16.

The concentration limits established for the hazardous constituents also are listed in Table 1. The concentration limits represent either background concentrations calculated for the constituents in this GWQAR, Maximum Concentrations of Constituents for Ground-water Protection listed in Table 1 of 40 CFR 264.94, USEPA Drinking Water Standard Maximum Contaminant Levels (MCLs), or alternate concentration limits (ACLs) established by the VDEQ (July 1998). Certain organic constituents on the list do not have USEPA MCLs or VDEQ ACLs; they also do not have calculated background concentrations because they have not been detected in the Unit's upgradient well. Therefore, the concentration limits for these constituents are equal to their respective method detection limits.

As Alliant discussed with the VDEQ in the past, the reliability of previous laboratory analytical data - particularly dissolved metals data - appeared to be questionable in some cases. In an April 9, 1996 letter to C. Jake (Alliant), the VDEQ agreed that only total metals concentrations in groundwater would be measured, as described in a USEPA Region III guidance on groundwater sampling in karst terrain. Therefore, all references to metals concentrations in this GWQAR refer to total metals concentrations.

3.4 HWMU-16 GROUNDWATER BACKGROUND CONCENTRATIONS

Background concentrations were calculated for each constituent in the groundwater monitoring program using the analytical data from 1996 through 1998 for upgradient well 16C1.

The background concentration calculations were based on site wide 95% confidence, 95% coverage upper prediction intervals. The calculated background concentrations are listed in Table 2 (Appendix B). The background concentrations were used to construct the outermost closing contours on the Isoconcentration Maps (Appendix A).

3.5 HWMU-16 STATISTICAL ANALYSIS

Statistical evaluations for HWMU-16 are performed annually and submitted to the VDEQ in accordance with the annual reporting requirements specified in 40 CFR 265.94. As part of this GWQAR, statistical evaluations were performed on Fourth Quarter 1998 analytical data in accordance with the procedures and guidance provided in the following documents:

- Title 40 of the Code of Federal Regulations, 40 CFR 264.97 and 264.98;
- VDEQ Guidance for statistical analysis titled "Data Analysis Plan," undated;
- Interim Final Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, USEPA, April 1989;
- Addendum to Interim Final Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, USEPA, July 1992; and
- Statistical Methods for Groundwater Monitoring, Gibbons, R.D., 1994.

Statistical threshold values were computed for the 54 constituents for which HWMU-16 is currently monitored based on the concentrations of those constituents in upgradient (background) well 16C1. All data starting with First Quarter 1996 to Fourth Quarter 1998 were used for this purpose. The 1996 through 1998 monitoring data have been submitted previously to the VDEQ by Alliant in quarterly monitoring reports; therefore, the data are not listed in this GWQAR. Statistical comparisons were performed for the Fourth Quarter 1998 data set. Comparison statistical analyses were performed for all constituents which were detected in any downgradient well during that event.

3.5.1 Background Data and Statistical Comparisons

Statistical analyses were performed using the analytical results from upgradient well 16C1 data as background data. Based on the percentage of non-detects and the distribution of the background data, methods of statistical comparisons varied. Background average, standard deviation and other descriptive statistical data were computed for all constituents and are presented in Appendix C.

The constituents listed below were 100% non-detected in the background data. The background threshold levels (BTLs) for these constituents were established as equal to their detection limits (DL). Detections of these constituents in the downgradient wells during Fourth Quarter 1998 were compared to these BTLs.

Backgro	und Threshold Leve	el (BTL) = Detecti	on Limit (DL)						
Parameter Sample Size % Non-Detects (µg/l) BTL (µg/l)									
Antimony	12	100	3	3					
Arsenic	12	100	1	1					
Bromoform	12	100	0.3	0.3					
Carbon tetrachloride	12	100	0.2	0.2					
Chlorobenzene	12	100	0.1	0.1					
Chloromethane	12	100	0.3	0.3					
Cyanide	12	100	10	10					

Background Threshold Level (BTL) = Detection Limit (DL)								
DL BTL								
Parameter	Sample Size	% Non-Detects	(μ g/l)	(μg/l)				
Di-n-butyl phthalate	12	100	5	5				
1,2-Dichloroethane	12	100	0.1	0.1				
trans-1,2-Dichloroethene	12	100	0.1	0.1				
1,4-Dichlorobenzene	12	100	0.1	0.1				
Ethylbenzene	12	100	0.1	0.1				
Mercury	12	100	0.2	0.2				
Methyl ethyl ketone	12	100	1.1	1.1				
Selenium	12	100	1	1				
1,1,2,2-Tetrachloroethane	12	100	0.3	0.3				
1,1,2-Trichloroethane	12	100	0.5	0.5				
Trichloroethene	12	100	0.1	0.1				
Toluene	12	100	0.1	0.1				
2378-TCDF	12	100	0.0485 ppt	0.0485 ppt				
12378-PECDF	12	100	0.0439 ppt	0.0439 ppt				
23478-PECDF	12	100	0.0417 ppt	0.0417 ppt				
123478-HXCDF	12	100	0.0390 ppt	0.0390 ppt				
123678-HXCDF	12	100	0.0377 ppt	0.0377 ppt				
234678-HXCDF	12	100	0.0428 ppt	0.0428 ppt				
123789-HXCDF	12	100	0.0415 ppt	0.0415 ppt				
1234678-HPCDF	12	100	0.0615 ppt	0.0615 ppt				
1234789-HPCDF	12	100	0.0709 ppt	0.0709 ppt				
OCDF	12	100	0.1307 ppt	0.1307 ppt				

Non-parametric prediction intervals were computed for all of the constituents for which the data from background well 16C1 satisfied one of the following two criteria, per VDEQ regulations and guidance as well as USEPA guidance:

- Percentage of non-detects was greater than or equal to 50 and less than 100; or
- Percentage of non-detects was less than 50, but data was not normally distributed in original or log-transformed mode.

The background threshold levels for these constituents were set as equal to their upper prediction limits (UPLs). The background and relevant statistical data for these constituents are summarized below. The confidence level and false positive rate were calculated based on the number of background data points available and number of future comparisons. For all constituents, the confidence level was determined to be equal to 0.933, and the false positive rate was equal to 0.067. Since the upper control limit of a non-parametric interval cannot be adjusted for multiple comparisons and inadequate number of background data, the number of resampling events required was adjusted to account for the high error rates inherent in those situations. The number of confirmation resamples required for all constituents is 2. The background and relevant statistical data for these constituents are summarized below. Associated statistical computations are presented in Appendix C.

BTL = Upper Prediction Limit of Non-parametric Prediction Interval w/false positive rate=0.067						
Parameter	Sample Size	% Non-Detects	DL _ (μg/l)	BTL (μg/l)		
Beryllium	12	75	0.2	0.7		
Cadmium	12	75	2 0.1	0.2		
Cobalt	12	75	1	5		
Copper	12	50	1	13		
1,1-Dichloroethane	12	0	0.2	9.5		
2,4-Dinitrotoluene	12	92	0.08	0.10		

BTL = Upper Prediction Limit of Non-parametric Prediction Interval w/false positive rate=0.067						
Parameter	Sample Size	% Non-Detects	DL (μg/l)	. BTL (μg/l)		
2,6-Dinitrotoluene	12	75	0.08	0.11		
Lead	12	42	, 1	10		
Nickel	12	92	15	16		
Silver	12	75	0.2	0.5		
Thallium	12	67	: 1	6		
TOC	12	75	1000	7000		
1,1,1-Trichloroethane	12	17	. 0.3	9.2		
Vanadium	12	83	4	151		
Vinyl Chloride	12	92	0.1	0.1		
Xylene (total)	12	92	0.1	0.2		
Zinc	12	50	5	51		

Chromium exhibited normally distributed data (excluding non-detects) with between 25% and 50% non-detects in the background well. The mean and standard deviation of the background data for chromium were adjusted using Cohen's Maximum Likelihood Estimator Method (1959, 1961). A one-sided parametric prediction interval was then computed for chromium based on the adjusted mean and standard deviation. The Upper Prediction Limit was set as the BTL for chromium. The background and relevant statistical data for chromium are summarized below. Cohen's adjustment computations and prediction interval computations are presented in Appendix C.

BTL = Upper Prediction Limit of Prediction Interval w/false positive rate=0.05							
Original Mean = 3.54, Original SD = 1.933 Adjusted Mean = 3.642. Adjusted SD = 1.95							
AC	ijusteu Mean – 3.0	042. Adjusted SD	= 1.95				
Parameter Sample Size % Non-Detects (ug/l) (ug/l)							
ParameterSample Size% Non-Detects(μg/l)(μg/l)Chromium122516.2							

The following constituents exhibited normally distributed background data with less than 25% non-detects. One sided parametric prediction intervals were computed on the background data for all of these constituents. The UPLs for these constituents were set as their respective BTLs, with one exception. For pH, a two-sided parametric prediction interval was computed; therefore, the BTL for pH consisted of a range between the lower prediction limit (LPL) and the upper prediction limit. The background concentration calculations were based on a site wide 95% confidence, 95% coverage upper prediction intervals. When adjusted for multiple comparisons of the background data, the minimum required false positive rate was below 1% (0.01). A 99% confidence level (0.01 false positive rate) was used for all individual comparisons, which with the most conservative assumptions provided a site-wide false positive rate of >0.05 for all constituents. The background and relevant statistical data for these constituents are summarized below. The prediction interval computations for these constituents are presented in Appendix C.

BTL = UPL of one-sided Prediction Interval (exception pH) w/site-wide false positive rate>0.05 (individual comparisons false positive rate=0.01) BTL for pH = LPL - UPL of two-sided Prediction Interval								
Parameter Sample Size % Non-Detects (µg/l) (µg/l)								
Barium	12	0	2	175.4				
Dichlorodifluoromethane	12	8	0.3	46.5				
Tetrachloroethene 12 17 0.1 0.7								
TOX	12	17	5	42.2				

BTL = UPL of one-sided Prediction Interval (exception pH) w/site-wide false positive rate>0.05 (individual comparisons false positive rate=0.01) BTL for pH = LPL - UPL of two-sided Prediction Interval								
Parameter Sample Size % Non-Detects (μg/l) (μg/l) Trichlorofluoromethane 12 0 0.5 11.3								
Specific Conductivity 8 0 1 μS/cm 672 μS/cm								
pH	8	0	0.1 pH units	5.7 to 7.9 pH units				

3.5.2 Results of Statistical Comparisons

The following table lists the constituents which were detected during the Fourth Quarter 1998 event at concentrations exceeding their respective background threshold levels (BTLs), and the downgradient wells in which they were detected.

Parameter	Monitoring Well(s)
Arsenic	16-5, 16WC2B
Barium	16-2, 16-3, 16-5, 16WC1A, 16WC1B, 16WC2B, 16SPRING
Beryllium	16WC1B, 16WC2B
Cadmium	16WC1B
Chromium	16-3, 16-5, 16WC1B, 16WC2B
Cobalt	16-5, 16WC1B, 16WC2B
Copper	16-5, 16WC1B, 16WC2B
Lead	16WC1B
Mercury	16WC1B
Nickel	16-5, 16WC1A, 16WC2B
Selenium	16-5, 16WC1B, 16WC2B
Zinc	16WC1B
2,4-Dinitrotoluene	16-3, 16-5, 16WC1B, 16WC2B, 16SPRING
2,6-Dinitrotoluene	16WC1A, 16WC1B

Any HWMU-16 target constituents not listed above were not detected in the downgradient monitoring wells at concentrations exceeding their respective BTLs.

3.6 HWMU-16 PLUME DELINEATIONS

In accordance with VDEQ instructions presented during the May 19, 1999 meeting between Alliant and the VDEQ, Isoconcentration Maps were produced to depict constituent plumes in the groundwater beneath the site (Appendix A). In order to evaluate the shape and position of constituent plumes over time, historical Isoconcentration Maps were developed using the historical maximum concentrations for the constituents monitored at the site for the time periods of 1992 through 1995 and 1996 through 1998. The historical maximum concentrations for these time periods are listed in Tables 3 and 4, respectively (Appendix B).

Groundwater analytical data collected prior to 1992 were not included in the evaluation of historical maximum concentrations. The data collected prior to 1992 are considered unreliable due to "order-of-magnitude" variations in parameter concentrations from quarter to quarter, as well as a general lack of laboratory QA/QC. Additionally, the groundwater monitoring analyte lists prior to 1992 did not include many of the parameters on the current groundwater monitoring analyte list for HWMU-16.

TABLE 2 HWMU-16 Calculated Background Values

Constituent	Background Concentration
	(μg/l unless otherwise noted)
Antimony	3
Arsenic	1
Barium	175.4
Beryllium	0.7
Cadmium	0.2
Chromium	6.2
Cobalt	5
Copper	13
Lead	. 10
Mercury	0.2
Nickel	16
Selenium	1
Silver	0.5.
Thallium	6 '
Vanadium	151
Zinc	51
Bromoform	0.3
Carbon Tetrachloride	0.2
Chlorobenzene	0.1
Chloromethane	0.3
1,4-Dichlorobenzene	0.1
Dichlorodifluoromethane	46.5
1,1-Dichloroethane	9.5
1,2-Dichloroethane	0.1
trans-1,2-Dichloroethene	0.1
Ethylbenzene	0.1
Methyl Ethyl Ketone	1.1
1,1,2,2-Tetrachloroethane	0.3 ,
Tetrachloroethene	0.7
Toluene	0.1
1,1,1-Trichloroethane	9.2
1,1,2-Trichloroethane	0.5
Trichloroethene	0.1
Trichlorofluoromethane	11.3
Vinyl Chloride	0.1
Xylenes (total)	0.2

TABLE 2 HWMU-16 Calculated Background Values

Constituent	Background Concentration (μg/l unless otherwise noted)
Di-n-butylphthalate	5
2,4-Dinitrotoluene	0.10
2,6-Dinitrotoluene	0.11
2378-TCDF	0.0485 ppt
12378-PECDF	0.0439 ppt
23478-PECDF	0.0417 ppt
123478-HXCDF	0.0390 ppt
123678-HXCDF	0.0377 ppt
234678-HXCDF	0.0428 ppt
123789-HXCDF	0.0415 ppt
1234678-HPCDF	0.0615 ppt
1234789-HPCDF	0.0709 ppt
OCDF	0.1307.ppt
Cyanide	10 7
Total Organic Carbon (x4)	7000
Total Organic Halides (x4)	42.2
Specific Conductivity	672 μS/cm
pH	5.7 to 7.9 pH units

Appendix IX Constituents Detected Since Permit Issuance HWMUs 5, 7, 10, and 16 Radford Army Ammunition Plant

Unit	Quarter Initially Detected	Constituent	Background Calculated or QL?	Background (ug/L)	GPS Required? (261 Appendix VIII)	Proposed GPS (ug/L)	Source
		Chromium	QL	5	yes	100	USEPA MCL
		Diethyl Ether	QL	12	no	NA	NA
HMWU-5	Fourth Quarter 2003	2-Nitroaniline	QL	20	no	NA	NA
HIVIVV U-3		4-Nitroaniline	QL	20	yes	20	Background/QL
		Nitrobenzene	QL	10	yes	10	Background/QL
	Third Quarter 2006	Dichlorodifluoromethane	QL	1	yes	125.2	VDEQ ACL
HWMU-7	Third Quarter 2003	Copper	Calculated	49	no	NA	NA
HVVIVIU-7	Second Quarter 2004	Zinc	Calculated	217	no	NA	NA
	First Quarter 2003	Cobalt	QL	5	no	NA	NA
HWMU-10	Second Quarter 2003	Vanadium	QL	10	no	NA	NA
	Second Quarter 2005	Acetone	QL	10	no	NA	NA
	Second Quarter 2005	2-Propanol	QL	50	no	NA	NA
		Chloroethane	Calculated	20.7	yes	20.7	Background/QL
	Second Quarter 2003	Diethyl Ether	Calculated	75.5	no	NA	USEPA MCL NA NA Background/QL Background/QL VDEQ ACL NA NA NA NA NA NA
HWMU-16		Dimethyl Ether	Calculated	17.0	no	NA	NA
	Third Quarter 2003	Methylene Chloride	Calculated	13.95	no*	NA	NA
	Second Quarter 2004	1,1,2-Trichloro-1,2,2-trifluoroethane	Calculated	1.2	no*	NA	NA

- HWMU-5: The additional Appendix IX constituents detected in the downgradient point of compliance wells were not detected above their respective Quantitation Limits (QLs) in the upgradient well. As a result, background concentrations for those constituents were set as equal to their respective QLs. In accordance with the Permit (Condition V.J.1.g.), GPS are proposed for those additional Appendix IX constituents that are listed in Appendix VIII of 40 CFR Part 261 (chromium, 4-nitroaniline, nitrobenzene, and dichlorodifluoromethane). No GPS are proposed for the additional Appendix IX constituents that are not listed in Appendix VIII of 40 CFR Part 261 (diethyl ether and 2-nitroaniline).
- HWMU-7: Background concentrations for the additional Appendix IX constituents detected in the downgradient point of compliance wells (copper and zinc) were previously calculated and submitted to the VDEQ in the August 1998 *Groundwater Quality Assessment Report for HWMU-7* prepared by ERM, Inc. In accordance with the Permit (Condition V.J.2.g.), no GPS are proposed for the additional Appendix IX constituents (copper and zinc), as they are not listed in Appendix VIII of 40 CFR Part 261.
- HWMU-10: The additional Appendix IX constituents detected in the downgradient point of compliance wells were not detected above their respective Quantitation Limits (QLs) in the upgradient well. As a result, background concentrations for those constituents were set as equal to their respective QLs. In accordance with the Permit (Condition V.J.3.g.), no GPS are proposed for the additional Appendix IX constituents (cobalt, vanadium, acetone, and 2-propanol), as they are not listed in Appendix VIII of 40 CFR Part 261.
- HWMU-16: Background concentrations for additional Appendix IX constituents chloroethane, diethyl ether, dimethyl ether, and methylene chloride were calculated using data collected from upgradient well 16C1 during the period from Third Quarter 2003 through Third Quarter 2004. The background concentration for additional Appendix IX constituent 1,1,2-trichloro-1,2,2-trifluoroethane was calculated using data collected from upgradient well 16C1 during the period from Second Quarter 2004 through Third Quarter 2006. In accordance with the Permit (Condition V.J.4.g.), GPS are proposed for additional Appendix IX constituents that are listed in Appendix VIII of 40 CFR Part 261 (chloroethane). No GPS are proposed for the additional Appendix IX constituents that are not listed in Appendix VIII of 40 CFR Part 261 (diethyl ether and dimethyl ether).

 *Methylene chloride and 1,1,2-trichloro-1,2,2-trifluoroethane should not be added to the Groundwater Monitoring List for HWMU-16, as these constituents were only detected in the upgradient well for the Unit, and not in the downgradient point of compliance wells.

Statistical Computations – RAAP HWMU-16 – 1,1,2-Trichloro-1,2,2-Trifluoroethane

In accordance with the facility permit and VHWMR, statistical background concentration is being established for 1,1,1-Trichloro-1,2,2-Trifluoroethane. Inter-well upper prediction limits (UPL) were calculated on the background data for this target parameter in accordance with the facility permit and VHWMR (40 CFR 264.97(h)). Background data for this target parameter consisted of all data for the background well 16C1 collected from 2nd quarter 2004 through 3rd quarter 2006.

Discussion of Tests for Normality

The power of a statistical tool to account for false positive and false negative results, while accurately detecting true statistical variations for a facility under scrutiny depends on numerous factors, one of which is the distribution of the data. A great number of statistical tools are based on the assumption that data are normally distributed. Hence the distribution of the sample population for parameters evaluated under this statistical analysis is first determined. Sample populations are tested for normal distribution using several normality tests. "Groundwater Information Tracking System with Statistical Analysis Capability" (GRITS/STAT) v5.0 was the software used to run these statistical tests. GRITS/STAT is an analytical software package provided by the USEPA. The distributions of the data sets were verified in the original mode as well as in log-transformed mode. The normality of the data set was evaluated using the Shapiro-Wilk test for normality.

Discussion of Prediction Interval Tests

Normality tests are performed prior to running parametric tests (tests that require that the data be normal). Results of the normality tests show that the background data for 1,1,2-Trichloro-1,2,2-Trifluoroethane is non-normally distributed. Non-parametric UPL (NUPL) was constructed on the background data for this parameter. The confidence levels of NUPLs are typically approximate and estimated to be around 91%.

Summary of UPL

Parameter	Background Data Distribution	Type of UPL	Multiple Comparisons/year	UPL (μg/l)
1,1,2-Trichloro-1,2,2- Trifluoroethane	Non-Normal	NUPL	N/A	1.2

Statistical Computations – RAAP HWMU-16

In accordance with the facility permit and VHWMR, statistical background concentrations are being established for the four new target parameters chloroethane, diethyl ether, dimethyl ether and methylene chloride. These four target parameters were added to the facility monitoring program during the 3rd quarter 2003 monitoring event. Inter-well upper prediction limits (UPL) were calculated on the background data for the target parameters in accordance with the facility permit and VHWMR (40 CFR 264.97(h)). Background data for these target parameters consisted of all data for the background well 16C1 collected from 3rd quarter 2003 through 3rd quarter 2004.

Discussion of Tests for Normality

The power of a statistical tool to account for false positive and false negative results, while accurately detecting true statistical variations for a facility under scrutiny depends on numerous factors, one of which is the distribution of the data. A great number of statistical tools are based on the assumption that data are normally distributed. Hence the distribution of the sample population for parameters evaluated under this statistical analysis is first determined. Sample populations were tested for normal distribution using several normality tests. "Groundwater Information Tracking System with Statistical Analysis Capability" (GRITS/STAT) v5.0 was the software used to run these statistical tests. GRITS/STAT is an analytical software package provided by the USEPA. The distributions of the data sets were verified in the original mode as well as in log-transformed mode. The normality of the data sets was evaluated using the Shapiro-Wilk test for normality.

Discussion of Prediction Interval Tests

Normality tests are performed prior to running parametric tests (tests that require that the data be normal). A 99% confidence parametric inter-well UPL was computed for each of the four target parameters that showed normally distributed background data. Results of the normality tests show that the background data for chloroethane, diethyl ether and methylene chloride are normally distributed, and the background data for dimethyl ether is non-normally distributed. Non-parametric UPL (NUPL) was constructed on the background data for dimethyl ether, and parametric UPLs (PUPL) were constructed on the background data for chloroethane, diethyl ether and methylene chloride. No adjustments to the error rates were made to the NUPLs for multiple comparisons. Adjustment for 10 comparisons per year (considering 10 compliance monitoring wells at the facility and 4 quarters of data for each year, and considering historic detects, 10 is considered a representative number for multiple comparisons per year) was made to the PUPLs. The confidence levels of NUPLs are well less than 95%. Any statistically significant increase (SSI) must be confirmed by verification sampling.

Summary of UPLs

Parameter	Background	Type	Multiple	UPL (μg/l)
	Data Distribution	of UPL	Comparisons/year	
Chloroethane	Normal	PUPL	10	20.7
Diethyl ether	Normal	NUPL	10	75.5
Dimethyl ether	Non-normal	PUPL	N/A	17.0
Methylene Chloride	Normal	PUPL	10	13.95

RAAP-HWMU-16 - Statistical Analysis - Notes

1) Y2K Correction dates are as shown in table below.

Actual Event	Date Used in Stat Software	Date Used in Stat Software		
2000-Qtr1	12/13/1999			
2000-Qtr2	12/14/1999			
2000-Qtr3	12/15/1999			
2000-Qtr4	12/16/1999			
2001-Qtr1	12/17/1999			
2003-Qtr3	12/18/1999			
2003-Qtr4	12/19/1999			
2004-Qtr1	12/20/1999			
2004-Qtr2	12/21/1999			
2004-Qtr3	12/22/1999			

Interwell Tests:

2) Background data for target parameters chloroethane, diethyl ether, dimethyl ether and methylene chloride were evaluated using Shapiro-Wilk test. Background data showed normal distribution for chloroethane, diethyl ether and methylene chloride. Parametric interwell 99% confidence upper prediction limits were computed for parameters with normally distributed background data. Dimethyl ether background data was non-normally distributed. Therefore non-parametric Upper Prediction Limit (UPL) was computed for dimethyl ether.

3) No adjustments for multiple comparisons could be made for non-parametric UPLs. Adjustments were made to the parametric UPLs for 10 future comparisons per year to account for multiple compliance monitoring wells and quarterly event data. Any Statistically significant increase (SSI) must be confirmed by verification sampling.

E:\Ross Work\Radford AAP Archives\HWMU-16\[HWMU16StatDate correction.xls]Sheet1

Normality Tests

Report Printed: 02-02-2005 13:49

Facility: RAAPHWMU16 Haz. Waste Unit 16 - RAAP

Address:

City:Radford

ST:VA Zip:24141

County: PULASKI

Contact:

Phone:() -

Permit Type:Detection

Constituent: ClEthane Chloroethane

CAS Number: 75-00-3

MCL:

0.000 ppb

ACL:

0.000 ppb

Detect Limit:

2.000 ppb

Start Date: Mar 31 1996 End Date:Dec 22 1999

Normality Test on Observations for wells listed below:

Well:16C1

Position: Upgradient Observations: 5

Scale Original: Minimum 1.000

Maximum 6.400

Mean 4.340

Std Dev

Log:

0.000

1.856

1.303

2.078 0.749

Pooled Statistics

Observations:

5

Statistic

Log Original Scale Scale

Mean: Std Dev: 4.340 2.078 1.303 0.749

Skewness: Kurtosis:

-0.810

-1.296* -0.011

Minimum: Maximum: -0.5551.000

0.000

CV:

6.400 0.479

1.856 0.575

Shapiro-Wilk Statistics

Test 5% Critical 1% Critical Scale Statistic

Value

Value

Original:

0.9037

0.7620

0.6860

Log: 0.7615* 0.7620 0.6860

* Indicates statistically significant evidence of non-normality. GRIT/STAT Version 5.0

Facility:Haz. Waste Unit 16 - RAAP Parameter:Chloroethane(CAS Number:75-00-3)

ONE-TAILED UPPER PARAMETRIC PREDICTION INTERVAL

```
Observations (n):
   Shapiro-Wilk
                        (W):
                                   0.9037
 Critical W,\alpha=0.01:
                                   0.6860
                       Mean: 4.340 ppb
                                 2.078 ppb
                  Std Dev:
                          DF:
                                 0000 0.99
 Conf. Level (1-\alpha):
                                       10
Future Samples (k):
            t - 1 - \alpha - :
\left[ \begin{array}{c} - \\ k \end{array} \right]
                                    7.1732
                                    7.8579
                     Kappa:
                          UL: 20.669 ppb
                          LL: -∞
```

Normality Tests

Report Printed: 02-02-2005 13:49

Facility: RAAPHWMU16 Haz. Waste Unit 16 - RAAP

Address:

City:Radford

ST:VA Zip:24141

County: PULASKI

Contact:

Phone:() -

Permit Type: Detection

Constituent: DEthEth Diethyl ether

CAS Number:

MCL:

0.000 ppb

ACL:

0.000 ppb

Detect Limit:

24.000 ppb

Start Date: Mar 31 1996 End Date: Dec 22 1999

Normality Test on Observations for wells listed below:

Well:16C1

Position: Upgradient Observations: 5

Scale Original: Minimum 12.000

Maximum 30.000

Mean 21.200

Std Dev 6.907

Log:

2.485

3.401

3.007

0.355

Pooled Statistics

Observations:

5

Statistic Original Scale

3.007 21.200 Mean: Std Dev: 6.907 0.355 -0.122-0.491Skewness: -1.140-1.024**Kurtosis:**

Minimum:

12.000

2.485

Maximum:

30.000

3.401

CV:

0.326

0.118

Log Scale

Shapiro-Wilk Statistics

Test 5% Critical 1% Critical

Scale Statistic Original:

0.9768

Value 0.7620 Value 0.6860 Log: 0.9507 0.7620 0.6860

* Indicates statistically significant evidence of non-normality. GRIT/STAT Version 5.0

Parametric Prediction Interval Report Printed February 2,2005

Page 1

Facility:Haz. Waste Unit 16 - RAAP Parameter:Diethyl ether(CAS Number:- -)

ONE-TAILED UPPER PARAMETRIC PREDICTION INTERVAL

```
Observations (n):
                 (W):
  Shapiro-Wilk
                           0.9768
 Critical W,\alpha = 0.01:
                           0.6860
                  Mean: 21.200 ppb
                          6.907 ppb
              Std Dev:
                     DF:
                          0.99
 Conf. Level (1-\alpha):
                              10
Future Samples (k):
          t - 1 - \alpha - 1
                            7.1732
                 Kappa:
                            7.8579
                     UL: 75.470 ppb
                     LL: -∞
```

Normality Tests

Report Printed: 02-02-2005 13:53

Facility: RAAPHWMU16 Haz. Waste Unit 16 - RAAP

Address:

City:Radford ST:VA Zip:24141

County: PULASKI

Contact:

Phone:() -

Permit Type: Detection

Constituent: DMethEth Dimethyl ether

CAS Number: - -

MCL: 0.000 ppb ACL: 0.000 ppb Detect Limit: 24.000 ppb

Start Date:Mar 31 1996 End Date:Dec 22 1999

Normality Test on Observations for wells listed below:

Well:16C1 Position: Upgradient Observations:5

 Scale
 Minimum
 Maximum
 Mean
 Std Dev

 Original:
 12.000
 17.000
 13.000
 2.236

 Log:
 2.485
 2.833
 2.555
 0.156

Pooled Statistics

Observations: 5

Original Statistic Log Scale Scale 2.555 13.000 Mean: 2.236 0.156 Std Dev: 1.500* Skewness: 1.500* 0.250 0.250**Kurtosis:** Minimum: 12.000 2.485 2.833 17.000 Maximum: 0.061 CV: 0.172

Shapiro-Wilk Statistics

Test 5% Critical 1% Critical Scale Statistic Value Value Original: 0.5521* 0.7620 0.6860 Log: 0.5521* 0.7620 0.6860

* Indicates statistically significant evidence of non-normality. GRIT/STAT Version 5.0

Nonparametric Prediction Interval Report Printed February 2,2005

Facility:Haz. Waste Unit 16 - RAAP Parameter:Dimethyl ether(CAS Number:- -)

ONE-TAILED UPPER PARAMETRIC PREDICTION INTERVAL

Observations (n):

5

Conf. Level $(1-\alpha)$:

33.330%

UL: 17.000 ppb LL: 0.000

Report Produced by GRITS/STAT 5.01

Page 1

Normality Tests

Report Printed: 02-02-2005 13:54

Facility: RAAPHWMU16 Haz. Waste Unit 16 - RAAP

Address:

City:Radford

ST:VA Zip:24141

County:PULASKI

Contact:

Phone:() -

Permit Type: Detection

Dichloromethane (Methylene chloride) Constituent: MeCl

CAS Number: 75-09-2

MCL:

0.000 ppb

ACL:

0.000 ppb

Detect Limit:

2.000 ppb

Start Date: Mar 31 1996 End Date: Dec 22 1999

Normality Test on Observations for wells listed below:

Well:16C1 Position: Upgradient Observations: 5

Scale Original: Minimum 4.100

Maximum 6.800

Mean 5.800 1.037

Std Dev

Log:

1.411

1.917 1.743 0.197

Pooled Statistics

Observations:

5

Statistic	Original	Log
	Scale	Scale
Mean:	5.800	1.743
Std Dev:	1.037	0.197
Skewness:	-0.925	-1.088*
Kurtosis:	-0.436	-0.263
Minimum:	4.100	1.411
Maximum:	6.800	1.917
CV:	0.179	0.113

Shapiro-Wilk Statistics

Test 5% Critical 1% Critical

Scale Statistic

Original: 0.8964

Value 0.7620 Value 0.6860 Log: 0.8519 0.7620 0.6860

 $\mbox{*}$ Indicates statistically significant evidence of non-normality. GRIT/STAT Version 5.0

Parametric Prediction Interval Report Printed February 2,2005

Page 1

Facility:Haz. Waste Unit 16 - RAAP Parameter:Dichloromethane (Methylene chloride(CAS Number:75-09-2)

ONE-TAILED UPPER PARAMETRIC PREDICTION INTERVAL

```
Observations (n):
                     (W):
  Shapiro-Wilk
                              0.8964
 Critical W,\alpha=0.01:
                              0.6860
                    Mean: 5.800 ppb
                             1.037 ppb
                Std Dev:
                       DF:
                            0.95000.99
 Conf. Level (1-\alpha):
Future Samples (k):
                                  10
           t<sub>-1</sub> - α<sub>-1</sub>:
                                7.1732
                   Kappa:
                                7.8579
                       UL: 13.947 ppb
                       LL: -∞
```

Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 16C1

All Results in ug/L.

Analtye/Quarter	16C1	16MW8	16MW9	16WC1A	16WC1B	OL	GPS	Method
Chloroethane						75-00-3		
Third Quarter 2003	6.4	U	4.8	U	U	1	20.7	8260B
Fourth Quarter 2003	5.7	U	2.6	1.1	U	1	20.7	8260B
First Quarter 2004	υJ	UJ	UJ	U J	UJ	1	20.7	8260B
Second Quarter 2004	4.4	U	2.4	0.63 J	U	1	20.7	8260B
Third Quarter 2004	4.2	υ	2	U	U	1	20.7	8260B
Fourth Quarter 2004	4.9	U	2.5	U	U	1	20.7	8260B
First Quarter 2005	7.6 J	UJ	3.7 J	U J	U J	1	20.7	8260B
Second Quarter 2005	υJ	U	υJ	U	U	1	20.7	8260B
Third Quarter 2005	4.7 J	Uj	U	UJ	υJ	1	20.7	8260B
Fourth Quarter 2005	4.6 J	U	2.6 J	U	ប	1	20.7	8260B
First Quarter 2006	5.3	υ	U	U	U	1	20.7	8260B
Second Quarter 2006	5 J	U	2 J	U	U	1	20.7	8260B
Third Quarter 2006	5	U	0.7 J	0.7 J	U	1	20.7	8260B
Fourth Quarter 2006	5.8	U	1	U	υ	1	20.7	8260B
First Quarter 2007	6.1	U	1	U	U	1	20.7	8260B
Second Quarter 2007	5.2	U	1.4	U	U	1	20.7	8260B
Diethyl ether					CAS#	60-29-7		
Third Quarter 2003	12 J	U	12 J	U	U	12	-	8260B
Fourth Quarter 2003	30	U	14	U	U	12	-	8260B
First Quarter 2004	24	U	U	U	U	12	-	8260B
Second Quarter 2004	23 J	UJ	13 J	UJ	UJ	12	-	8260B
Third Quarter 2004	17	U	U	U	U	12	-	8260B
Fourth Quarter 2004	24	υJ	U	U	UJ	12	-	8260B
First Quarter 2005	29	U	14	U	U	12	-	8260B
Second Quarter 2005	20	U J	9.2	UJ	UJ	12	-	8260B
Third Quarter 2005	30	U	15	U	U	12	-	8260B
Fourth Quarter 2005	25	U	18	U	Ü	12	-	8260B
First Quarter 2006	19	U	U	U	U	12	-	8260B
Second Quarter 2006	17	U	U	U	Ũ	12.5	-	8260B
Third Quarter 2006	33	1.5 J	4.3 J	4.6 J	U	12.5	-	8260B
Fourth Quarter 2006	20	U	U	U	U	12.5	-	8260B
First Quarter 2007	21	U	U	U	U	12.5		8260B
Second Quarter 2007	17 J	1.5 J	5.7 J	2.1 J	fi fi	12.5	-	8260B
Dimethyl ether					CAS#	115-10-6		
Third Quarter 2003	6.6 J	U	9.9 J	U	U	12	-	8260B
Fourth Quarter 2003	U	U	U	U	U	12	-	8260B
First Quarter 2004	17 J	Uj	13 J	UJ	n 1	12	-	8260B
Second Quarter 2004	υJ	U J	6.6 J	υJ	υJ	12	-	8260B
Third Quarter 2004	UJ	UJ	UJ	UJ	U J	12	-	8260B
Fourth Quarter 2004	16 J	UJ	12 J	U	υJ	12	-	8260B
First Quarter 2005	26	U	25	U	U	12	-	8260B
Second Quarter 2005	15	U	14	U	U	12	-	8260B
Third Quarter 2005	13	U	U	U	U	12	-	8260B
Fourth Quarter 2005	υ	υ	U	U	U	12	-	8260B
First Quarter 2006	U	. U	U	U	U	12	-	8260B
Second Quarter 2006	U	U	υ	U	U	12.5	-	8260B
Third Quarter 2006	11 J	UJ	3.2 J	2.8 J	υJ	12.5	-	8260B
Fourth Quarter 2006	U	U	U	U	U	12.5	-	8260B
First Quarter 2007	U	υ	U	U	U	12.5	-	8260B
Second Quarter 2007	11 J	U	7 J	2.6 J	1.2 J	12.5	-	8260B

Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 16C1

All Results in ug/L.

Analtye/Quarter	16C1	16MW8	16MW9	16WC1A	16WC1B	OL.	GPS	Method
Methylene chloride			<u> </u>		CAS#			
Third Quarter 2003	4.1	U	U	U	U	1	13.95	8260B
Fourth Quarter 2003	6.8	U	U	U	U	1	13.95	8260B
First Quarter 2004	6.4	U	U	U	U	1	13.95	8260B
Second Quarter 2004	5.7	U	บ	U	U	1	13.95	8260B
Third Quarter 2004	6	U A	U A	U A	U A	1	13.95	8260B
Fourth Quarter 2004	6.4	U	U	U	U	1	13.95	8260B
First Quarter 2005	6.8 J	U	υ	U	U	1	13.95	8260B
Second Quarter 2005	6.3	U	U	U	U	1	13.95	8260B
Third Quarter 2005	6.2	U	U	U	U	1	13.95	8260B
Fourth Quarter 2005	4.7	U	U	U	U	1	13.95	8260B
First Quarter 2006	4.9	U	U	U	U	1	13.95	8260B
Second Quarter 2006	7	U	U	U	U	1	13.95	8260B
Third Quarter 2006	UΝ	UN	UN	UN	UN	1	13.95	8260B
Fourth Quarter 2006	U A	U	U	U A	U	1	13.95	8260B
First Quarter 2007	6.3	υ	U	U	U	1	13.95	8260B
Second Quarter 2007	3.4	U	U	U	U	1	13.95	8260B
1,1,2-Trichloro-1,2,2-Trifluc	oroethane		•		CAS # 7	6-13-1		
Third Quarter 2003	U	U	U	U	U	1	-	8260B
Second Quarter 2004	1.2	UJ	υJ	U J	Uj	1	-	8260B
Third Quarter 2004	Ü	υ	U	U	U	1	•	8260B
Fourth Quarter 2004	U	U	U	U	U	1	-	8260B
First Quarter 2005	1	U	U	U	U	1	*	8260B
Second Quarter 2005	U	U	U	U	U	1	-	8260B
Third Quarter 2005	υ	U	υ	U	U	1	•	8260B
Fourth Quarter 2005	U	υ	U	U	U	1	-	8260B
First Quarter 2006	U	υ	U	U	U	1	-	8260B
Second Quarter 2006	Ü	U	U	U	U	1	-	8260B
Third Quarter 2006	U	U	U	U	U	1	-	8260B
Fourth Quarter 2006	U	U	U	U	U	1	-	8260B
First Quarter 2007	U	υ	U	U	U	1	-	8260B
Second Quarter 2007	U	U	U	U	U	1	-	8260B

Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells Radford Army Ammunition Plant, Radford, Virginia

Upgradient well = 16C1

All Results in ug/L.

Analtye/Quarter	16C1	16MW8	16MW9	16WC1A	16WC1B	OL	GPS	Method
L								

Definitions: QL Denotes permit required quantitation limit. U Denotes analyte not detected at or above QL UA Denotes analyte not detected at or above adjusted sample QL. J Denotes associated result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above QL and QL is estimated. When used with "UA" (i.e., "UAJ"), denotes analyte not detected at or above adjusted QL and adjusted QL is estimated. UN Denotes analyte concentration is less than the quantiation limit and five times the blank concentration. Not reliably detected due to blank contamination. This qualifier used only for Appendix IX monitoring event when results are reported to at or above the project detection limit. R Denotes result rejected. Q Denotes data validation qualifier. CAS# Denotes Chemical Abstract Services registration number. X Denotes mass spectral confirmation not obtained-result suspect.

GPS Denotes Groundwater Protection Standards listed in Appendix G to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002).

NS denotes not sampled. NA denotes not analyzed. "-" denotes not detected (pre-2nd Quarter 2003) or not available / not sampled (beginning 2nd Quarter 2003).

Notes

-Appendix IX Groundwater Monitoring Events:

Third Quarter 2003, Second Quarter 2004, Second Quarter 2005, Third Quarter 2006, Second Quarter 2007
For Appendix IX monitoring events, all results evaluated to detection limit. See laboratory data deliverable for detection limit.

-9/30/2003: Verification sampling event for 16C1 (heptachlor) and 16C1B (Endrin). Verification results: all results reported not detected to detection limit. Original results 0.067 µg/l and 0.39 µg/l, respectively. Confirmation results reported in this table. -9/30/2003: Verification sampling event for 16C1 (chloroethane, ethyl ether, methyl ether, methylene chloride) and 16MW9 (chloroethane, ethyl ether, methyl ether, methyl ether, methyl ether). Verification results: all results confirmed original analysis. Original results reported in this table.

-June 21, 2004: Verification event for 8260B 16C1 (1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane).

Verification results: all not detected except 1,1,2-trichloro-1,2,2-trifluoroethane added to quarterly analyte list beginning 3Q 2004.

Due to laboratory error, Appendix IX results for semivolatiles (Method 8270C) will be presented in 3Q 2004. Verification event results for 16WC1B and 16C1 (8081A) — all verification results were not confirmed.

07/27-28/2005. Verification event for 16WC1B (Mercury Method 7470A.) Not detected in verification sample.

Also, verification event for 16C1, 16WC1B-8081A. and 16C1, 16MW9, 16WC1A-ethanol. All verification results not detected. Verification results used.

06/19/2007. Verification event for 16WC1B and 16MW9 thallium Not detected in verification sample. Verification results used.

APPENDIX E

LABORATORY ANALYTICAL RESULTS – YEAR 2008 (CD-ROM)

APPENDIX F

FIELD NOTES

4/28/08	,	RA. Bo320	40	FB# 8	4/25
	į :	D45	170E		:
Genera	1 Note	5			<u>5w</u> 0
يان	Cather -	Raining 50's			D
		rotection, Nitri			Post P
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	A 1 +	vity reals 4	1. P	-	(12.0
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				at desicated	[123
	cation				(123
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	WELL	OTO	Post Ruge Di	iw justs	(1365
	S5W7	10,85	11.00		
	S5W5	7,36	7.75		560
	5W9A	2.12	2.12		
	5W10A	14.58	15.65		Post Po
	5W11A	11:09	11.98		Tim
	5W8B	14.46	14.98		(1315
	5W7B	8,93	9.16	sign needs mounted	(1320
	5W5B	2.81	9,23		(1325
	5W232	8.87	8.93		1330
	5wca3	8,35	8.56		(1335
	5WC21	2.89	8,96		(1340)
ナ	5WOA	12.92		Water Level Only	(13465)
**************************************	55W6	<i>5.55</i>		11	(1350)
		11.68		1)	(1355
\$	55 WE	1 L . 1 V B			IE . B F .
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タ 大 女	55 WY 5WCH 5WCH	15.43 15.63	3		(1400) (1400)

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+		B0320426 DAS/TOE	
	5wc23		
	DTW-8.35	Bagin Purge (12:00)	
	Post Purce Drw-8,	56 Initial Purge - Clear	
	Time Temple	Condust DO/ONE ATT OKHIMI Turger	
	(12:02) 12:58	875 5.59 6.92 134.0 0.3 IMW	Clear
Š	(12.05) 12.88	848 4.07 6.47 175.4	('
	(12/10) 13.06	833 2.24 6.34 184.2	
	(1215) 13,14	837 1.97 6.34 185.6	1 1 1
	(1230) 13.24	831 1.80 6.34 185.0	
	(1325) 13.29	832 1.62 6.34 183.8	111
	(1230) 13,26	832 1.55 6.34 183.3 19	46
John !	(1235) 13.31	832 1,49 6.35 182.3 "	4
426	(235) Reading	54566	
1 Coders		R 1240	
1 CUZLEYS		Sandes Collected: (2)8270, () Cyanide, ()	Sed Side
	04065. (3)826	2,(2)8081, (1)TM-MERC, (2)8151	
10	(1305) 13.67	841 1.52 6.43 85.4 "	PastRuge
<u>es</u>	1 3,611 6044		
	56(22		
	Drw - 8.87	Begin Purge (1314)	
	Post PUZZ DTW -8,		
		Candlus Dong/ CH ORP(no) Pura	k Desc
	A	1815 1.66 6.42 194.7 0.35	Inin clear
7.1		823 0,88 6,40 143.7 4	4
s mounted	(1325) 13.66	824 6.80 6.41 150.6 4	7
		824 077 641 /883 4	
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		13 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
10)	(1340) Mot	824 0.64 6.42 180.9 "	4
Corly	(1346) 14.11	825 0.61 6.42 178.6	11
	(1350) 14.19		Li
	(1355) 14.17	024 03	k
	(40) H.11		
	(1400) Readings	stade 9	<u> </u>
	9		

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4/28/08		RA/ BO32	04-06			FB# 8	4/3
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	Sampl		_ (1405				(
4	Simple			270,(3)8244	(1) CN (1) Sulfide	-
(1)9065,6	2)8081,(1)7				. \		
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(1425) 14.24	880	1.1	0 6.	47 18	71.5	Pest Purge	
	<u> </u>				· !		
5WC24	<u>:</u>			<i>(</i> - , ,	***	•	
DTU-8,89	<u> </u>		B_{co} à R_{c}	ove (143	3)	:	-
Post Pury DIW-8,96			Contial 7	unge-Cle	es		
Time Temp(c)	Land (us)	DOMY!	PH		Punyk	Desc	<u> -</u>
(1435) 13.98	619	2.24	3.39	376.9	0.34n		1
(1440) 13.88	610	2.05	3.38	3886	· ~	.u	
(1445) 3,89	608	1,64	3,38	396.3	ř,	W	· ·
(450) 13,89	610	1.28	3,37	405.7	7	Ц	
(455) 404	610	1,28	3,37	412,7	t,	<u> </u>	
(500) 14.08	40	1.22	3,37	418,3	i,	4	<u>51</u>
(1505) 14.12	612	1.01	3,37	428.7	1	11	
(1510) 14.18	613	0.79	3,35	447,0	1#	*#	Post
(1515) 14.19	613	600 T	_3, 3 %	448.5	H	Å R	7
(1520) 14,21	613	0.67	3.37	4496	*1	ř,	69
(1525) 7426	613	0.65	13,35	450.7	4	i ((0
(1530) 14.31	614	0.64	<i>3,</i> 35	454.6	· 4	4	(ϱ^{α})
(1530) Rending	Stable			<u>i</u>	!	:	(0)
۲ مینی	417	1.27	3.39	420.3	Post Run	ge Clear	
<u>:</u>	Sample	Time!	1535)_	1		~	(1
	Sample	2 Collec	ted: (2)	8270, (3)	8760, (i)	CN, ChSulfiele	(10
<u> </u>	14065, (2)					:	(I
						:	(1
SWDUP		:					
:	Sample	Time (1	550)	:			
:	5 mples	Collect	ed: (2) 8	270, (3)\$21	જા.હોલ	· Woulfille	
(1) 9065,(2) 8					·	١,
DUP Collected	Sm 5131	C21 (i0	-			_	

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#8	4/39/08	RAAP	FBAS
		BO3204-06 DAS/TOE	
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le		ofectar, Witrile glaves,	
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luge		ty reads 447 us in 447 us	3574
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		d of afki each use.	
34		4 deconed between each we	
<u>'47</u>	location e	confained and disposed of at	Gedicak d
		lecked stored and transported	à codanc
	an ice	PECKO SPICE 415 THIS FOR THE	n carers
	0671 /26		
	5W8B		
	DTW-14.46	Begin Purge (0934)	
	Post Purge DTW-14,98		
			mek Desc
***************************************	(0935) 11.87	71 7.33 4.18 254.3 0.3	Smin Clear
	(0940) 11.70	59 639 4.07 279.9 1	
	(0945) 11.84	58 4.28 4.10 2888 "	
	(0950) 11.79	58 Gab 412 297,1	
a/	(0955) 11.81	5n 6.25 4.11 303.5	
		57 6.26 4.11 306.7	
ielfide	3 4 1	54 6.25 4.14 311.5	
	(1005) Readings 5	table	6 (0
	(1030) 11,78	55 7.10 4.04 323.4	Post Purge
	Sampl	e Time (1010)	()000
18ide	<u>Jamples</u> Co	Meched: (3) 8260, (2) 8270, (1) CN, (1) Salfide	1174065
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DTW-		1	. 1,	in lurge (!		
Post Page DTL				Purge -	1	Λ .		
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(1045)	11,28	592	7,80	5,38	215.2	0.34min	Clear	
(1050)	11.00	588	Gill	5.30	236.3	11	71	<u>S51</u>
(1055)	10.98	578	6.09	5.32	243.2			D,
(1100)	10,90	576	6.07	5,33	246.7	10) l	Post R
(1105)	10.81	578	6.05	5.33	251,9	11	l l	Tin
(1110)	10.79	579	6,04	5.33	254.4	11	11	(13:
(1115)	10,64	582	6.07	5.34	257.2	/1		(13:
(1120)	10.61	583	6.10	5.34	259.0	11	l	(134
(1120)	Readings	Shabl	e	i				(132
(li35)	11.04	590	7.03 5.45	5.45	263.8	Post	Purge	135
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	1		(1)9065,	(DTM.	2)8151	, 5		(146
					!		!	(14
5W7B						1	1	(14)
	293		Beq	in Parge	(1153)			71
Post Purge DTG	1-9.16		Initio	1 0	Clear			142
٠	Temple)	Candlus)	DO "4/L	JAY	ORP(MU)	PargeK	Desc	<u> </u>
(1155)	11.71	210	7.83	4.14	330.Z	013 /mm	Clear	7
(1200)	11.67	2 <i>3</i> 3	7.18	4.04	385.4	n	11	1
(1205)	11,55	234	7.06	4.06	397,9	ıt	П	55
(1210)	11.54	234	4.97	4.03	411.7	11	i i	, 57
(1215)	11.58	233	6,92	3.99	425.8	11	1)	Post Pu
(1220)	11.47	333	6.92	3.95	430.9	11	[1	Tin
(1225)	11.51	233	6.91	3,96	432,1		[]	(144
(1236)	11.57	233	6.88	3.96	432.4	· I t	[[]	(1444
	Reading			۷۱۱۷	1567			V -
(1300)	11.60	243	7.13	3.90	428.3	1 6	Purge	lysc
	11100	シホン	11.10	<i></i>	140:3	rost	- ruige	(1455
		1	(T	<u> </u>				(500
	West Silver vales have been seen in	100 - 100 -	ر د					

F8#8	4/29/08 RAAP FB#8
:	B03204-06 DASITAE
	5w78 (cont.)
	Sample Time (1240)
	Samples Collected (9) 8260, (6) 8270, (6) 8081, (3) CN (3) 9065
<u>sc</u>	(3) Sulfide, (3) Tu (6) 815)
ar	
L	S5W5
,	DTW - 7,36 Bagin Purge (1322)
1	Post Purge DTW -7.75 Initial Runge - Clear
1	Time Tempe Cond(us) Dougle pt off(no) Pringer Desc
	(1330) 12.10 279 4.68 5.92 346,2 0.34min Clear
)	(1335) 12.20 269 3.06 5.98 333.8 " "
	(1340) 12.47 269 2.68 5.97 321.2 11 11
	(1345) 12.42 272 1.72 5.97 316.5
ge_	(1350) 12.56 275 1.59 5.99 311.0 1' 1'
	(1355) 12.36 279 1.44 5.99 298.1 1 1 1
le	(1400) 12,21 282 1,30 5.98 298.0 1 1
	(1405) 12.06 287 1.15 5.99 295.5 14 14
AAAAAAAAAAAAAAAAAAAAA	(1410) 12,119 288 1,10 6,00 293,2 "" "
	(1415) 12.10 292 11.06 6.01 290.8 11 11
and the second of the second of	(1415) Readings Stable
	(1429)12,17 301 1.80 600 284,1 Post Runge
25C	Sample Time (1420)
'ear	Samples Collected: (3)8240, (2)8270, (1) TM
11	<u> </u>
11	DTW-10.85 Begin Punge (438)
1)	Past Runge DTW-11.00 Initial Purge-Clear
f	Time Tompé (and (us) Dough of the ORP(UN) Pungel Desc
[]	(1440) 14.25 378 1.03 6.73 244.9 0.34min Clear
	(1495) 14 40 377 0.83 6.74 240 4 "
	(1450) 14,46 378 0.73 674 237.5 11 11
nge	(1455) 14.32 3.79 0.58 6.75 235.4 "
<u> </u>	(500) 13.99 378 0.54 6.71 235.5

(3)

(Z)

					Attack (CA)		\mathcal{M}	-
4/29/08			RAH	7 P		1	F0#8	4/3
55W7 (Con	A)		B03201- DAS[T	4E				
Time T	em (2)	(and(iis)	Domale	PH	ORKUU)	Purgek	<u>DesC</u>	<u>(</u>
	3,97	377	0.51	6.71	234.6	0.34	clear	
	3,89	377	0.49	6.70	234.4	j si	11	' !
	eadino							
	3.74	375	0.53	Le: 74	22816	Post Pa	Tel	
CIPAL		_	ہے ر	Time (1	515)	1	<u>O</u>	
!		5	moles	Collecte); (3)826	0, (2) 8278	MT(U)	
			1. haz		1	4		
569A		:						B
DTW - 2.	10	:	3	Benin P	MER (1533)		
ost Punk DTV2				To Hial	Purze: Cle	ecif		G
The Transfer	cmp(x)	Cardas	Dong	PH	ORP(mv)	Porch	Desc	E
7/02 18 (1535) 1	3.88	404	4.87	7.09	219.4	0.37min	Clear	¢
	3.88	391	4.88	7.21	215.4	jt	1)	
1	3.90	388	4,80	7.22	215.3	n	10	" <u>£</u>
	3.91	382	4.79	7.23	215,1	4	li	
	3,82	3 ₈ 7	4.80	7.23	215.3	it	11	Post
,	3.85	387	4.79	7.23	215.6	6.	.31	
1	3.87	387	4.79	7.24	215.5	•	2)	
	_		4,78	7.33	216.0	1	*	
		387						* ()
		s Stable 1390	4.88	7,23	212,3	Post P	urge	(7
(1620)	13.92	370 - 4	1100	(145)				
1			ple lin	المدروا) (3)82 W ₁ 1	18/8270	INTM	
		- Jam	اف حفلا	(cerrou)	(310a-1	10-1-1		
			·					
							-	- 9 \
	,							
				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
		<u>.</u>			-			_
							1	-
		!						- :
		1	1	14)	<u> </u>	1		
	o a separation of the second	Allega, est operate		UV	1. 10 to 1. 10 to 1.		41	

#8	4/30/08 RAAP FB#8
	B03204-06 D45/70E
<u> 28C</u>	Genera Notes
lear 11	Weather - Sunny 60s
11	PPE-Eye Protection, Nitrile gloves
	Calibrations - YSI USO MDS
	pH - 4.00 = 4.00, 7.00 = 7.00, 10.00 = 9.99
	Conductivity reads 447 us in 447 us std
771	DO 90 = 100
	· Dedicated tubing and well skirts used at each well and
	disposed of after each use.
	· All equipment deconed between each well
<u>غر</u>	· Purge water contained and abspaced of at addicated area at treatment plant
ear	· Samples collected, stored and transcrited on ice in coolers
1) 	
<u></u>	5WOA
i	Drw - 14.58 Begin Purge (14.24)
<u> </u>	Past Purge DTW-15.65 In Hal Purge Clear
	Time Temple) Condlus DO 19/1- pH ORP(140) Purgel Desc
	(1425) 14.85 982 3.70 7.33 188.6 03 /1min Clear
	(1430) 15,00 520 2,16 7,38 182,1 11
	1435 / 15,14 396 1,76 7,43 1752
	(1440) 15.28 388 1.65 7.43 173.7 "
	1,44 1711,5
	(1930) 15.50 317 1.51 7.42 77.7
	(1100) 1000 301 1100
	(1455) Readings Stable 74.7
	(1510) 15.34 389 251 7,63 174.7 Post Parge
	Sample Time (1500)
	Samples Callected. (3)8260, (2)8270, (1) TM

								TRL.
4/291	900 4/3c	n/ 0 8		R44P				FB#8
51	SWIIA		B	3204-00 TQB/PAS				
		1.09			Begin F	2 mg (15	22)	
	st Page DT				Intal	Turn Cle	<u>~</u>	
C 4	Time	Temple	Carillas	00 mg/L	PH	ORP(mi)	Puzek	Dusc
(15	(1525)	14,50	669	2,71	6.29	112.6	0.34	Clear
اعل)	(1530)	14.78	675	1.13	6.24	126.9	· .	11
	(1535)	14,97	669	1,00	6.23	129.4	. ધ	-21
	(1540)	14.80	670	0.96	6.24	1290	. •(h
	(1545)	14.86	667	0.94	6.24	128.2	t t	4
5h	(1650)	14.90	670	0.94	6.25	1241	"	>
	(1555)	14.95	671	0.94	6-25	120.7	• •	-7
Post P		Readings	Stable	ا د		-		
74	(1610)	15.00	703	1.41	6.36	122,4	1.600	+ Pirge
(15			Smo	& Tim	(100)		Į.	
(1 <u>54</u>			Samp	les Colle	extedite	3) 8260,(2)	8270 c	(i) THO
(154								
(153				\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \				
(165			CON	IFLET		 		
(160	-		7-7-	5.06			-	
(160			- 1		U		-	
41610								
(1610								
(162							<u> </u>	
		!		-		!		
					1	1		
					1			
			:	_	-			
				i				
		1		<u>.</u>				
			1					
				:				
	:			:				
				!				
			_		(16)			

5/21/08		RAAF	2			FB#8	5
<u>5wc23</u>		BOBZOU-	06 A			į	-
DTUS: 9.98		1	Bain F	ing (103	3)		
Post Purge DTW: 10.0	3	\mathcal{L}	J. Frail Pa	rage dear		:	
Time Temp(0)	Cond(us)	10mg/L	ρ4	ORP(MU)	Puzen	Desc	P
(1035) 13.71	878	3.19	6.64		0.3/min	Clear	
(1040) 13.82	884	1.77	6.51	152.1	1(clear	₩ (
(1045) 13.87	8%	1.65	6.52	151.2	"	clear	† (
(1050) 14.07	384	1.82	6.52	151.1	VI.	Clear	
(1055) H.15	888	2.60	6.57	132.5	((clear	
(1100) 14.11	887	2.21	6.53	138-5	4	Clear	
(405) 14,09	884	2.39	6,50	146.5	ti	clear	
(1110) 14.04	8 3 9	2.49	6.52	146.5	11	clear	a
(115) 14.09	887	2,52	26.52	147.0	11	dew	
(1120) 14.11	887	2.56	6.52	147.3	1)	olear	!
(1120) Readings	Stuble	1		!			1
Post Pugy 14.02	885	2.86	6,60	148,4			Ì
0	<u> </u>	mple T	ine (112	5)		<u> </u>	1
		mples	Collected	: (3)8260	•		
				İ		!	
50032						1	and the factor
DTW 1 10,57	:	1	Begin Pu	ze (1/39)		1	State of the state
Post Purze OTW: 10.63			In Fal Po	reje! Cleu		<u> </u>	- Company
Time Temp(0)	Cond (15)	<u>00"7/</u> C	PH	CRP(mU)	Puzz K	Desc	er principal de
(1140) 14.43	870	2.59	6.54_	152.9	0.3 4min		Section 2
(1145) 14.45	375	2.29	6.53	154.6	/(Clear	1
(1150) 14.58	378	1.45	(₆ .53	155.8	ŧι	clear_	Po
(1155) 14.62	377	2.64	6.53	155.6	1(Cleur	. 12
(1200) 14,70	378	2.69	6.53	155.6	t (clew	Mary and and and
(1305) 14,72	876	2.75	6.54	155.3	<i>د</i> ا	Cleer	4 undaharan
(1210) 14.74	878	2.78	6.53	155.1	11	Clear-	s of the native court of
(1210) Reading	1	<u>le</u>				:	A.
Post Pung 14.79	447	970	659	1649			Polish D'You dury belle to
U		ple Tro	(1216) Wed: (3	2001 -		:	***
/	Scm	ous Coll	used: (3	12760			
	,,	, (83			· · · · · · · · · · · · · · · · · · ·	and the second

5/21/10 500 0762 1600 (1230 (1230 (1240 (1250

(1305 (1305 (1305 (1305)

135 (135 (14C) (14C) (14C)

	5/21/08		2101	2				
J K	7/2110		RAA(BOS	204-06			2	5 4 .5
	<u>swc21</u>		$-\pi$	DEIKFL		<u> </u>		
18				-	0 (10-			
1	DIW: 10.60	_			Pur (122	1 71 1		Ш
**************************************	Post Rug DTW: 10.65	1 1	10 ma		(Place: Cl			1
	Time Temp(0)	Cond (415)	DOG		ORPROVI	Puzeh	Desc	
	(1230) 14.79	635	2.91	3,56	364.4	0.34m.	i Clear	
	(1235) 15.12	645	2.61	3.55	407.5	"	dew	
- Constitution	(1240) 14,92	647	2.93	3 <i>.55</i>	394.4	1.7	Claw	
en e	(1245) 15.00	647	2.91	3.55	418,6	u	Clear	
Mile and a second	(1250) 15.05	649	2,96	3,53	423,6	И	clear	
	1255) 14,98	653	2.96	3.51	433,4	L (Clear	
	(13eo) /4.91	651	2.97	3.51	436.5		clour	
<u> </u>	(1305) 14.88	651	2,99	3,50	441.7	/ (clock	-
	(1305) Readings	Starble						
***	Post Pung 14,80			3.54	443,6			
Ĭ		-5n	nde T	me (131	0)			
l		Sw	Des Co	lected:	:(3)826	2		
	5WDUP							
		Sim	Q. Ti	ne (1320)			
- The state of the		San	ples Co	Mected	: (৪)৪৯৫।			
-	*5cm	ples Col				-		
	16-3			100			1:	
1	DTW: 58,56			Benn	Perox (134	(2)		
P	151 Penzo DTW : 64.11			Initial	Page: c			П.
	Time Temp(0)	Cond (1	1 DOC	off Off	L BRPLAN	1	Desc	
	(1345) 14.27	239	9.28	7.30		094	i cler	
	(1350) 14.52	239	6.43	7.61	202.9	n u	clear	
	V355) 1450	239	5.95	<i>7.1</i> 3	195.1	· · ·	clear	††
	(400) 14,33	238	5.65	7.78			clear	
	(1405) 14.41	238	5.52	7.82	187.6	16	Clear	
	(1410) 14:37	238	5.47	7.82		LI,	cleur	1
	(1415) 14/32	237	5,44	7,82		Li		H
		00.	(2)))	1001 F		- Older	ا د
•	7 11/29	201	3.47 (2)) - \\DA	186,7	1 14	Clear	

B#8

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FB#8	1/17/08		RX	AP			FB#8
<u> </u>			<i>පි</i> 03: ⊅	204-06 15/TGE/TO)		
	55W7						
	DTW-12,45			Begin	Parge (14)	12)	
	Post Punge Drw-1	2.53	J	nitial !	Rurge - Cl	ear	
	Time Temple	Condlus	Do ng/2	PH	ORP(MU)	Pune K	Desc
**************************************	(1415) 18.73	427	2.36	6.57	154.2	0.3 /min	Clear
	(1420) 19.33	426	1,39	4.50	157,8	11	Clear
	(1425) 19.86	426	1.27	4.53	156,4	11	Clear
The state of the s	(1430) 20,14	427	1,38	le.60	150.3	ti (Clear
	(1435) 20.20	422	1.64	6.64	146.6	l l	Clear
480-0	(1440) 19.70	426	1,66	6.60	147,5	rt i	Clear
	(1445) 19,66	426	1.73	6.61	141.3		Clear
	(1450) 19.79	424	1.74	6.61	142.7	n	Clear
	(1450) Readings	Stable					
	(Post Punge) 20,04	427	1.81	6.73	149.2		Clear
NORMAL AND A STATE OF THE STATE	U	Time (1	455)				
	Samples	Collected	1 (6) 83	160			
-				i			
			11.	- -			
in consepted				(a7)			

FB#8	10/21/08	7	PAAP	FB#8
POH &	10/2/100	Bo	7AAP 3204-06 AS/7QE	
	General Notes			
	Weather-Pa	Atly Sunny	40'5	
	PPE-Eye Pre	election. Nit	rilegiones,	
Klepa Desc	Calibrations	- YSI 65	o mbs	
Imm Clear	2H-40=4	00 7.00=7	00 ,10.00= 9.9	9
Clear	Confortivity	mats 1413	us in 1413 us	std
Clear	To % = 99	1.9		
Clear	· Dedroiled tubing	and well s	kirts used at e	ach well, and
Clear	disposed of	ofter each us	se.	
Clear	a All economon	- deconed 1	between each we	11
Clear	· Purap woter con	tained and c	hisposed of 9t 7	realment plant
Cleas	ensite.			
Cica	· All samples con	llected, store	d and transported	onice in Coolers.
me Clear				
3		Statie Wal	er Lovel Toble-	-Unit-5
-	WELL	Drw	Post Purge DTW	Nots
	55W7	13.61	13.65	
	S5W5	11.61	12.24	
	5w9A	5.39	5,39	
* .	5WIOA	17,27	17,59	
(apri) DOSC	5 WIIA	15,77	16.05	
Time Elect	5w2B	16.96	17.28	
Clear	5 W 1 B	12.46	12.46	
Clear	5W5B	12.83	14,39	
Clear	5wc aa	12,79	12.88	
Clear	5 WC 23	12.27	12.41	
Clear	5wc21	12.77	12.82	
Clear	• 5WCA	16.34		SWL ONLY
	· 55W6	11.03		
rge Clear	.55w8	14.02		1 1 1
<u>J</u>	· 5 wall	17.88		11.
APILE TIME	· 5wc12	17.70		
V 12-8-08	Catholic Cat			

(33)

10/27/68	RAA	Ø	co++	8 10/27/08
γ	B03204-	06		2 Populus
5w2B	V 10/14			S5W5
DTW -16.96	Be	fin Parge (1121)	DTW-11
PostPurge DTW-17.	28 Init	ial large - Clear		Post Page DTW
Time Temple	Condus Do Mala		v) Pavgek(gru) Dosc	Time Temp
(1125) 12.83	4 ~	152 7.70456 250.0		(1355) /7,
(1130) 12.61	73 4.72			(1400) 17,3
(1135) 12.45	70 6.14	4.19 274.	1 " Clear	(1405) 17.4
(1140) 12.42	48 6.05	4.18 280.0		(1410)175
(1145) 12.60	65 <i>5.84</i>	4.20 286.	1 11 Clear	(1415)17.5
(1150) 12.68	65 5,78	4.22 289.	3 11 Clear	(1420)17.6.
(1155) 12.66	65 5.76	4,23 291.8	? " Clear	(1425)17.60
	s Stable	i		(1430)175
(1210) 12.98 °	62 5183	4.25 303.6	1 Post Purge Clear	(1435)17.4
	e Time (1200)		:	(1435) Rea.
Samples	Collected (3) 8260	2,(a)8270,(1)TM		(1450)17,12
CONT	i			San
<u>\$5w7</u>				Sampl
DTW-13.61		gin Purge (1236		
last Purge DTW -/3.4	Inch	ial Purge-Clear		5W7B
Time Temple) Cond(us) Do mg/1		J) Purgek(gpm) Desc	
(1237) 15,25	380 2,55	6.79 114.0	0.3 Janu Clear	
(1240) 14.83	383 1.90	6.80 105.4	1,	1 \
(1245) 14.73	383 1.43	4.78 102.3	Clear Clear	(1535) 15,
(1250) 14.82 (1255) 15.00	393 1.30	6.78 104.3	13	(1540) 15.
(1255) 15.00 (1300) 14.97	383 1.15	6.79 108.3	Llear	(1545) 15.5
(1305)14.86	385 1.10	6.77 113.4	11	1 / 1 1
	386 1.08 386 1.08	6.76 118.5) clear	(1555) 15.6.
	igs Stable	6.75 121.2	2 11 Clear	(1600)15.6
(1327) 15.	. 1.	6.77 124.2	10.10 . 010-	(1605) 15.6 (1605) Read
	,	~	1 Post Punge Clear	7
Sal	mple Time (s Collected: (3):	1010)	17-141	(1633) 15,93 Sew
- ample	5 COLVECTED 5 (3)	xx160, (d)&d 10, (10 100	
	-	56)		Samples

(36)

	1 / -			
FB#18	10/27/08	KA 80320	AP 9-06	F8#8
	, A	DAS	TOE	
	<u>\$5W5</u>			
:	DTW-11.61		egin Purge (135	4)
	Post Ruge DTW- 12.	24 Ini	fial lurge-Clea	
Jagu Dos C	Time Temple)	Cond(us) Dong/	DH ORPLA	w) Purgeklapu Desc
im Clear	(1355) 17,43	325 3.92	6,09 185.	
Clear	(1400) 17,31	335 1.65	6.01 192.	
Clear	(1405) 17.40	342 1.26	5.99 193.	11
Clear	(1410)17.57	348 1.10	6.00 193,	10
Clear	(1415)17,55	354 1.02	5,99 1930	1.1
Clear		358 1.03	6.00 192,6	
Clear		362 1.09	6.01 190.8	
	/ 1 L. V. T. H. L. H.	364 1.13	6,00 191.0	
me Clear		368 1.16	6.02 188.9	Clear
-,-	(1435) Readings			- Una.
			6.02 177.6	Post Purge Clear
		Time (1440)		10111119
		Meckd: (3)826	2 (2) 2170 (1)	Tus
•	1 Stringles G	1 1 1 1 1 1 1 1	3, (<i>a 10 a 1</i> 0, (1)	
1	5w78			
(apri) Desc	DTW-12.46	D	gin Purge (1534)	
um Clear	Post Pume DTW- 12.		al Purge-Clear	
Clear		Cood(us) Doms	<i>y</i>	
Clear	1) Rumek(apm) Desc
Clear	(1535) 15,86	201 - 20	3,93 302.	
Clear	7	301 5,30	3.62 385.0	Crecif
Clear	>	314 4.98	3,55 428.9	1)
Clear	1.2.1	325 5.06	3,53 925,3	Clear
		328 4.87	3.54 450.4	
Clear	\mathcal{C}	329 4.89	3.55 455.4	
0 012 2		329 4.90	3.55 459.1	Clear
ge Clear	(1605) Readings			2 10
		332 4,94	3,50 468.6	Post Ringe Clear
		Time (1010)		
	Samples Coll	ected (9)8260, (4		
		•.	67	

Tielos las	$\mathcal{O}_{\mathcal{O}}$	n P	N. Wartschaffelder			100/10
10/28/08	BO 320	AAP 1-06 TRETTO		-	FB# 8	10/28/08
(11/10	DASI	TREITD	The state of the s			
General Noks						5WC22
Weather -1	artly Sunny 30's			4		DTW-12:7
	feetion, Nitrile		VALUE OF THE PARTY	***************************************		Post Purge DTW-,
	- YST 650 M			- 10-		Time Temple
PH - 4.00 =	4.00 $7.00 = 7$,00 /	0.00 = 10.0	? <i>0</i>		(1125) 13.66
	y reads 1412	us in 1	413 us s	td		(1130) 13.41
	100					(1135) 13,36
· Dedicated hibing	and well skirts u	sed at a	each wel	1, and di	sposed	(1140)12.93
ot after use	2		1 .	•	· · · · · · · · · · · · · · · · · · ·	(1145) 12,85
· All equipment	decored betwee.	n each	well			(1150) 12,82
· Purge water co.	ntained and disp	used of	at dedica	led locat	ion onsite	(1155)12,78
· All samples collec						(1200) 12.54
		, 				(1205)12.36
<u>5W5B</u>						(1205) Readii
DTW-12.83	E	legin Purg	e (1013)			(1224) 1198
Post Purge DTW-14.39	Init	ial Purge	- Clear			Sam
Time Temple) Purgeklap	W Desc	Sample
(1015) 12.66		5,38	273.9	0.3 / MIR		
(1020) 12.37	614 4.03	5,21	291.9	11	Clear	<u>5wc23</u>
(1025) 12.24	408 3.25	5,23	301.8	11	Clear	DTW - 12.
(1030) 12,25	618 2.88	5,24	303.5	71	Clear	Post Purpe DTW - 13
(1035) 12.36	638 2.62	5,28	304,2	7)	Clear	Time Templ
(1040) 12.40	<i>453</i> 2.48	5,29	305.3	11	Clear	(1240) 12.7
(1045)12.59	470 2.41	5.31	304.4	11	Clear	(1245) 10.9
(1050)12.68	673 2.39	, 5,31	304.9	11	Clear	(1250) 10.86
	s.Stable	-				(1255) 11,90
(1105)13.24	665 2.26	5,26	301.21	2st Purge	Clear	(1300) 11.78
	le Time (1055		Mary Mary Mary Mary Mary Mary Mary Mary	<u> </u>		(1305) 12.10
	s Collected: (3) 8		2220 (1)	nu	The conditional condition of Print No. 1997.	(1310) 12.34
- July W	<u> </u>	-,) 00/2	· · · · · · · · · · · · · · · · · · ·	•	V.A. Annual And Annual Principle on the second	(1315)12.69
						(1315) Readi
		TO THE SAME SAME SAME SAME SAME SAME SAME SAM				(1330) 12.81
		<u> </u>	1		2	Sample Time
		58)		:	, , , , , , , , , , , , , , , , , , , ,	Dample 11me
				*		

E414 0	· looks		Dral		<u> </u>
FB# 8	10/28/08	2/	RAAP 03204-06		FB#8
		D _i	ASTOE TO		
	5WC22				
	DTW-12:79		Begin Kunge (1124		
	Post Parge DTW-1=	2.88 In	Hal Ruge - Clear		
·	Time Temple)	Cond(us) DOMS/L	DH ORP(MO)	Purgek(gpm)	Desc
	(1125) 13.66	916 1,17	6,50 241.6		Clear
	(1130) 13.41	912 1.01	6.47 237.0	11	Clear
	(1135) 13,36	909 1.06	6.47 233.8	H .	Clear
Lisposed	(1140)12.93		6.47 228.8	- 11	Clear
	(1145) 12,85	ا ما	6,47 227,3	13	Clear
	(1150) 12.82		6.48 225.2	11	Clear
rtion ensite	(1155)12,78		6:47 223:6	11	lour
ilers	(1200)12.54		6.47 223.0	1.	lear
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(1205)12.36		6.48 222.1	1 2	lear
	(1205) Reading		ei 10 3001		····
	(1224) 1198		6.47 217.1 Po	+0 (lear
:			6.47 217.1 Po	strange c	7.67
apm Desc		e Time (1210)	(0) (0) (0)	-7+ A	
in clear	Damples	Collected! (3)820	(a) (a) (a) (1) /		
Clear	511277				
	<u>5wc23</u>	7	2 , 0 , (
Clear	DTW - 12.2		Begin Purge (1239		
Clear	Post Purge DTW - 12,	1 June 1	ritial Purge-Clea		
<u>Clear</u>	lime lemple		pH ORP(Ma)	Purgeklapin)	Desc
Clear	(1240) 12,77	920 2.60	6.69 221.0	0.34 min	Clear
Clear	(1245) 10,94	930 2.48	6,58 220,6		Clear
Clear	(1250) 10.86	916 2.07	6,51 223,1		Clear
!	(1255) 11,90	916 1.78	6.51 220.6		Clear
e Cléar	(1300) 11.78	922 1,73	6.51 219.3		Clear
	(1305) 12.10	915 1.64	652 217,6	" (21ear
:	(1310) 12,34	918 1.62	6.52 216.2	11 0	lear
	(1315)12.69		6.52 215,1	11	Clear
	(1315) Reading				
	(1330) 12.81		6.51 217,38	ostfurge (? lear
	Sample Time		les Collected: (3)8260 (2)8270	
	- TY	,	(59)	100,0070	(

	19/28/08	7 2	00			ST. C	10/20/09
	1408108	RA B0320 D45/7	4-06			F8#8	10/28/08
	5wc21	D45/7	QE/10				-
	DTW ~ 12,77	R	e luna	(1349)			5W9A
	Post Parge DTW -12,8	$\frac{1}{2}$	gin Purge				DTW-5.39
	Time Temple	Cordles DO My/2	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		D. Ha	Danc	Post Purge DTW-5.
	(1350) 13,22	652 2.27	3,50	450.9	D. 3 MIN	Des C Clear	Time Temp(2)
100	(1355) 13,57	650 1.47	3.46	468.3	il	Clear	(1525) 14.57
	(1400) 13.36	448 1,53	3.44	475.0	11	Clear	(1530) 14.18
To the second se	(1405) 12,75	452 1.63	3.45	467.4	11	Clear	(1535)14,25
	(1410) 13.00	647 1.75	3.45	466.1	1)	Clear	(1540)14,17
A Company of the Comp	(1415) 12.84	648 1.78	. 3.44	470.6	//	Clear	(1545)14.27
	(1420) 12.88	644 1.82	3.44	475.0	11	Chear	(1550)14.21
20	(1425) 13,06	645 1.80	3.45	475.8	11	Clear	(1555)14.21
		95 Stable			7		(1555) Reading
	(1500) 13,35	649 1.83	3.44	482.6	Post Purge	Clear	(1610) 13,89
	Sample	Time (1430)		i .	J		Sampl
	Samples	Collected: (3)8260,	(a)8270,	(i)TM			Sample:
	1				i		
	5WD4p						
	Samp	le Time (1445) Collected (3)8260,)	1			
	Samples C	Ollected (3)8260,	(2)8270,	(I)TM			
	* Samples colle	refed from 5WC	ι /				
		:	:				
	i		1	1	-		
				:			
ALL PROPERTY.	:	•					
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		1	l		i	1	
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		i :		i			
	i						
Mercel design				1			
		1					
	:	Ci.	(i)	3			
I		Le	ン			_	

FB#8		"KAAP	FB#8
	10/28/08	RAAP BO3304-06 DASTTOETTO	
-		337,437,0	
	5W9A		
	DTW-5.39	Begin Purge (1523)	
m-Kgan Desc	Post Purge DTW-5	39 Initial Purge-Clear	
		Condlus Do se pH ORP(MU) Pargek(gpm)	Desc
Hum Clear Clear	(1525) 14.57		Clear
Clear	(1530) 14.18	427 4.61 7,35 220.3 11	Clear
Clear	(1535)14,25	741 774 775	Clear
Clear	(1540) 14,17	424 4.44 7.36 222.2 "	Clear
11 Clear	(1545)14.27		Clear
1/	(1550)14.21		Clear
11 Clear	(1555) 14.21		lear
Credi	(1555) Reading		18881
0	(1610) 13,89		
luge Clear		423 4,43 7,34 216,7 Post Purpe (lear.
	Jampi	le Time (1600)	
	Sample.	s Collected: (3)8260, (2)8270, (1) TM	
1			
	1		
:			
	3 1		
:			
1			
		(4)	•

Tola /			The second second	
10/29/03	RAA. BO 3204- DA 5/CJ	ρ ο %	PB其包	10/29/08
<i>?</i>		73		
General Note		A COLOR OF C		
weather-	Sunny , 50's			5WIIA
PPE-Eye	Protection, Witril	e gloves		DTW - 15
Calibrations	1- YSI 650 MI)5		Post Purge DTW-
pH-4,60.	= 4.00 7.00=7.0	00 , 10,00 = 9.98		Time Temple
Conductio	ity reads 14B us	in 1413 us std		(1040) 14,59
Do % =	100			(1045) 14.47
· Dedicated tubi	ng and well skirts	used at each wa	e/l	(1050) 14,54
· All equipment	deconed between	each well		(1055) 14.69
· lurge water con	itained and disposed	of at dedicated	occition ensite	(1100) 14,50
· Samples oflect	d, stored and transpor	led en ice in cooler	5	(1.105) 14,68
				(1110) 14.77
5W10A	Venderline beautiful and the second	· ·		(1115)14,70
Drw - 17,6	27 Beg	in Purge (9:34)		(1115) Reading
Post Purge DTW-17	1.59 Initial	Purge - Clear		(1130)14,56
Time Temps	(and (us) Do 15/	= 3H ORP(AW) P.	ingeklapm Desc	Sampl
(0935) 13.1		1	.3 Truin Clear	Samples
(0940) 13.4	0 627 4,10	7.56 150.4	il Clear	
(0945) 13,70	0 565 3,36	7,56 151,3	Clear	
(0950) /3.90	510 2.78	7.56 152,5	" Clear	
(0955) 13.94	490 2.69	7,54 153,6	" Clear	
(1000) 13,93		7.54 155.0	11 Clear	
(1005) 13.94		7.54 155.3	" Clear	
(1010)14.08	459 2.48	7,53 155.7	" Clear	
	igs Stable		:	-
(1038) 14,15	442 2155	7,45 164,3 R	ot Purge Clear	
	aple Time (1015)		J	
	es Collected (3) 826	o,(2)8270,(1)TM		
-				
			,	
	MAR AL .	·		
			¥	
#\ <u>\</u>	,	(63)		-

1937年8	10/29/08 RAAP	FB#8
	10 110 BO3204-06 DAS/CJB	
	5WIIA	
	DTW - 15,77 Begin 1	Parge (1040)
	Post Parge DTW-16.05 Initial Pu	rge-Clear
	Time Temple Condlus Dough pt	+ ORP(m) Pungek(gpm) Desc
	(1040) 14,59 752 2,44 6.5.	2 -2.4 0.34min Clear
	(1045) 14.47 822 1.59 6.53	14,3 11 Class
:	(1050) 14,54 862 1.56 6,55	3 28.8 Clear
	(1055) 14,69 884 1,60 6,56	
ion ensite	(1100) 14,50 293 1.68 6.57	
	(1105) 14.68 897 1.76 6.57	
1	(1110) 14.77 897 1.79 6.58	
:	(1115)14.70 898 1.81 6.58	72.6 "Clear
	(1115) Readings Stable	
i	(1130)14.56 891 1.88 6.58	68.4 Post lurge Clear
Klapul Desc	Sample Time (1120)	
min elegr	Samples Collected: (3) 8200, (2)	18270, (1) TM
Clear		
Clear		
Clear		COMPLETED
Clear,		14-8-00
Clear		
Clear		
· elect		
lurge Clear		
0		
	63)	

4/22/08			R	AAP			F8#7
Tlaalos			8032	04-06			7.00
74mw7			UHS)70E			
DTW-2	25 42		R ₂ m	infume (9277)		
Post Purge DIW			TILO	l funge	Clear-		
Time T	emple)	Cond(206)	. 7	, , , , ,	ORP(MU)	Purgek	Desc
	13.69	430	2.36	7.20	-18,3	0,37,	Clear
	13.69	379	0.81	7.25	-52.4	11	lı
	13.88	371	0.68	7,27	-53.9	11	11
>	13.77	366	0.62	7,29	-62.5	il	11
	13.68	364	Diteo	7,30	-64,1	rt	(1
	13.54	363	0.58	7,30	-67,4	U	¢)
(1355) 1	3,51	361	0,61	7,31	-469	(1	· · · · · · · · · · · · · · · · · · ·
7 - 1	13.57	361	0.63	7,32	-67.5	it	tj
(1400) R	eading	s Stal					
-	Sav	nole Ti	mel 140	5)			
S				60 ,(3)8°	11.(1)T.	Inorgan	le 5
	Α,				76	J	
		Static	Water	hevel	Table	- Unit	7
<u>w</u>	EU		$\pi\omega$	Post	arge DTW		otes
	0128	ي	4.86	240			
76	N9C		3,79	15	53		
74	010B	1	5,30	15			<u> </u>
<u> </u>	vioc		1.88		.49		
	<i>U13</i>		2.43	<i>ે</i>	.09		
	MW6	ير	6.05	32			
70	UIB		4,97	25.	28		
	wcA	2	4.85	25	48		
	7W9B		3.27			5WL 0	NLY_
li li i	1611	1	1.02			1/1	
	1MW5	24	1.81			N	
					TALE	550	20
		Lieu Charles			-50		
		Project Control of Con	(59)			

4/22/08	RA	HAP	_		FB#8	48-
		04-06 45/70E	The state of the s	100		7
Contin			#7	age 15	7	
7W9C		2 may 1 may 2				,
prw-13.79		Begin Pun	ge (1445))		
Post Purge DTW-	15,53 In	tial Per	ge-Cleai			
Time Temple) Cond(us) Doing	J SH	ORP(mu)	PurgeK	Desc	
(1446) 13.33	1084 3.84		62.5	0.3 Thin		
(1450) /3,57	1093 1.99	6.78	57.1		14	,
(1455) 13.53	1141 1.13	6,75	65.7	11	IC .	
(1500) 13,83	1150 0.98	6.76	73.8	11		
(1505) 13.85	1161 0.81	6.77	80.4		11	
(1510) 13.89	1142 0.81	6.77	79.7	11	11	-
(1515) 171.09	1166 0.84	6.78	75.6	17	11	}
(1515) Readin	95 Stable					
	the Time (1520)					
Samples	Collected (2)827	0,(1)c	N,(1)Tn	1		
7w10B						<u> </u>
07w-15.30			ze (1530)			v_
Post Parge Dow-15	5,79 I I		rge-Clear			
Time Temp(e)	Cond(us) DOME/L	HG	ORP(MV)	Pungek	Desc	
(1531) 12,28	958 4,56	6.92		0.34min	Clear	
(1535) /3,25	920 2.86	6.80	96.7		11	
(1540) 13.11	894 1,91	6,77	97.4			-
(1545) 12,96	881 1.54	6,77	97,1	1.4	11	
(1550) 12198	886 1,44	6.77	97.4			+-
(1555) 12,96	887 1.37	6.78	98.2			-
(1600) 13,01	887 1,38	6.78	98,4			
	s Stable					_
Sam	ple Time (1605)					
Sam	ples Collectedil	3)8270	,(1)CH ₎ (1)TM		
			The second secon			

4/22/08	4/22/08 RAAP B03204-06 DAS/TGE										
7WIOC_							, -				
DTW-	18.88		Ве	gin Pung	e(1609)		-				
Post Purge DT	W-24.49	-	Initio	al Purge	(1609) - Clear		2				
Time	Temp(E)	Condlus)	DO 15/L	DH.	ORP(MV)	Purgek	Desc				
(1610)	13.35	L88	4.03	7126	88.6	034min	Clear				
(1615)	13.35	728	1,75	7.17	96.9	11	. 41 ,				
(1620)	13:19	732	1,25	7.14	99,7	H	1)				
(1625)	13.03	744	0.72	7.13	98.3		.11				
(1630)	12.94	744	0.54	7.13	93.4		-41				
(1635)	12.95	744	0.51	7,13	88.9	: II					
(1640)	12.88	743	0.48	7.13	89.1	: II	!!				
(1640)	Reading	s Stat	ble			:	.:				
	Son	role Tin	ne (1645))	•	:					
	Samo	les Coll	lected: (2)8270	(1) CN, (1)TM					
	Jan 14						1				
				:			1				
							1				
•				<u>c</u> (DE 5-5						
				<u>c</u>							
				J							

4/23 Ge PF

13 Post 77 (08 (08 (08 (08 (08 (09 (09 (09

				777	Later State	(1.81)
4/23/08		B03204			,,,	FB#8
		DA5/	79E			
13MW2						
DTW-21.71			gin Purge		:	
Post Purge DTW - 22.39)		al Punge			
Time Temple) Cond(125)	DO "7/L	-pH_	ORP(M)	Purgek	Desc
(0936) 1430	616	7.56	6.96	15613	0.39mm	Clear
(0940) 14.15	620	5.16	6.77	173.1	n p	1
(0945) 14.32	619	4,77	6.79	173.4	•	i
(0950) 14,41	619	4.63	6.34	172.7	М	1)
(0955) 14.52	421	4.49	6,84	172.9		11
(1000) 14,50	622	4.45	6.85	174.0	. 11)
(1005) 14,60	619	4,40	4.85	173.6	11	: [(
	ngs Sta	-	:			:
	ample Tin		o)	1		
Samoli	es Collecte	1.(2)833	2, (2)8330	(1)314.0.0	(3) 8260.1	(1) TW)
Sqmpa	5 ance	(2)827	0		ĺ	
			i			
1W13				1		
DTW-18.43		В	ngin Purge	(11/4)		
Post Purge DTW-22.00	9		al Purge			
	(A) // (I	1 2 815/	off.	ORP(MU)	Pargek	Desc
1115 14.24	1250	6.24	7,40	132.4	0.3 / win	Clear
(1120) 14.61	1252	4.65	7.24	112.3	ì١	11
(1125) 14,72	1262	3.98	7.18	85.4		, 11
(1130) 14.87	1284	3.37	7.16	63.1	ii	11
(1135) 14.98	1291	2,53	7,18	40.5	11	11
(1140) 15110		2.54	7.22	39.4	11) 1
(1145) 15.07		2.59	7,28	40.8	11	11
(1145) Read						
CITIZI KEROL	INGS STAD	T. v 1	(1150)	:		
	Sample mples Col		1) 877A /	/cn (1)1	M	1
	mples Col	<u> </u>	<u>0/02/U,(1</u>	JCN (I)		
					•	
			:		1	
	**		(4)	:	:	<u> </u>
λ	· ,/		XV	and the second		

				10000000			
#8	4/23/08		RAF	P		· · · · · · · · · · · · · · · · · · ·	FB#8
*			B03200 DAS,	TOE			
	7mw6						
	DTW-26.05		Bec	in Purge	(1209)		
į	Post Purge DTW-32.6	7		1 Purge	-Clear	1000	
esc	Time Temple)	Condlus)	DOMIL	_bH_	ORP(mu)	Purgek	Desc
lear	(1210) 14.18	1581	2.81	7.39	1,4	0.3 min	1 . 1 1 i i
M t	(1215) 14.43	1624	1,39	7.19	-57.8	11	
12	(1220) 14.51	1642	0,95	7,14	-80.9	1 1	
1	(1228) 14,69	1594	0.62	7,13	-104.3		
1	(1230) 14.78	1606	0.62	7.18	-108,1	The second secon	
) [(1235) 1456	1589	0,60	7,21	- 100.1		111
((1240) 14.69	1581	6.67	7,24	-102.4	11,	
	(1240) Reading 5	Stable	e		7 100		
	Sam	was Tim	u (124	5) 📗			
w)	Samples	ollected	(2)8151	MT(1)	(2)2270,(1)(~,(1)	Sulfide
		(i)9065 (3)2260,(2)8081			
	7WIB			- Control of the Cont			
-	DW-24.97		Begi	n Punge	(1314)		
Li Masantan da	Post Parge Drw-25,28	3		Purge	-Clear		
25C	Time Temp(C)	Cond(us)	Dongle	Ha	ORP(MU)	Rugel	Desc
lear	(1315) 1422	836	5,50	6.44	64.6	0,3 min	Chear
16	(1320) 14,54	178	3.89	6.34	90,8	(1	4
1	(1325) 14,29	722	204	6.37	96.5	u	le le
* Application	(1330) 14.11	713	1.71	6,37	91,7	u	4
i .	(1335) 14,02	718	1,29	6,39	74,1	24	и
The state of the s	(1340) 14.06	735	1,17	6.41	64.7	n	9
The red classes	(1345) 14,10	750	1,14	6.43	59,4	ii	
Angeldig opposit	(1350) M.61	763	1,14	6.43	54.7	4	7
	(1355) 13.98	771	1,14	6.42	62.1	11	9
	(1400) 13,92	774	1,14	6.42	63,2		
	(1400) Readings	Stable					
	$ \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot $			1405)			
	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	males	Collect	1:(081	51,(3)TM,	(6) 8270,(3	3)CN. (3)Sulfide
			~ (5) (3)9	065,(9)82	60.(6)80	281

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			an agreements			TO THE REAL PROPERTY.	TATE OF THE PARTY	
4/23/08			R	PAAP			F8#8	4
1,700,700			B03	704-06 145/1UE				37
7 wca								
	24.85		Be	gin Purge	(1448)			Res-
ost Purge DTW		İ		1 Parge				
Time	Temp(E)	Condlus)	120 mg/L	pH		Purgek	Desc	
(1450)	14.43	253	3.25	6.64	121.8	0,34min	Clear	\
	13.94	819	0.76	4.58	137.3	41	11	(
(1500)	13.94	819	0.74	leileo	135,4	11	lı	
(1505)	13.93	821	0.74	le.le4	132.8	11	11	Ĺ
(1510)	13.91	823	0.76	le.65	131,2	1t	Dr.	(
(1515)	74,01	823	0.75	le lele	131.9	11	И	(
(1520)	14.10	824	0.78	6.67	131.6	11	11	. (
		s Stable			-			
<u> </u>	Salar	~ple Jin	·n (1525)				
2	Jana Olac (~ Hor fed!	(2) 22 70 (1)	1 (1) Sul	fide,(i)90	14 (3)82	60.	
<u> </u>	willer	Buwine.	1205/c/	1)8151, []	The			
			0/0000	76.31	/ 13			
TWOUP								
Mile	Canalle	Time (540)		- Avance			
• •	Solvan Dos	Caller Lo	1./27827	b man,	(i) Sulfic	6.11)906	5, (3) 826	ا ا
)army cs	Conven	(3)8081	, (2)8151	(1) TM	10.77-		
= =	Sup Col	1-06-06		TWCA			\	· *
	Jup co	115CHW	701	1000				•
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•		-				77		
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			İ					
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					A A A A A A A A A A A A A A A A A A A			
			,					e i
		<u> </u>	1	(b)	1	1		. :
							(A).	

				Δ	<u> </u>		FB#8
#8	4/23/08		RAA BO3204	-06			<i>For</i> ro
!	26		DAS/1	DE			
	1W12B			` 0	(1,00)		
	Rest Purge DTW-24,89		Beg	in Parge	(1609)		
	Drw-24,8	0	Initia	1 Runge	: Clear	0 4	Desc
<u> SC</u>	Time Temple	Cord(us)			The second second		Clear
201	(1610) 1583	446	8,16	6.88	122.0	0.3 /win	11
	(1615) 15.58	647	7,88	6.86	125.4	71	u
[(1620) 15,14	40	7.33	6.85	131.5	11	17
t	(1625) 15.13	<i>435</i>	7.20	4.87	134,1	11	112
*	(1430) 15.20	634	7.18	6.88	/35.9	71	10
((16.35) 15.21		7.18	6.90	136.8	t v	31
<u> </u>	(1640) 15,30		7.17	6.91	137.6		
	(1640) Readings	Stable	<i>[</i>				
	Sar	nple Time	(1645)	() - (101010	10 (3)	27/0
	Samples	Collected;	(2)8270 ₁	(1)CN; (1)Sulfide, (i)906 5 ,(3)8	aw .
,		<u> </u>	.a)8081,	(3)8151	, (1) TM		

<u>3)826</u> 0							
	4						
							v.
				7		1 1 1 1 1 1	

Wale.

	· · · · · · · · · · · · · · · · · · ·
#8	7/17/08 RAAP FB#8
	803201-06 DAS/TQE/TO
·	General Notes
	Weather-Sunny 80's
	PPE-Eye Protectan, Nitrile gloves, Hard Hat
	Calibrations - YSI 650 2005
	pH-4.00=4.00,7.00=7.00,10.00=9,98
	Conductivity reads 1413 us in 1413 us 5td
	Do 70 = 100
-	· Dedicated tubing and well skirts used at each well
	· All equipment decored between each well
<u>5</u> L	· Purps water contained and discount Cat (1 1 1 1 1
eac	• Purge water contained and disposed of at dedicated location on site
	Samples collected, stored and transported in coolers on ice
eev_ ecv	7w/3
W	
<u>~</u>	DTW 19.34 (PPDTW-25.40) Initial Purge-Clear
12 <u> </u>	Time Temple Condlus Domsk DH ORP(MU) Purge k Desc
~	(1035) 75,89 1462 5.99 7.10 147.1 0.34mm Clear
25	Clear Clear
	Clear Clear
	Cear Clear
	(1055) 17.28 1560 2.61 7.03 728.4 " Clear
	(100) 17.18 1559 2.50 7.03 -24.5 " ckar
	(1105) 17.30 1548 2.49 7.03 -216 " Clear
	(1105) Readings Stable
	Post Pluray 14.24 1529 2.71 7.10 386 8 clear
	Sample Time (1110)
	Samples Collected: (2) TM, (2) TM
	(1112) REP-2-(2) Tay
	(1114) REP-3-(2) TM
	(1116) RER4-(2) TM

A	
	63

		10 J. F. W. W.					
7/17/08		RAAF 803204	-06			PB#8	1/17
		DASIT	QEITD				•
7W9C							
DTW - 14	.66	Begin 1	Parge (113	34)			<u>55</u>
Post Parge DTW-16		Fritial R			:		
Time Temple	Condlas Do	K pH	ORP(MU)		Desc		Post
(1135) 14,10	1353 2,118		25.9		Clear		7
(1140) 16,12	1364 1.9	0 6.66	31.6 %	2.8	Clear		11.
(1145) 15.72	1386 1.3	3 6,59	44.4	и	Chear		(14
(1150) 15.63	1390 0.99	6,52	70.2	11	Clear	·	(14
(1155) i6.01	1390 0.8	8 6.50	76.3	11	Clear		1 (14
(1200) 14.20	1389 0.80	o 6.52	76.9	11	Clear		(10
(1205) 16.09	1396 0.80	6.50	76.7	11	Clear		(14
(1210) 15.93	1395 0.80	0 6.49	75.6	ŧι	Clear	•	(10
(1210) Reading	is Stable						(12
her .	Sample Tu	ne (1215	5)	·		-	(14
San	roles Collee	led; (2) T	u				Post
(Post Purge)14.98	1366 0,92	4.54	73.6		Clear		
	**************************************				THE STATE OF THE S		
10MW 1				1			7
DYW - 19	. <i>38</i>	Begin 1	Luge C12.	53)	İ		1
Post Punge DTW - 1	9.56	Initial &	linge - Clea	W			:
Time Temple	Condlus Domg/c				esc		1
(1255) 17,20	507 8.24	7.04 10		lmin	Clear		
(1300) 17.53	492 7.96		0.7		Clear		
(1305) 18.18	488 7.76		3.9		Clear		1
(1310) 1851	484 7,47		25.6 1	1	Clear		· .
(1315) 18.86	481 7.59	1	26.3	1	Clear		
(1320) 18.84	484 7.56			11	Clear		1
(1325) 1283	485 7.52	-		11	Clear		•
U.Z	is Stable					1 10	
	imple Time	(1330)	:				;
	es Collectedi("		าหมาก				-
(Post Purge) 18.14	484 7.92	6.47	187.8	:	Clear		: -
12. 14 de \ 1511	101 1, 10	<u> </u>	10110		- vea	·	
<u> </u>		(26)		!	<u>.</u>		

(26)

F8#8	10/22/08	RAAP		FBH 8
10710	MACON TO THE PROPERTY OF THE P	B03204-0	الله الله	
	General Notes			
	Lara Hang Com	605		
	DPE-Eve Protect	on Nitrile 9/	loves, Hard Hat	<u>'-</u>
w) Desc	Calibrations -	YSI 650 MD	5 1	
· Clear	2H-4,00=	, 7,00 =	, 10.00 -	
Clear	Conductivity	reads 1413	us in 1413 us s	td
Clear	70 % = 100			
Clear	Dedicated tubing	and well skirt	s used at each u	iell, and
Clear	decoded of	2 350		
Clear	e all comment	Jeconed between	en each well	
ciear	· Purge water pon	tained and dusp	osed of at treatme	at plant
	onsite.	4		
Clear	· All samples col	lected, stored a	and transported on	1Ce
	in coolers			
	Stat	c water Leve	el Table-Unit 7	
	WELL	DTW	Post Ringe DTW	Notes
	7w12B			
-:	7w9c	15:12	18.05	
	7w10B	15.75	16.36	
pu) Desc	7W10C	21.20	25.84	
n Clear	7w13	19.45	22.95	
Clear	7MW6	26.91	34,24	
Clear	7WIIB	25.23	25,30	
Clear	7 WCA	25.04	27.56	
Clear				SWL ONLY
Clear	7w9B	22.75		
Clear	7011	24,34		
	7MW5	25.05		
. Clear				
			COMPLET	ED
			HAV Jas	J04
		Ma Ma	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	

10/22/08		9AP 04-06	and the section of th		F8#8	10/23/08
, ,	возд Дж.	1705 1705				
7W13						7WIOB
DTW - 19.45		Begin Purg)		D7W-1
Post Parge DTW-22,9	5 <u>In</u>	tral Pung		0 (1	Post Purge Di
Time Temp(E)	Cond(us) DOTE	-p#	ORP(MU)	<u>lunge Klepm</u>		Time Ter
(1005) 13.53	1473 4.87	7,28	9,8	0.3 /MI		(1230) /3.
(1010) 13.86	1483 2.47	7,19	-7.4	11	Clear	(1235) 13
(1015) 13,96	1486 2.09	7,16	-4.2	1)	Clear	(1240) 13.
(1020) 13.94 (1025) 13.97	1482 1.98	7.15	2.5	11 -	Clear	(1245)13.
7 7		7,14 7,14	16.5	11		(1250) 13.
(1030) 14,00 (1035) 14,04	1465 2.02 1460 2.10	7,13	19.7	- 11	Clear	(1300)13.
(1040)14.05	1456 2.12	7,12	20.3	- 11	Clear	(1305)13.
7 3 -	s Stable	1710	1013	I I	CIECL	(1305) Re
(1058) 14.29	1448 2.33	7.15	19.4	Post Purge	Clear	(1323)1:
	e Time (1045)			103110190		L V
Sam ples	Collected (a) 82	70, (1) 01	V. (1)TW	4		Sai
	٠		- ,			100
7W9C				:		7W10C
DTW-15.12	Beg	in large (1124)		•	D7W -
Post Purge DTW-18.05	Inital	il Purge-	Clear			Post Punge Di
Time Temple	Condlus Dougle	_pH_	ORP(MU)	Purgek(gp	W_Desc	Time I
(1125) 13.60	1332 2,25	6.81	19.4		n Clear	(1355) /
(1130) 13.38	1346 1,73	6,77	27.1	11	Clear	(1400)1
(1135) 13,31	1357 1.24	6.74	39.6	<u>''</u>	Clear	(1405)1.
(1140) 13,29	1369 1.02		50.7	· · · · · · · · · · · · · · · · · · ·	Clear	(1410)1.
(1145) 13,22	1376 0.89	6.72	65.3	11	Clear	(1415)1
(1150) 13,23	1383 0.78	6.72	74.2	11	Clear	(1420) /
(1155)13,24	1385 6.73	6.71	73.4		Clear	(1425)1
(1200)1326	1387 0.70	6.71	69.8		Clear	(1430) R
	s Stable	j "7, i	-1 7 C	. ۱۲ (01	(1430) K
(1215)13,27		6.74	26.18	6st Puge	Clear	U T71)16
- Jamp	le Time (1205 Collected: (a) 8	ノ シュァ。 /・\	cal /,)	TAL	the state of the s	Sav
Jamples		50)	CN, (1)	1/01	<u> </u>	
	(-	ツ	AND THE PARTY OF T			

F8#8	10/33/08 RAAP	FB#8
	10 134 100 BO3201-06 DAS/19E	
	TWIOB	
	DTW-15.75 Bogin Parge (1227)	
;	Post Parge DTW- 16.36 Initial Purpe-Clear	
(gom) Desc	Time Temple Condlas Dong/c pt orPland Rugck(gpm)	Desc
Imm Clear	(1230) 13,33 1028 3.57 6.77 137,4 0.34 min	Clear
Clear	(1235) 13.41 1034 2.92 6.77 137.6	Clear
Clear	(1240) 13.72 1046 2.24 6.77 139.9 "	Clear
Clear	(1245) 13.78 1052 2.10 6.77 139.8	Clear
Clear	(1250) 13.62 1065 1.97 6.77 138.2	Clear
Clear	(1255)13.65 1067 1.85 6.77 139.2	Clear
Clear	(1300)13.77 1067 1.77 6.77 137.6	Clear
Clear	(1305)13.92 1067 1.71 6.77 136.0	Clear
-	(1305) Readings Stable	
ge Clear		Clear
-	Sample Time (1310)	
	Samples Collected: (2) 8270, (1) CN, (1) TM	
:		
	1 7W10C	
	Dtw-21.20 Begin Parge (1354)	
	Post Runge DTW-25-84 Initial Purge-Clear	
(gpm) Dosc	Time Temple Condlaw Don'S/L DH ORP(MU) Purgeklapin) Dosc
Imin Clear	(1355) 13.36 874 1.87 7.07 -50.4 0.34min	Cleav
Clear	(1400) 13.34 872 1.33 7.05 -34.1	Clear
Clear	(1405) 13.34 873 1.01 7.07 -2.0	Clear
Clear	(1410) 13.23 872 0.70 7.04 17.4 "	Clear
<u>Clear</u>	(1415) 13.20 870 0.65 7.04 24.9 "	Clear
Clear	(1420) 13.12 867 0.53 7.04 37.6	Clear
Clear	(1425) 13.14 866 0.55 7.04 39.6	Clear
Clear	(1430)13.20 866 0.57 7.04 40.8 "	Clear
	(1430) Readings Stable 0.59	
je Clour	(1447) 12.94 868 20-70 7.64 41.9 Post Purge	Clear
J	Somale Time (1435)	
	Samples Collected (2) 8470, (1) CN, (1) TM	
	(31)	

10/22/08		RAAP				FB#8	10/23/08
k f	:	B03204- DAS/706	-06		:	, <u>, , , , , , , , , , , , , , , , , , </u>	
							General
7WIZB	,	1					Weat
DTW -	24.86	Beg	in Purge	(1514)			PPE-
Post Parge DTU	3-24.89		1 Purge -				Calil
	Emple Condl			n -	Punge Klappi	Desc	014-
(1515)	15,26 74	6 8.48	7,05	114.1	٠. ١٠	Clear	Coade
(1520) 1	5,16 749	9 7,82	7.00	123.3	11	Clear	Doz
(1525) 1:	5.15 750	7.43	6.98	125.4	//	Clear	· Dedicated;
(1530) 19	5.19 752	7.28	6.97	128.3	- 11	Clear	dispose
(1535) 15	5.21 755	7,22	6.96	130.3		Clear	· All equip
(1540) 15	.14 756	7.22	6.96	131.5	11	Clear	· Purged w
(1545) <i>15</i>			6.94	133.1	11	Clear	· All sample
(1545) Re	eadings Sta	ble					In ca
(1600)15	113 760		6.97	135,41	Post Purge	Clear	
S	cample Tim	e (1550)					7MW6
S	amples Colle	ected: (a) 82°	70,(1)00	U, (1) TM		1	DTW-:
							Post Purge DT
	· · · · · · · · · · · · · · · · · · ·						Time Ten
			!	i			(1110) 13
	!	ı					(1115) 13.
							(1120) 13:
					,	:	(1125) 13.4
	!						(1130)14,
!							(1135) 14,
							(1140)13.
· ·							(1145) /3
					11 - 12 - 13 - 14 - 14 - 14 - 14 - 14 - 14 - 14		(1145) Rea
				((1200) 13.
· .							ري
							Sai
					1	i	
					-		7WDUP
					. •		Sanish
		(52)				
	500 m - 1	NAMES (AND SAN SAN SAN SAN SAN SAN SAN SAN SAN SAN	ele N. L. Miller N. Aller and Constitute for the		and the second s	100 m 100 m	

				FAVE
FB#X	10/23/08	KA Pas		FB#2
		003g	04-06 5/10=	
Name of the state	General Note	25		
		- Sunny 50s		
	PPF-EVE	Protection, Niti	ile gloves	
,		ions - YSI 650		
dans Desc		0 = 4.00 , 7.00 =		9.98
Ponin Clear	Cadali	vity reads 1413		
Clear	Do 70 =			
Clear		g and wellskirks	wad at parti us	oll and
Clear		Cafter use	(130 0 & 7 Euch Co	
Clear		t decemed betw	0 0 0 0 0 1 1 1 2 1	,
Clear	AIT Equipmen	1 Cycones Deta	part of the	citment plant onsite
	* Nurged walk	U. I. I. I.	1 50 d 400 1 500	Jal an ica
Clear		ollected, stored	ana Frans John	700 00 1C C
<i>C</i> 1 2 = 0	In cooler	~ 5		
inge Clear	43 (-			
	7MW6		- D (
1	DTW-269		egin Purgel (107)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Past Purge DTW-34		Fial Punge - Clear	
	Time Temple		pH ORP/MU)	Purgek (gry Desc
	(1110) 13,72	1690 3.85	7.38 -20.4	
	(1115) 13.62	1780 2.16	7.28 -53.9	Clear
	(1120) 13.83	1852 1.62	7.19 -84.5	Clecar
1	(1125) 13.93	1858 1.45	7,17 -92.6	Clear
	(1130)14.02	1857 1.31	7,15 -102.1	Clear
	(1135) i4,03	1841 1,20	7.14 -110.8	Clear
	(1140) 13.97	1803 1.16	7,17 -114.9	Clecor
	(1145) 13,93	1786 1,13	7,18 -116.2	Clear
	(1145) Reading			
	(1200) 13,80	1781 1.33	7.27 -106.6	Post Purge Clear
		le Time (1150)		J
- A A A A A A A A A A A A A A A A A A A	Sausle	s Collected: (2)82	70 (1)00 (1) 7	u
	Sumple			
	711 DUP 10-	Heifed at well	Joca Jan 74	3CA)
	- We will be	me (1450) Sa	mples Callorled	(a)8270, (i)en, (i)TM
	;	MACIFICOLD S	(53)	Constant of the series
				and the second s

10/23/08		RAF	1P			FB#8	10/27/08
		BO 3204 DA5/1	1-06 BE				
7W11B	MANAGE TO THE STATE OF THE STAT						General N
DTW-25,23				(1227)			Weath
Post Parge DIW - 25.		Inti	al Purge-	- Clear	Λ ,		PPE-E
Time Temple	Conduis)	DO 9/c	PH_	ORP(NO)	Lurgeklap	a) Desc	
(1230) 13,71	937	3.82	6,44	66.8	0.3 4mm		PH- 4
(1235) 13.88	937	2.64	6.43	74.6	11	Clear	Condact
(1240) 13.86	942	1.61	4.43	80.5)1	llear	Do %
(1245) 13.86	942	1,46	6.42	84.6	11	Clear	· Dedicated
(<i>125</i> 0) 13.82	942	1,37	6.44	88.8	11	Clear	dispose
(1255) 13.87	947	1,21	6,44	94,1	11	Clear	· All egu
(1300)13.77	951	1,20	6.44	97.3	· · · · ·	Clear	· Purge wa
(1305)13.79	952	1,25	6,44	99.5		Clear	onsite
	5 Stabl	೬			1 . 0		· All sampl
(1334)13,76	941	1,50		107.4	Post Purge	Clear	
Samp	le Time	(1310)				
Samples	Collecte	id: (4) 8	270,(3))en , (3))TM		WEL
		· · · ·			:	LANCE MAN TO STATE OF THE STATE	55W
7WCA				, ,			<u>55w</u> 5
DTW-25.04		Be	zin Purge				<u>5691</u>
Post Punge DTW-27		Fnit	ial Ringe	e-Clear	:		5W10
Time Temple	Cond(us)	DO"3/2	pH	ORP(MU)	Purope Klg Di	Desc_	<u>5w11</u>
(1400) 13,59	964	2.43	6,72	12/12	0.3 Tenis	i Clear	<u>5w8</u>
(1405) 13,57	928	1.16	6.68	133.8	11	Clear	<u>5 w7.</u>
(1410) 13,58	913	0.90	6.67	139,1		Clear	5W5
(1415) 13.55	912	0.81	6.67	139.8	11	Clear	5wc;
(1420)13,50		0.74	6.69	138.7	11	Clear	5 WC,
(1425) 13.49		0.67	6.67	138.4		Clear	<u>5wc</u>
(1430) 13,48	908	0.65	6.67	138.1	71	Clear	• 5wc
(1430) Readin	gs Stal	ile,		···	-	No. of the late of	·55W4
(1500) 13.26		0.73	6.68	129.7	Post Purge	Clecur	055w8
San	iple Tin	re (1	435)		<u> </u>		<u>. 2 mc1</u>
Sample	s Colle	ctedical	1)8270, (1) CN, (· 5wcl
	· · · · · · · · · · · · · · · · · · ·	7				2-8-08	
		.(5	4)		l .		

ורווגו	<u>૦</u> ૬		RAA BO32	P 04-06 ITQK			F\$# 8	1/28/09	
General	1 Notes	The state of the s	O _D	1410				Geneva	
	- Weather: Overcost 505								
	: N.40.4			Portection	₩ N	- #		· Weat	
- Calib	rations:	YSI 65	io mos					2	
)H-4.00			6.99	10.00 =	9.48		A)	
	onductiv						<i>c</i>	· Dali	
	0% = 100	2 1				· 0.4		· Jeco	
	cated to		nd well	skirt	used			0/0	
· Puras	Water	Conta	ined an	l d.300	osed of	at		Som	
ded.	lated 1	ocation	ensite	<u> </u>					
								1-AA9	
<u>7ωι</u>	3					1		₽	
	3-13,60) :	\mathcal{B}_{ϵ}	egin Pur	zc (1159)				
Post Pura	f DTW-2	3.70		J n/	ryc-Vear	-			
Time	Temp(8)	Corlles		DH	ORP(mi) Puzzle	Desc		
(1200)	12.40	1304	8.51	7.04	56.8	- 0.3 7m			
(1205)	12.64	1333	1.72	7.00	8.0	и	cleur	Sam	
(1210)	12.76	1324	1.20	6.98	0.9	1 17	Clear	(z)829c	
(1215)	12.86	1311	1.81,01	6.97	8,3	и.	Clear		
(1220)	12.98	1293	1.13	6.97	14.9	17	Clear	PAD-2	
(1325)	12.90	1238	1,53	6.97	17.3	16	Clew		
(1339)	12.83	1290	1.53	6.97	16.1	1/	clear		
(1235)	1292	1298	1,25	6.97	5.9	11	cleur		
(1240)	12.93	1298	1.15	6.97	2.9	а	clar		
(1245)	12,99	1296	1.16	6.90	0.6	ч	deer		
(1350)	12.98	1294	1,20	7.00	1.6)¢	clear	Sample	
(1255)	12.39	1293	1.25	7.01	3.4	t _t	cleur	(2) 829	
	Readings	Strible			V. (4)				
(1312)	12.79	1289	1,41	7.02	5.9			PAD-3	
	Same	le Time	(1300)						
	Damp	ios Colle	ord: (1)	TM-C	obalt on	ly		<u> </u>	
11									
F:								Samples (6)	
			((4)					

FB#7 4/17/08 RAAP -	
203204-06 245/1CFC	> <i>F8</i> #7
General Noles	
Troutfor-Suny 705	
PPE- Eye Protection, Nitrile gloves	
Dosc Calibrations - 757 650 MDS	
Cloudy pH-4.00=4.01, 7.00=7.00, 10.00=9.5	<i>ie</i>
SI Cloudy Concretivity reads 1500 us in 1500 us 5th	2
51 c Joady 20 % = 100	
Chear	
Clear Dedicated tubing and well skirts used at each	N WE(I)
" and disposed of after each use. " All equipment decored between each well	
• Purge wake contained and clisposed at dedicated loa	from onsite
· Samples Collected, stored and transported on ice and in	coolers
5-kolic Water Level Table-Unit	10
well Dtw Post Parge DTW	Nors
10 mw 1 18.94 19.10	
10D4 2290 2294	
10D3D 18,80 +	1
Desc 10D3 18.85 18.98	
in Clear 10DDH2R 20,34 24,53	
Claw	
Clear Drw 1294 Bain Purce (1033)	
Part Proportion 19:10 Faither Russe-Clear	
cler Time Tempé Condlus Dons Att ORPhio Para	e K Desc
1035 15.36 485 8.71 7.21 1628 037h	in Clear
(1040) 15.41 484 8.28 7.27 160.9	
(1043) 15.70 487 8.08 7.26 159.8	
S. (Fiel (1050) 15.84 483 8.03 7.24 162.9	
158 (1000) 15,43 488 8,01 7,86 162,3	
(100) 16.08 488 8.01 7.26 163.9 "	

	4/17/08		BAH	11			FBS+7	4/17/08
	11.100		P~ 22/4	1-36				
The state of the s	pomwi-(Cont.)	1		COOKFC.				10D3
Company of the compan	- 16	Condius)			RP(W)	lange K I	De56-	DIW
A Commence of the Commence of	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	490	8.02			0.3 /min		Post Parge D'
1200	(1105) 16.12 (1110) 15.94	488	8.03	-	70.3	<i>?</i> (71	Time
Section 1	(1110) Readings			1700 1	70.0		•	/1335
		Stable le Time			-			(1340)
C	Samples C	11 - 6 1 V	(2) 87/00 [2) 8270 (וצמצוג	(Dew.	1) Sulfide	(1345)
The second secon	- samples C	onecka:	9045, (2	18151 1	i)+111	(1)001/(1009-1100	(1550)
20012		<u> </u>	17043, (4	1010116	1) / 001			Y(355)
	Teani					-		(1400)
2586	10D3D		Q.	jin Punge	(1143)	:		714058
	DTW - 18.72 Post Purge DTW-18.80			Purge-	Cipal			(1410)
STATE OF THE PARTY	\sim 0		Domski	DH	ORP(MU)	Purek	Dosc	(0) ·
	Time Temple	720	4,20	7.21	-183.9	0.3 /min	Clear	
	(1145) 14.66	761	2.96	6.99	-163.2	11	17	2
	(1150) 14.69	782	3,33	7,00	-139.1)1	-11	MOON
100		785	3,19	7,02	-121.4	11	11 -	¥ 10 D
	7	785	3,20	7:06	-113.8	17	71	F
	(1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	186	3.08	7,09	-118.2	(1)	11	.
		,,,	2.91	7.11	-123.4	"	. 17	
	(1215) 14171 (1220) 14172	786 785	2,87	7,12	-127.6	11	1)	(1)CH
					-131.9	11	71	
	(1225) 14.72	787	2,95	7,15	1 1161-			10 D.D.t.
	(1228) Roading	is Starol	- (in -):	7				Dn
		inple 111	ne (1230	11)0770	16)2001	(3) Cul /2	Sillida	Post forge
1000	Samples	conected"	12/0-15	11. 7010	(2)TAL	(3) (N) (3)	1 Julyine	14 0
			(3)9065	וכוצנשו	۱۳۸ روس			11445
		1 1 11		10 -	dar			1450
	* Water	Nod 104	en egg/s	wher ox	107 ·	المالية	anae K	(1455
and Artistics	* Purge	tube at	10 Oct	casir	S nas	Simall Lin Da	raci	(1500)
8	<u>eausi</u>	ns air	bubbles	Have	no wa	Har DO		isna
and the second	1/201	fant ai	s pabbl	RS IN	7 1000	ich and	W ADDING TO THE	(1505) (1510
	* A9k1	Collecti			Juli cos a	tubin	9	
			1	49			J	

m.		
'B=+7	4/17/08 RAAP	FB#17
	B03201-C6 DAS/TOOKFC	
	10D3	
:5C	DTW - 1885 Begin Purge (1330)	
lear	Post Parce Drw - 18.98 Initial Parge - Clear	
71		repk Desc
	1335 15.38 670 4.30 6.83 58.5 0.3	Show Clear
	(1340) 14.92 667 3.67 682 72.2 1	Clear
Sulfide	(1345) 14.98 669 3.56 6.88 80.0	1' Clear
		" Clear
	(1355) 1504 676 3.47 695 918	r Clear
	(1400) 15,05 683 3,57 6,97 95.5	" Clear
	14058 15.11 691 3.62 6.99 98.2	11 ("lear
	(1410) 15.16 698 3.65 7.02 99.6	" clear
lesc	(410) Readings Stable	
lear 17	Sampletime (1415)	
	Samples Collected: (3) 8260 (2) 8270	(2)808(
-11	(1)CM (1) 51/14de (1) 9065, (2) 8151 (1) TM	
1]	* 10 DUP was collected for 10 B3 *	5
11		
11	Somple Time (1430)	
1)	Samples Collected: (3) 8260, (2) 8	270,(2)8081,
1)	(DCH, (1) CULFIDE (1) 9065, (2) 8151, (1) Th	
71	Production (1997)	
	10DDHZR	
	DTD - 2034 Book Ruse (1444)	
elfide	Post forge DTW-21,53 In hal large-Clear	
	Time Temple Cond(us) DOUR DA ORP(us) Pu	iek Desc
	145 15.65 677 5.22 6.78 99,7 0.3	3 Yulin Clear
	(1450) 15.00 680 1.88 6.70 966 1	i Clear
ack	(1455) 14.73 680 1.35 6.71 93.8	
	(1500) 14.57 GAZ 113 6.67 95.7 1.	a Choar
((1505) 1429 674 1.26 6.61 98.8	14 Cear
MANITA	(1510) 14118 658 204 6.55 108.7	i c'hen
	150	

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4/17/08		RA	AP				4/2
		RA B0320 DAS	3f-06	Annual Advintor		-	
10DDHZR	((01)	DH5	HU-C-				a
		V(us) Domy/c	1 - 4	ORP (M)	Parak	Desc	
		. /		110.9			
6/	14.21 65		6.55		0.37mm		,
	4,13 64		6,54	128.6	0,3/min	Cleat	
	3.98 Co		6.55	128,2	<i>j</i> 1	11	
	13.93 64		6.54	129,3			1
(1530) 1	Readings	Stable					
	Sample	Time (153	(5)				
5	amoles C	ollected:(3)8.	260, (2)86	70, (2)80	81, (i) CN	1, (1) Saltide	
		11)9065	(2)8151,(DTM			
1			, , , , , , ,				
1004							4
	22.90		Bagin	Priva (16	18)		
			Initial P	7			
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TIME TEM	NPE Condi		_				
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(1 <u>63</u> 0) 14.	73 353	3.27	6.39 14	8,6		Clear	P
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(1650) 14,5				18.2	15	jı	7
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War Lea	CINY OF	No Time (16.55				(%
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Land Control of the C				1200			. Longer
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	l l	1 71	FAILEY!		. 1		

		7.0	= 24/01
B#8		RAAP 03294-06	FBHS \
		DASITOR	
	General Notes		
	Weather-Sunny lec) \$	
D. (.	PPE-Eye Protection	1) trile gloves	
Desc	Calibrations - YSI (250 MDS	
a i	54 - 400 = 400.7	.00=7.00,10.00=9.99	
- 4	Cardin tipte weads	447 us in 447 us 5to	1.
	Do 70 = 100		
1 4			
1 5		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
,	· Dedicated tubing and well:	skirts used at every went and	
7	disposed of after each	n use.	
	• All egaipment deconed	between each well	1
Perge	· Purge water contained and	disposed of 9t chalcafed 100	a TOA CIISIRE
	· Samples collected, stared	and transported on ice and	In Coolers
THE			
	10MWI		
	Drw-18,79	Bagin Purge (1000)	
	Post Reige Dow 18,27	Initial Purge-Clear	
	Time Temple Condlais) i	DOMIK DH ORP(NW) Parger	& Dosc
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		1,29 7,15 1,57,9 "	Clear
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	Janipe IV	led-(3)2260,(2)8270	
	Jamples Collec	10-10/2010 jusparo	
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5/19/08 Bo32eg-et Bo33eg-et-etear Time Tempol Condins Down pt ORKIND Puropek Des C (1105) 1446 691 4123 7.02 -1944 0.3 Main Clear (1100) 141.70 672 3.29 6.87 -181.1 11 Clear (1115) 141.74 628 3.67 6.87 -170.8 11 Clear (1120) 141.86 698 3.34 6.90 -155.3 11 Clear (1125) 141.86 698 3.34 6.90 -155.3 11 Clear (1125) 141.87 701 3.21 6.93 -149.2 11 Clear (1130) 15.04 704 3.03 6.96 -141.0 11 Clear (1135) 141.94 707 3.91 6.97 -132.9 11 Clear (1145) 141.94 707 3.91 6.97 -132.9 11 Clear (1145) 141.87 710 2.23 6.98 -127.1 11 Clear (1145) 141.87 710 2.23 6.98 -127.1 11 Clear (1150) 141.58 711 2.72 7100 -127.0 11 Clear (1150) 141.58 711 2.72 7100 -127.0 11 Clear (1150) Readings Stable Sample Time (1155) Samples Callected (3)8360, (2)2270 Post Purge (1200) 141.60 703 3.85 7.0% -14811 1023 DYW - 18.22 Bo310 Rurge (1215) Rost Purge (1200) 141.60 703 3.85 7.0% -14811 1023 DYW - 18.22 Bo310 Rurge (1215) Rost Purge (1200) 141.60 703 3.85 7.0% -14811 1023 DYW - 18.22 Bo310 Rurge (1215) Rost Purge (1200) 141.60 703 3.85 7.0% 14581 Clear (1230) 141.60 6.32 4.01 6.75 58.3 11 Clear (1235) 141.66 6.32 4.01 6.75 58.3 11 Clear (1235) 141.66 6.32 4.01 6.75 58.3 11 Clear (1255) 141.66 6.31 3.71 6.77 6.78. 11 Clear (1255) 141.66 6.31 3.71 6.77 6.78. 11 Clear (1255) 141.66 6.31 3.71 6.77 6.78. 11 Clear (1255) 141.66 6.31 3.71 6.77 6.78. 11 Clear (1255) 141.66 6.31 3.71 6.77 6.78. 11 Clear (1255) 141.66 6.31 3.71 6.77 6.78. 11 Clear (1255) 141.66 6.31 3.71 6.77 6.78. 11 Clear (1255) 141.66 6.31 3.71 6.77 6.78. 11 Clear (1255) 141.66 6.31 3.71 6.77 6.78. 11 Clear (1255) 141.66 6.31 3.71 6.77 6.78. 11 Clear (1255) 141.66 6.31 3.71 6.79 6.78 7.78 7.78 7.78 7.78 7.78 7.78 7.78	BOSTONIC BOSTONIC		rencie Alberta et a							
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	•	(1415) 14.52 600 1.39 6.66 71.8	Clear
	Y	(1420) 1469 595 1.64 6.62 76.7	Clear
		(1425) 1472 589 1.67 6.58 79.9	Clear
• • • • • • • • • • • • • • • • • • • •		(1430) 14.85 524 1.73 6.57 81.4	Clear
sc	1	(1430) Readings Stable	
real		Post Purge 14,95 515 3.78 6.32 1/3,2	
94r			
	i.		
ear		Samples Collected: (9) 8340, (6) 8270	
la (
ar	i		
20V_			
ear			
<u>'ar</u>	į		
	(
		(19)	

							1/2
5/19/08	1	ı	RAAP	·/-			FB# 8
			B03204-C	10 E		: ! !	· : !
			1	1		·	
10D4							:
DTW	- 22.87	-	<u> </u>	Egin Para	e (1500)		:
Post Page		18	In	Fial Purer	-Clear		
Time	Tomple)	Condins) Dorgh	DIE	ORP(m)	Pargek	Dose
(1505)	14.48	324	4,32	6.50	10811	Di3 /nin	Clear
(1510)	14,77	317	3,79	6.41	115.8	11	ì(
(1515)	14.80	315	3,10	6.41	119,0	<i>(</i> (·	į Iį
(1520)	14,14	315	2.94		124.6	<i>(</i>	(1
(1525)	14.18	3/2	2.90	1	125.4	71	(1
(1530)	14,56	311	3.01		12518	ľ	11
(1535)	14.70	3/7	3.98	1	126.3	(1	1)
(1540)	14.71	3/2	3.05		127.1	f i	11
-	Readings		1		i		
Post Purge	1407	312	3.16	6.48	122.8	ŗ	!
3.7213	San		ime / 15				<u> </u>
	Samoles	Collect	ine (15 led: (3) 8	260 /3)8270		1
	Sample	unui		100,00			1
	:			<u> </u>	1		
							:
			: :		:		
			-				
· · · · · · · · · · · · · · · · · · ·				:			1
	!			<u> </u>			:
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	i			: : !	:		
	i 						:
	1		:	1			1
					İ		1
			70	ري			

7/17/08	RAAP 803204-06	PB#3	1/17/1
4.100	DASTAELTD		
7W9C		<u> </u>	, , , , , , , , , , , , , , , , , , ,
DTW - 14.66	Begin Purge (1134))	<u>551</u>
Post Parge DTW-16.96	Finitial Runge-Clear		D.
Time Temple Con			Post fi
/		Him Clear	71m
7 - 1	67 1.70 6.66 31.6	Cltai	(141
/	86 1,33 6,59 44,4	Chear	(142
(1150) 15.63 13	90 0.99 6.52 10.2	Llear	(142:
(1155) ile.01 13°	90 0.88 6.50 16.3	Clear	1431
(1200) 16.20 13	69 0.66 6.5d 16.7	Clear	<u>L143</u>
(1205) 16.09 139	16 0.86 6.50 76.7	Clear	(144
(1210) 15.93 139		Clear	(144
(1210) Readings S			(145
	uple Time (1215)		(145
Samples	s Collected: (2) TM		(Post Pu
(Post Purge)14.98 130	66 0,92 4.54 73.6	Clear	
10MWI			4
DW - 19.38	Begin Purge (1253)	-
Post Ruge DTW - 19.56	o Initial Runge - Clear		,
	us) Domg/c pH ORP(Mu) Purgek	Desc	1
(1255) 17,20 507		n Clear	
(1300) 17.53 492		Clear	-
(1305) 18.18 488	7.76 6.84 123.9 11	Clear	4
(1310) 18.51 484	7,61 626 1256	Clear	
(1315) 18.86 481		Clear	:
(1320) 18,24 484		Clear	· · ·
(1325) 1283 485		Clear	-
(1325) Readings 5	lable		
	e Time (1330)	1	
Samples Co	blected: (4) 8081, (4) 8270	1	A STATE OF THE PARTY OF THE PAR
	14 7.92 6.47 187.8	Clear	-
			d
	(26)		

(26)

	1/10/30/08	RAA1 803204-)			FB# 8	10/30/08
// i/" 	10 1-0	803204- DAS/TAE/	06 70			:	
	General Notes						romwi - (con
	Weather-Si	uny, 50's					Time Temple)
	PPE-Eye Pro	tection, Nitrila	gloves				(1025) Readings
	Calibrations -	YSI 650	MDS				(1040) 14.94
	DH- 4.00=	4.00 ,7.00=	6.98,10.0	00= 10.00)		Sample
	Conductivit	y reads 141	3 us in /	413 215 5	H	·	Samples Co
	Do % = 10	0	İ			:	
	· Dedicated tubin	g and well sk	irts used a	t each	well	•	10D3D
•	· All equipment à	deconed betw	een each	well			D7W-19.86
	· Parge worker car	valued and o	is posed of	at ded	icated	-	Post Parge DTW-19
	location o	nsite	i		:	:	Time Temple
and the state of t	* All samples collec	led, stored and	transported	on ice i	n cooler	3.	(1105) 14.82
-	•	:					(1110) 14,54
Pos	<u>54</u>	tic Water	evel Tab	le-Unit	10_		(115) 14.48
103	WELL	DTW	PostPurgo	DTM	Modes	3	(1120) 14.61
	JODDH2R	21.28	21.67				(1/25) /4,70
	IOD3	20.08	20.26		!		(1130) 14,70
	10D3D	19,86	19.89		:		(1135)14.70 (1140)14.82
1	10MW1	19.73	20,15				(1145) 14.90
	1004	22.43	23.08				(1145) Readine
	make were to the extension	made a see of a section of the	:	-	!		(1200)14.63
	<u>iomwi</u>		1D - U	(+0/10)		*	
	DTW-19.73	<u>.</u>	Begin Purge	(0948)		:	Sample.
	Post Puge DTW-20.1	$\frac{5}{2}$	itial Purge -	Clear	Q. 10/	1 0 0	- Jampie
	Time Temple		OL PH		Purgeklypu	u) DesC	1003
	(0950) 13.72	560 81		148.7	0.3 7 min	Clear	DTW - 20.0
	(0955) 13.50	524 81			11		Post Purge DTW.
	(1000) 13,67	526 7.8		172.3	. 11	Clear Clear	Time Temp
Electronic de la constantina della constantina d	(1005) 13.87	<u>520 77</u>	-	17 9 .6 182.9	11	Gear	(1225) 14.83
COLUMN TO THE PROPERTY OF THE	(1010) 14.53	506 7.1		187.7	11	Clear	(1230) 15,13
	(1015)14,79	503 7.3		189,9	- 11	Clear	(1235) 15.23
	(1020)14,87	500 711				Clear	(1240) 15.49
	(1025)14.98	497 7.1	(44)	1101		-1001	

FB# 8_	10/30/08 RAAP	FB#8
	803204-06 DAS/TOE/TD	
V	romwi - (cont.)	
	Time Temple Condus Dough pH OR	P(MU) Purge K(gpu) Desc
	(1025) Readings Stable	
	(1040) 14.94 488 7,21 7,24 19	8.3 Post Purge Clear
	Sample Time (1030)	
H	Samples Collected: (3) 2340, (2) 8270, (1) T	M (1) cN
:		
vell	10 D3D	
	Drw-19.86 Begin Parge	(1104)
aled	Post Parge Drw-19,89 Initial Parge	
		RP(Mu) Pungek (Agus) Desc
n coolers	(1105) 14.82 717 3.34 7,25 -	191,8 0,3 1mm Clear
	(1110) 14,54 7/3 2.05 7,23 -	203,8 " Clear
10_	(1115) 14148 713 1.42 7.17	-218.3 " Clear
Notes	(1120) 14.61 725 1.89 7.13	-2/1,7 " Clear
	(1125) 14,70 767 2.01 7,12 -	202,6 " Clear
:	(1130) 14.70 786 2.29 7.14 -	-190,5 " Citar
		183.8 " Clear
-	(1140)14.82 798 2.41 7.15 -	182.6 "Clear
	(1145) 14.90 798 2.46 7.15 -	180.7 " Clear
	(1145) Readings Stable water	had rotten egg odor
	(1200)14.63 805 2.42 7.17 -1	170.6 PostPurge
,	Sample Time (1150)	
	Samples Collected: (3) 8240, (2) 827	10, (i) CN, (1) TM
Punjeklapu) Desc		
0.3 7 min Clear	10D3	
" Clear	DTW-20.08 Begin large	· (1223)
Clear	"Post Purge DTW-20:26 Initial Purge	
11 Clear	Time Temple Cord(us) Doingle pit	ORHAW) Purgek(gpn) Desc
11 Clear	(1225) 14,83 721 4,42 6,94	-1,0 0,3 1min Clear
11 Clear	(1230) 15,13 722 4,33 6,94	15.7 " Clear
" Clear	(1235) 15.23 724 428 6.93	27.9 " Clear
" Clear	(1240) 15:49 725 4,29 6:93	32.2 " Clear
	(65)	

	10/30/08	RAAP B03204-06	en in an existent hande for the armster	ndkoples nesemble Elici Nessi (Ci	and the second of the second o	FB# 8	10/30/08
gel G		BO3204-06 DAS/TGE/TD					7-7-1
1	1003 (cont.)					The billion of the second supply and read out of the second supply and read out of the second supply and the s	
	Time Temple)	Condles DOM	L pH	ORP(MU)	lungeklapm	Desc	10D4
	(1245) 15.63	724 4,26		36.8	0.34 mir		DTW-22.
	(1250) 15,72	726 4,19	4.93	41.0	:1	Clear	Post Purge DTW-2
	(1255) 15.68	727 4,15	4.92	46.4	11	Clear	Time Temple
	(1300) 15,77	728 4,08	6.91	53,3	()	Clear	(1305) 1425
-	(1300) Readings	Stable					(1510) 16,47
	(1338) 15.70	727 4,04	6.94	59.1 P	strurge		(1515)16,49
	Sample 7	ine (1305)	:				(1520)16,50
	Samples Ce	Mecked: (3)8260	7, (2)827	0,(1)cN	, (1) TM	***	(1525)16,57
	1. > 0 /	1 1					(1530)16.64
	10 Dup- (Collec			P. MAY - MAIL	:	1	(1535)16.69
		Time (1320)					(1535) Readir
	Jamples Co	Ellecked:(3)8260	0,(2)8270	(1)cN,	(1) Tas	1-70	(1550)16,33
1	10001100	1					Sami
	1001H2R Drw-21.28		D - A	(, , , , , ,		·	Sample
í	Dot Punga DTW - 2116		Begin Purg				
		Cond(us) Do my/	itial Pun	•		70	
	(1350) 14,72	623 3.41	4.21	ORP(MU) 84,5	9		
1	(1355) 14.79	648 2.16	6,26	22.6	0,3 /min	Clear Clear	
	(1400) 15,03	677 1.69	6.92	73.7	11	Clear	
		693 1.72	6.96	63.7	11	Clear	
		700 1,77	6.96	62.1	/(Clear	
	1	707 1.84	6.95	61.0	11	Clear	
S comme	7. , 7	713 1.92	4.94	59.7	11	Clear	
	(1420) Readings	Stable			,	1	
	(1440) 15.55	729 1.94	6.87	61.8	Post Purgi	o, ,	
	Sample	Time (1425)			U		
	Samples C	olleeted: (9)8260	(6)8270	(3)cN,(3)TM		
					-		
			~			The state of the s	
	S	(4	₹ 6 .)				

	73.4.4	- 0 × 0
F8# 8	10/30/08 RAAP	FB#8
	803204-06 DAS178E17D	
(gpm) Desc	10D4	
Min Clear	DTW-22.93 Begin Punge (1302)	
Clear	Part Parae Dtw-23.08 Initial Purge-Clear	
Clear	Time Temple Condlus Doms/L pH ORP(am) Purgek (gpm) Desc	
Clear	(1505) 1625 363 5,08 6,77 70.8 0.3 min Clear	
	(1510) 16,47 361 4.14 6.72 84.5 " Clear	
ie	(515)16,49 355 3.71 6,65 98,2 " Clear	
	(1520)16,50 353 3.62 6,65 102.6 " Clear	
W	(1525)16,57 349 3.56 6.65 108,5 " Clear	
	(1530)16.64 347 3.53 6.64 112.0 " Clear	
	(1535)16.69 345 3.53 6.65 113,6 " Clear	
A Designation of the Control of the	(1535) Readings Stable	
<u> </u>	(1550)16.33 339 3.64 6.65 117.8 PostPurge	
· · · · · · · · · · · · · · · · · · ·	Sample Time (1540)	
. · · · · · · · · · · · · · · · · · · ·	Samples Collected: (3)8260, (2)8270, (1)CN, (1) TM	100
	Jampies centero Corasace jos jos significantes	
<u> </u>		,
Klapw Desc)
myn Clear		
Clear		
<u>Clear</u>		
Clear		
-		
lurge,		
1		
	(67)	4

.		
7	4/14/08 RAAP	FB#7
· 1	114/00 B03294- 66 D44/70E	
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	Time Temple) DH Condis Domale ORP(MU) Purget	Desc
}	(1355) 11,82 6,15 1247 5,65 186.6 2.34min	
-	(1400) 11,80 6,17 1250 5,63 187,2 11	11
	Samo Time (1405)	
	Samples Collected (3)8260, (3)8011, (1)	7M
1d4 /		
ridy	16-3	
nedy_	Drw -58,58 Begin Purge (1439)	
ruly !	Post Purge DTW - 69.72 Initial Purge - Clear	
may -	Time Tende of Coadus Duy ORRaw Purgele	Desc
owy	(1440) 11,83 7,24 229 8.34 144,3 0.37min	Clear
ridy ridy ridy ridy ridy ridy ridy ridy	(H95) 12.16 7.70 229 6.96 136.0 "	clear
ently	(1450) 12.24 7.86 228 6.65 133.7 "	Clear
Laury .	(1455) 12.77 7.95 227 6.36 131.1 "	clear
Crity	(1500) 12.45 7,91 227 6.34 134.0 1	Cleur
Cocion	(1505) 19.73 7.45 226 6.29 131.57 "	clear
ugually.	(150) 12.69 7.91 225 6.32 133.4 "	clear
<u> </u>	(1515) 12.71 7.88 225 6.36 133.4 "	Cleur
	(1515) Readings Stable	
rm	(1524)	
	5 mple Time (1525) 5 mples Celle, tell; (3)8011, (6)8260	CITTY
**************************************	(2) 8270, (1) T/M Mercury	
	Static Water Level Table-Unit 3:	53
<u> </u>		
ear	FAU 2 35,67 40.11	
ceff	FAU 2 35,67 40.19 FAU 3 68.35 68.95	
	NEU7 27.56 27.64	
1	16-3 58.58 69.72	
1		No Kell 2
VI		whitel 5.5-08
		Sell H
	(A)	

e.

4/15/0	ზ [.]		RAAP			#	-B#7
11-1-			B0320 D45/	4-06 70E			
Gereza	Notes						
	eather?						
	: Eye P	otertion	, Mitch	le Glor	je S		<u> </u>
	1,600 to						1 3
	4-4.00		i	1	=10.00		
	ductio, A					td	
	Dogo	= 100					
3	Dedicated	fubing	and wel	1 skirts	used an	teach w	e/1,
	and de	sposed o	f after	each we	://. · ·		
	All equip	ment de	coned be	tween ea	reh well	location	1
	Punge wa	her conte	ained and	disposed	of at de	dicated to	cation
	onsitel	treatment	Plant),				
	Samples	Collected	1, stored	and fran	sported e	n ice in	coolers
-		0: 1:		_		+1.	- 11
						- UNT	
	WELL			Post Purgy	1	_wote	5
	16-1		3.32	DRY		ŧ	1.* /
	16-2		5. 7 g	55.20		,	<u> </u>
-	16-3		2,58	69.72			
	16-5		43	15.92			
	16WCZB		777	64.96			
	16MW8		8.71	DRY			
- In the second	16MW9		148	69.40	l		
-	16WCIB	i '	1,17 8,93	71.33	1 .		
	16WC1A	<i>(4)</i>	,,,,	.,,,,,			: :
	16C1	٨	RY				
-	16C3	•	RY				
	1605		ry				
	1 GWCZTI						
-							
The state of the s	6		J.				
	· · · · · · · · · · · · · · · · · · ·	L	<u>'</u>	41)			

1/15/1 1/6-1 1

3 #7	4/15/08 RAAP BOJ244-06	F6#7
	803204-06 DAS/79E	
	16-1	
	Drw-53,32 Begin Punge (1025)	
	Post Ruge Diw-DRY Initial Range: 51 Cloudy	
:	Time Temple) Conduis) DOPL DH ORPHUJ Kurgela	Desc
	(1030) 12.77 547 6.78 695 144.9 0,34/min	SI clarly
	(1035) 12.91 552 6.53 7.01 145.2 4	SI. cloudy
	(1040) 13.10 549 651 7.63 144.3 "	clear
<u></u>	(1045) 13,10 546 6.54 7.02 144.5 14	Clur
<u> </u>	(1050) 13.05 547 6.57 7.01 144.6 4	Clear
	(1655) 13.09 548 6.59 7.01 145,0 "	cleur
	(1055) Readings Stable	
colers	5 Sample Time (100)	
	5 mples Collected: (31 8260, (2) 8270	(1) TM mercury
colers		
	16-2	
16,	DTW - 55.78 Begin Purge (1137)	
	hist flore OTW - 455.26 In that targe clear	
	Time Respect Constast Dolors) At ORPINU Persyl	Desc
<u> </u>	(1140) 1311 694 8.32 692 15317 0.35m.	Clear
<u> </u>	(1147 1212) 1464 16.46 16.42 10.8.1	Clear
.:	(1130) 121/1 106 3.88 6.78 3.1	Clear
		Clear
		clacs
white the state of		Clear
1.00		Class
	(12.15) 14.16 702 6.60 6.77 151.3 1 (12.30) 14.19 700 6.01 6.77 151.0 1	clear
<u>v 1</u>	(1220) Realizas Stable	- CLCO
<u> </u>		
	5 angle Tim (1825) 5 angles Collected: (3)8260, (2) 8270,	(DTM)
***************************************	Sanges Glas a Gracy Control	
		- consistence
		

	4/15/08			RAAP			,	FB#7	4/15/1
/f	•			603204-0 DAS/1	TO DE				
t '	16-5								1660
	-	-3.43		Вес	in Parge	(1252)			Tim
	Post Purge Di	W=15,92		Initia	Purge	-Clear			(145
	Time_	Temp(E)	Cond(sus)	DO MS/L	oft o	OR D(NW)	Pargek	Desc	4150
	(1255)	13,09	530	2.28	7.10	149.3	0,3 /min	Clear	Lisa
	(1300)	12.89	523	1,53	7.10	148.7	11		(151
	(1305)	13,00	52	1,34	7.12	145.3		11	(1511
	(1310)	13,10	521	1,15	7.16	141,2	11		
	(13is) ,	13.04	521	1,07	7.17	139.0		11	
	(1320)	2.96	526	1,00	7.18	137,2	11	11	
	(1325) 1	2,83	521	0.98	7.18	136.0	ļ <u></u>	11	16n
	(1330) j	2,80	519	0.94	7.12	134.4	11	11	
10000	(<u>1335)</u> j	2.74	519	0.98	7.18	132.8		<u> </u>	Post k
		Samp	Le Time	(/340)			-	Tim
		Samples	Collec	led: (3) 2	260,(2)8270,Li)774		(1545
		,							(550
	16Sprin	Tende					3		(155:
	Time	State	Cond(us)	00 %	pH	ORPIM	<u>u) </u>		1600
	<u>(1355)</u>	12.34	733	8.22	7,09	/30.0			1605
			-						(16 ic
		Sam	le Time		6.1				libit
		Samples	Collech	d: (3) 82	(2), (2)	8270, (1)	TM		
*									
and the second	16WC2B				. 0				
	DTW-	55177				ze (1428))		
	Post-Purgel	na-64,94	9		ial Purge	1 -	0 .		
The state of the s	Time	Temp(2)	(andlus)	DO 79/2	pH 0	RP(MU)	- u	Dosc	
	(1430)	14,07	337		7,63	117.8	0,34min	SI Cloudy	
7	(1+35)	13.25	352	1	7.66	120.5	17	Clear	
	(1440)	14,04	332	1,94	7.72	117,4	- H	Clear	
1	(1445)	14.09	329	1,39	7.70	102.1	n	Clear	
CHARLES STATES	(1450)	14,20	329	1.45	7,70	97.0	-	Clear	
		And and a second		THE	3)				
5 4.				<u>v</u>				310	

بمبلغة أثبا وسيؤوا		- -				<u> </u>	
#7 4/15/08		RAA 80320	4-06			िछर्म	7
		DAS	TRE				-
16wc2B(c							_
Time Te	mple Condlus	Dong/L	pH	ORP(MU)	Pargek	Desc	
	1.64 328	1.68	7.64	72.9	0.34/mm	Checur	_
, , , , , , , , , , , , , , , , , , , ,	1.00 329	1.87	7.63	72.5		11	
(1505) 13	3.91 329	1,83	7,62	6910	11	/ 1	
	3,97 327	1.90	7.61	le 6.8	13	1 N	
(1516) R	eadings Sta	hle.					
	ample Time (1515)			0.000		
Sa	mples-(3)8260,	(2) 8270 (1)m				The state of the s
16MW-8							
D7W-	73.71	Ros	in Purge	(1540)			
Post Purge D7		Initio	Pume	3 Cloudy			
Time 7	Temp(E) Cordle	1) Do 25/2	JA	ORP(MU)	Purerk	Desc	
	4.06 93	3.77	4.67	-0.29.7E	Purgek 0,37mm	SI clave	
	3,82 95	0,65	4.67	199.5 199.5	Ez	cleur	•
	3.84 100	0.50	4.72	205,7	1.	Clear	
	3,68 107	0,45	4.75	210.2	10	Clary	
	3,60 /09	0.51	4.74	216.0	(,	Clear	
	3,57 106	0.49	4.73	211.1	ė; l	Cloudy	
	ell puzza			sumples			-
	the party of	707) Weck c	MADES	tomor	70	-
					1 Part Triple	777	-
					THE REAL PROPERTY OF THE PROPE		-
							-
" (1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
	100				La contraction de la contracti		_
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						-
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4	16/08		,	RAMP	10			FB# 7	4/16/08
			8	03204-00 D45/708					
6	renera	1 Mb/ks		•					16MW-9
	W	reather.	- Sunn	4 605					(1210) K
A	PP	B-Eve	Partect	ien, Net	rile qu	loves, Ha	nd hat	-	
A COLUMN TO THE PROPERTY OF TH	Ca	Li brations	- YSI	650	aros)	,			-
						10.00 =	10,00		
	Co	oduction	ity rea	ds 50	D 115 1	n 1500 l	15 5H		
		DO %	= 100)					1 CWC1A
D. C. Common of the Common of					,		,		DTW:
•	Dedic				11 skirt	s used	and di	sposed	Post Pura D
The second secon	La company	of at	each	well.					Time 07
The state of the s	AIL	equipm	ept dec	coned b	etween	ω <i>ell<u>5</u></i>	1 1 1-	17	(1250)
P	Purge u	safer con	tained a	nd dispose	d of at	decheak	1 locatro	onsite.	(1255)
	Sample	s eolled	led, s	tored a	nd tran	sported	on ice i	n coolers	(1320) 1
	\				A. LI CARLON P. P. P. P. P. P. P. P. P. P. P. P. P.				(1305) 1
16	MW-8								(310) /
		Sample	lime	(1015)		2 1 0 7	<i>(</i>)	(2)	(1315) /
	_Sam	ples Co	llectedi	(3)8260, (1)en, (1)	Sulfide,	(1)9065	(2)8270	(1320) 1'
			(s	2)8081 ,(a)8151,(1) TH- ME	R.	:	(1325) 1
				A Line of the Control					(1325) k
	onw-9	ه آن سنر ن		-	: 0	(42)			
U_1	DTW	-65,48		21	in lurge				
	ے <i>ل</i> ہے	MW-65.	~ 1/ \	1 2 1 100 6	1. Yurge	· Clear	0 - 1-	Dose	
	me_	Temp(c)	A .		61.	1		1	- 201
and the second	25) 301	13.58	607 491	3.59	6.17	202.7	0.37min	Clear	16WDU
6111110	35)	13.82 13.85	608	1.63	6.09	196.8	n	Clear	
111111111111111111111111111111111111111	`			1.18	6.13	177.0	11	cles -	1 117
HILIPI II -	1.1	13.91	533	097	6,18	153.	11	Clear	1
111611		13.45	553	0.90	6.22	135.2	11	Clear	
		13,96	5.60	0.96	6.24	124,0	i	cleer	
13119-1-1-		13,97	5%	0.80	6.27	109.5	11		
111111111111111111111111111111111111111		13.45	594	0.73	628 628	102.	ы ы	cleer	
1-17/10/11 I		13,92	595	0.71	6.30	90.7	N	clear	the same of the same
(IS	(10)	13,40	547	0.70	15	98.1		CHAN	

F8#7	4/16/08 RAAP FB#7
•	BO3204-06 DAS/TQE
	16MW-9-cont
	(1210) Readings Stable
4	Jande Time (1215)
ART White Proceedings of the Control	Samples Collected: (3)8260, (1) CN, (1) Sul Fich
	(1)9065, (2)8270(2)8081, (2)8151, (1)TM-MER
•	1 GWC LA
	OTO: 68.93 Bez Puzze (1246)
isposed	Post Puzz DTW 71.33 In tial Puzze Clear
	Time Temp? Condles DO(my) PH ORPMU Purax & Dex
	(1250) 14,97 631 6.84 7.01 139.2 0.3/m. Clear
n onsite.	(1255) 14,84 650 4,65 6,90 143.7 4 4 1 1
in coolers	(1300) 14.40 698 1.41 683 143,1 1.
	(1305) 14.73 712 1.03 652 "
	(1310) 14,75 732 0.86 6.78 21.0 11
. ()	(1315) 14.69 734 0.85 6.78 19.3 1° 1°
(2) 8270	(1320) 14.55 739 0.82 6.76 18.4 " "
	(1325) 14.59 139 0.82 6.16 17.2
	(1325) Readings Stable
	Sample Time (1330)
	Samples Collected: (3) TM (6) 8151, (6) 8270, (3) CN (3) Sul Cide
Dave	(3)9065 (6) 8260, (6) 8081
Dose	7. (1) 0
Clear	16WDUP
Clear	Sample Time (1345)
Class	Samplets Collected: (1) Tu, (2) 8751, (2) 8270, (1) EN, (1) Sulfide
Clear	* Duplicate samples were collected
Clear	at 16wC14
clear	
cleer	
clear	
clear	
	(49)

s.

HILLIOS RAAP FE	#7 /
4/16/08 RAAP FE B03204-06 DAS179E	
16WC1B	
DTW -69.17 Bagin Purge (1450)	
Post Purge DTW-69,40 Initial Purge: Claudy	
Time Temple Cond(us) DO mg/L DH ORP(nu) Runge K Do:	<u>sc</u>
(1455) 1548 306 8,51 6,12 147,2 0,54min 010	udy
(1500) 1577 299 7,79 6.03 153.8 11 516	loudy
	- Joady
(1510) 1559 262 7.46 6.01 174.0 " Ebe	ar 1
(1515) 1545 263 7,44 6.00 176.6 " Clea	af
(1520) 1550 264 7.32 6.01 178.0 11	
(1525) 1541 266 7,30 6,04 174,3 11 11	
(1525) Readings Stable	
Sample Time (1530)	
Samples (citected (3) 8260, (1) CN, (1) 5=1 fide, (1) 9065,	 į.
(2) 8270, (2) 8081, (3) 8151, (1) TM-MER	
160	
070 -51.37 Bagin lunge (1604)	
PostPurge DIW-51.72 In that Purge Clear	
Time Temple Com(us) DOBLE DH ORAMU Pagek De	5C .
(1605) 1438 672 9.99 7.30 83,4 0.3 min Cl	401
(1610) 14.40 726 4.45 6.51 52.7 " Cle	rev
	cus_
	en o
	en \
	IN _
(1635) 13.96 800 1.26 6.47 102.9 " ile	w
(1635) Roadings Stable	· .
5 angle Time (1640)	
1	Le_
(1) 9065, (2) 8270, (2) 8081, (2) 8151, (1) TM-MER.	·
(42)	

4/17/02

10 h 10 m 10 m 10 m 10 m 10 m 10 m 10 m

			per er	200	2012		
5/21/08		RAA	rP			FB	¥8
*		$\mathcal{B}^{\mathcal{O}}$	3204-06 DEKKEL				
5WC 21							
Drw: 10.60			Benin	Perzy (122	7)		
Post Ring DTW: 10.6	5		()	(Pinge: Cl			
Zim Temo(1)	Cord (in	DO		ORTON	Puzzh	Desc	
(1230) 14,79	635	2.91	3.56	364.4	0.34min	-	
(1235) 15.12	645	2.61	3.55	407.5	11	dew	
(1240) 14,92	647	2.93	3.55	394,4	t J	Clau-	
(1245) 15,00	647	2.91	3.55	418,6	1	Clear	
(1250) 15.05	649	2.96	3.53	423,6	И	Clear	
(1255) 14,98	652	2.96	3.51	433.4		clear	
(1300) 14.91	651	2.97	3.51	436.5		clear	-
(1305) 14,88	651	2,99		441.7	7.	cleer	<u>.</u>
(1305) Readings						Cler	
Post Rung 14,80	654	2.73	3,54	443.6			
			1'me (13	4			
	\$. 1	1 1 1	: (3)826	7		
		Carlow	recio				
5 Dup							H
30000	ζ.,	na Ti	1. (1310	7			
				: (3)826°			
*		•	_	for the second second)		
Ja	mples Co	nected ;	Tom b	wegi			
16-3							
DTW: 58,56			Ro.	Pinx (134	(0)		
Post Perze DTW: 64.11				~/1			_
_ /) c \	1 6000	1 000	Inifical	Porge: c	1 0		
Time Temper (1345) 14,27	-	,		L BRPLAN	Purch	Desc	
	239 239	9.28	1 k		0.37,	den	_
		6,43		202.9	h	clear	+
	139	5.95	-	195.1	16	clear	-
	238	5.65			<u>t(</u>	clear	
(140s) 14,41 (1410) 14,37	238	5.52	7.82		r	Clear	
	238	5.47	7.80		l.	cleur	- 1
U412 7 14/35	237	5,44	7,8 <u>1</u>	186,9	ıı	Clear	
		(2)	<u>غ</u>				

B#8.

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ear ear ex

5/21/08		DAAG			To the same	PAR8	ا بد
Jano		RAAF BOBRO TURI	4-00 4-00			1 PHO	7/4
16-3 cont	!	76467	ru-C				. '
(1415) Reading	- 61	(_1				:	. 4
			oil.	000/ 11		1	
Pri D. W 20	Condlus 236			ORP(MU) 184.3	 		
Post Purge 14,08	× 200	5.50	1100	164,3			
	Sample	1 1/	((2)	0010			
	Sando	s lollec	ted (3)	82 <i>60</i>		:	
16WCIA							
DTW: 6910			R.	0 116	271	•	
Post Puri DIW: 70,5	<u> </u>		/ /	Pury (16	21)		
<u> </u>	1 1 1.	10mg/L	Inifia	OR Plan	\Ω :	Λ.	1
7	() Cordlus		pH.		• —	Desc	
(1440) 1413 (1445) 13.90	678	7.08 2.24	7.15	196.6	_ <i>DY</i> 37m	in Clear	6
(450) 13.65	678	1	6.78	211,3	£1	Clear	
(1455) 13.61	688	1.59	6.75	93.5	· *1	clear	1
(1300) 13.81	696	1.36 1.63	6.74	36,2	11	Clear	·
(1505) 13.80	695			20.7		Clear	.
(1510) 13.77	695	1.62	6.69	5.6	11	Clear-	110
(1515) 13.86	694		6,69	1.0	11 -	cleur	<u>U</u> o
		1.72	6.69	<i>-3,</i> 8	1)	Cleur	(10
	089	1.82	110	¿			(10
Post Ruge 13,75			6.69	5,7			1 (10.
	Jung	e Time	(1) (2)	<i>Q</i> 01 ~			(10:
	Jungo	5 610	eted 7 (3)	0000		i	(110 (110
16 DUP					····		(110
10001	S. al.	T, (ican)				Post
	Sample Sample nples Col	Inel	1000	10210			Post
# ~ .	-de C	s verve	Hell W	1000 CA			
7 301	npus coi	ucted t	Tがハ_/b(NCIA			
			COR	e, le e	5.27°)	
			- FJav	Thylons	- 5th 1		
			·				
	<u>. </u>		(9)				

23-00-00					1/4	
1011mm		ΛΛΩ			FB#8	10/15/108
10/14/08	15	AAP 3204-06				
	. 3 - 2	DASTRE				C
Well . 7 cont	-			<u> </u>	^	bereal
- (α)	Cond (us) 20 mg/	L PH	ORP(mv)	Pizeh	lesi	- Wen
	708 5.65		230.7	0.3 /min	clew	- PPE
(1415) /4.72		5.33	230.9	4	cleur	- Calib
(1428) 14.75	704 5.61	0.03		:		Q
(1420) Readings	Stube		03=0	Post Pun		<u> </u>
(432) 14.80	723 5.79		235.8	1031 1012	<u>\$</u>	
Transfer de la companya de la compan	Sample Tim	(1425)			:	
	Samples Colle	+cd : (3)86	260, (2) 8	511, (1) T	Min	- Ded
	campus com		-			an
						- A11.
16-3		0 0	1 21 1	(-)		- Pursyc
DTW: 58.51		begin t	crys (144	//		
Post home DTW:	·	Initial	Page des			100
101	Cordlus) 00 "	3/L DH	BRPLMU	Purch	Dusc	- Som
	275 9.01		2053	0.34min	der	
(1450) 17.46	1	1	206.4	£(Clear	
(1465) 17.70	224 8.48			R	Cleur	
(1500) 17.89	223 . 7.94	1	202.6	n ?		We
(1505) 17.53	224 7.21	7.51	197,3	i i	Clew	16-1
(1510) 16.63	224 7.01	7.58	195.6	n	Clew	
11-1-1 11. 48.	224 6.8	7.59	196.9	l li	Cleer	16-2
I I			197.5	h	cleur	
10	1 -	-	199.0	n	dew	16-5
(1525) 16.22	222 6.3			n	deur	16 W
(1530) 16.20	223 6,4	(7.62	200.		<u> </u>	10 Mi
(1530) Readin	as Stuble				1	1
DI (1545) 16.01	225 6.6	9 7.71	199.9	post pu	ye	160
Di (1545) 16.01	225 6.6 Sample Tis Sample & Co (2)8011	m (1535))			166
Tin	ampe 1	K. 40: 18	\$ 8270, (2) 711	(6) 8260	<u> </u>
(113	Jample 2 Lo	IVECTOR . CO		7	!	16(
(114)	(X) XOII					
1114						1601
(1150)			Section 1			
[115		COL	-		. 1 7.	164
(120		7	ماد		<u> </u>	
(120:		4 /				16-1=
		3	,		4	Y 13 A\$ W.

	· · · · · · · · · · · · · · · · · · ·			
FB#3	10[15]08		BAAP	FB#8
		D	803201-00 46/7QE/TD	
	General Notes			
h lese	- Wenther:	Sunny , 70'5		
3 Ymin Clear			ye Protection	
clew	- Calibrations			
Clen			00= 7,00 ,10.00= 9.	97
· Pung			13 us in 1413,45 Ste	
	D0% =			
(1) TM.			a well skirts used (a embasel
(1) [5.6)			res each use	
	a All as was		between each well	
			and disposed of at	0,0,1,0
	location o		in an appear of at	
()			red, and transported	
th Dusc			record and mansported	
Ymin dew	in cooler			
cless				
Cleve			evel Table - Unit K	
clear	Well	60.0	Post Pure DTW	Mites
clur			DRY	
Clear	16-2	55.17 58.61	55.79	
· cleur	16-3		67.34	
n dew	16-5	5,43		
n deur	16 LOCOB	55.42	60.40	
	16 MW3	74.16	75.76	
st purze	icucib	71.16	71,83	
	16 CC 1 A	70.66	71.4	
m (6) 8260	16 MW9	47.25	67,68	
	16 CX	50.56	56.84	
·	16CDH3	DRY		
	16C3	DRY		
	16wcan	DRY		
	16-1 = DTW	-60.0 , We	11 dry (No sample de 33) Ho measure i	s collected)
	pum	P was pulle	d (33) Uto measure i	water level
Management of Table				

polisios		RAF	7P			FB\$\$8
		B03200	1-06 00/10			
16-2						A CONTINUE OF THE PARTY OF THE
D7W -55	: 17	Beg	in Para	e (1037)	WE PARAMETERS	
PostPurge DTW -59	5.79	Taite		ge-Clear		
Time Temple) Cond(us)	Do"4/2 p	. 1	/ \ \ \	gekkan)	Desc
(1040) 16.01		.98 4.8			3 Juin	Clear
(1045) 15.47	458 4	.24 6.5	5 184		1	clear
(1050) 15.00		.82 6.5	0 19	7.8	l c	lear
(1055) 14,94	4.82 4	1,43 6:5	51 2	02.1	C_{I}	lear
(1100)14,75	4.84 4	125 63	O de	57.8	" CI	ear
(1105)14,70	484 4	121 6	50 a	10.0		lear
(1110) 14,46	480 4	18 6.4	9 2	12.5	ii C	lear
(1110) Readii	ns Stab	le				
	Sample.		1115)	:		
Samo	le & Colles	ted: (3) 8	260, (a	13-10-686)Try	
(1130)14,60	480 4	39 4.4	9 2	11.4 pes	+ purge (clear
16MW8				1 T	. 0	1
DTW-74.16		Be	gin Par	rge (1149)	
Post Purge DTW -7	5.76			rge-Clear		
Time Temple		DO 3/L	DH_	ORP(MU)	Pargeklapin)	Desc
(1150) 16,55	89	4.481,13	4,98	233,2	40.3 /min	Clear
(1155) 17,18	90	1:18	4.92	231.8	17	C1801
(1200) 17.57	80	0.95	4,94	<i>သ</i> ခ2, 3	1)	Cheav
(1205) 17.41	78	0.75	4,88	226.4	11.	Clear
(1210) 17.16	71	0.69	4.88	238,2	17	Clear:
(1215) 16.90	66	0:66	4.85	230.1	11	Clear
(1220) 16.97	68	0.68	4,83	231.7	11	Clear
(1220) Readin	ns Stabb	<u>.</u>				
(1232) 17,14	61	0.82	4.98	227.7	post purge	elear
San	aple Time	(1225)	<u> </u>			
Samp	Les Collec	ted: (3)82	160, (2)	(1), 0768	TW	
	:			-		
		- Proposition of	:			
				: ·		
		(3	Ð :			

10/15/08

16WC2B DTW-Post Purge D Time T. (1250) 1

1255) 1300)

1305) 17

(1316)i4 (1315)14

(1320)16 (1325)17

(1330) r (1330) k (1345) /.

16MW9
D7WPost Parge D
Time Tel
(1425) 16
(1430) 17.
(1435) 16.
(1446) 16.
(1450) 16.
(1455) 16.
(1455) 16.
(1455) 16.
(1455) 16.

(34)

FB#8	10/15/08	RAAP 803204-06		<i>F8#8</i>
	, i	DAS/TOE/TO		
ALAMA	16WCAB			
*****	DTW-55.42	Begin Par	ge (1248)	
	Post Purge DTW-60.40	Initial Par	nge-Clear	
Desc_	Time Temple Condla	us) DOME DH	ORP(MU)	Purgeklappe Desc
Clear	(1250) 17.10 208	7.78 7,30	170,3	0.3 Ymin Clear
lear	(1255) 16.77 209	4.63 7.16	179.1	Clear
legs	(1300) 16.92 209	3.43 7,20	175.9	'' Clear
ear	(1305) 17.03 209	2.24 7,29	168.4	11 Clear
ear	(1310)16,94 209	1.60 7,33	158.9	" Clear
ear	(1315)16,71 210	1.01 7,36	144.7	Clear
ear.	(1320)16.62 208	1.01 7.34	146.0	16 Clear
	(1325) 17.08 208	1.04 7.34	142.7	" Clear
	(1330) 17.16 208	1.02 7.36	139.3	11 Clear
	(1330) Readings Sta			
lear	(1345) 16,83 210	1.45 7.35	74,5	post purge Clear
,	Sample Tim			
	Samples Collecte	d: (3)8260 (2)8	270, (1) TN	4
	* * * * * * * * * * * * * * * * * * * *			
Desc_	16HW9			
Clear	D7W-67.25	Begin Pu	1421	
C1-001	Post Purge DTW-67.68	Initial Po	irge-Clear	
Chear	Time Temple Condlaws	\ MCI	ORP(MO)	Purgeklapu) Desc
Clear	(1425) 16.70 446	5.33 6.44	141.5	0.3 Tmin Clear
Clear	(1430) 17.57 521	2.82 6.44	113.1	11 Clear
Clear	(1435) 16.53 563	2.20 6.45	91.3	Clear
Clear	(1440) 15.86 566	1.46 6.43	86.9	" Ciear
	(1445) 16,03 564	1.54 6.43	85.0	11 Clear
clear	(1450) 16.54 560	1.49 6.45	The second second	" Clear
<u> </u>	(1455)16.77 558	1.52 6.49	79.5	i' Clear
	(1458) Readings Sta			
	(1512)16.49 547	1.67 6.51	41.80	ostpurge Creor
		me (1500)	- 11.0	o paige
-	Samples Collect	(2) (2) (2)	12 (1)	ITM
Angele W. Colored State of the	amples Conec	(35)	ر در در در در در در در در در در در در در	<u> </u>
*			,	

	10/15/6	Ş		PAL)P			FB#8	10/16/08
	10110		·	RAF 203204 DAS/791	1-06 =/+A			19H8	1010108
	1601	i	} !	DAS//48	-1 <i>ID</i>				Gamera
-		- 50.50	t _o	Ra	in Prince	je(1533)			General 1. Weather
	~	DTW-56		- , L	,	e-Clear	l :		PRE-1
	Time	Temple)	Condus	Domg/L			Punaklau	Desc	Caliba
i	1535)	17,03	480	5,90	4,72	121,2	0.34 min		DH=
	1540)	17.16	484	5.58	6.43	126,2	n	Clear	Condu
	7	17.44	502	3.02	6.48	131.9	a	Clear	DO %
	7	17.03	513	2.42	6.45	134,8	(1	Clear	· Dedicated
	× -	16.89	514	1.82	6.41	140.0	(1	Clear	· All equ
	9	16.90	514	1.73	6.41	141.1	11	Clear	· Purge wa
the state of the s	(1605)		517	1.62	6.46	139.7	[1	Clear	Samples
	(1410)		520	1,29	6.44	142.3	11	Clear	Jampies
	(1615)		520	1.16	6.41	144.5	11	Clear	16WCIA
	(1620)	1	519	1.13	6.40	145.6	i	Clear	DTW-
	(1625)		519	1.10	6.40	145.8	11	Clear	Post Runge DTW.
		Readings		,					Time Tem
	(1638)		522	1.08	6.40	153.5	past parge	Elear	(0920) 16
			Time				7-3		(0925) 14
		Samples (Collected	(3)8260.1	[2]8270.	(1) TM	M. Marian	*	(0930) 14,
		1	-	j)				(0935) 14.
									(0940) 14.
		·							(0945) 14.
									(0950) 14.
									10955) 14.
									(0955) Re
						= = = = = = = = = = = = = = = = = = = =			(1028) 14
			1						
	Marie								San
				į					
							1		* 16W DUP
			1						Sa
							!		Sav
			and the second	j					* Coll
N				3					

F8#8	10/16/08	RANP	F8418
1942	1	RAAP BOJACY-CO	16418
	General Notes	DAS/TOE	
	Wegther-		
		gloves, Eye Protection	
w Desc		MI I I I I I I I I I I I I I I I I I I	
n Clear		- YSI 650 MDS	
		4.00, 7.00 = 7.00, 10.00 = 9.99	
Clear	1 1 1 1 1 1 1 1 1 1 1	1 reads 1413 us in 1413 us 8 to	d
Clear	DO % = 16		
Clear		og and well skirts used at each	well
		A deconed between each well	
Clear		tained and disposed of at declicated	
Clear	Samples Collec	ted, stored and transported on ic	e and in Cooleas
Clear	. 1.,,,,,,		
Clear	16WCIA		
Clear	DTW-70,66	Begin Purge (0919)	
Clear	Post Ringe DTW-71,11	Intial Purge - Clear	
		ond(aus) Dosa DH ORP(MU) Pluge	
. Clear	(0920) 16.08 5 -		uin Clear
		449 5.35 6.78 /70.1	Clear
		675 3.30 6.69 154.3	Clear
. `		688 2.60 C.70 133.9	Clear
:	1	pi7d di64 6111 155,6	Clear
<u> </u>		043 214 6.14 133,5	Clear
	. 17 (_ !	096 2.10 6.76 155.8	Clear
:		096 2.61 6.11 149.3	Clear
	(0955) Readings		
		698 1.50 6.90 138.2 post a	ime Clear
		Time (1000)	
!	Samples	Collected (9)8260, (6)8270, (3) TM	
!			
<u> </u>	16W DUP		
:	Sample T	Time (1015)	
į.	Samples	Collected (3) 8260 (2) 8270, (1)7	ma l
: !	(on manitoring well 10001A	
	•		4

16WCIB Bry Parge 1047 16-5 (Co)			^		A TOP TAKES			
16WCB DTW - 71.16 Begin Parge (1047) 16-5 (cor Past Parge DTW - 71.83 Too tal Parge Clear Time Ten (1350) 1506 420 5.20 6.69 135.72 0.34 mm Ctear (1320) 141 (1050) 1506 420 5.20 6.69 135.72 0.34 mm Ctear (1320) 141 (1055) 15.08 425 2.24 6.72 138.5 Clear (1320) 162 (100) 15.32 511 2.67 6.64 149.6 Clear (1333) 151 (100) 15.92 465 2.94 6.68 145.0 Clear (1333) 151 (110) 15.92 465 2.94 6.68 145.0 Clear (110) 15.92 465 3.07 6.49 150.2 Clear (1126) 16.13 435 3.17 6.42 156.9 Clear (1125) 15.93 417 3.05 6.33 176.1 Clear (165 pring (1130) 15.69 406 2.95 6.32 170.1 Clear (165 pring (1140) 16.05 401 2.95 6.33 176.2 Clear (1470) 15 (1140) 16.05 401 2.95 6.33 176.2 Clear (1470) 15 (1140) Readings Stable (1207) 15.61 325 2.96 6.23 199.1 postuage Clear Sample Time (1145) Sample Time (1145) Sample Collected (3)8240, (2)8270 (1)774 Clear (125) 15.96 421 3.05 7.08 193.0 0.34 mm Clear (1240) 16.09 490 2.57 7.08 193.0 0.34 mm Clear (1245) 15.76 500 1.92 7.08 193.2 Clear (1255) 15.95 505 1.25 7.07 193.4 Clear (1255) 15.95 505 1.25 7.07 190.8 Clear (1255) 15.94 509 2.14 7.07 137.7 Clear (1255) 15.43 509 2.14 7.07 137.7 Clear (1255) 15.43 509 2.14 7.07 137.7 Clear (1255) 15.43 509 2.14 7.07 137.7 Clear (1255) 15.43 509 2.14 7.07 137.7 Clear (1255) 15.43 509 2.14 7.07 137.7 Clear (1255) 15.43 509 2.14 7.07 137.7 Clear (1255) 15.43 509 2.14 7.07 137.7 Clear (1255) 15.43 509 2.14 7.07 137.7 Clear (1255) 15.43 509 2.14 7.07 137.7 Clear (1255) 15.43 509 2.14 7.07 137.7 Clear (1255) 15.43 509 2.14 7.07 137.7 Clear (1255) 15.43 509 2.14 7.07 137.7 Clear (1255) 15.43 509 2.14 7.07 137.7 Clear (1255) 15.43 509 2.14	10/16/08		RAAP	b .			FB# 8	10[16/08
DTW - 71.16 Begin Pange (1047) 16-5 (Cov Rost Runge DTW - 711.83 Touther Pange - Clear Time Ten (1315) 14: (1050) 1506 420 5:300 6:49 13573 0:34mm Clear (1320) 14: (1050) 15:06 420 5:300 6:49 13573 0:34mm Clear (1320) 14: (1055) 15:08 425 2:34 6:72 138.5 " Clear (1320) Rea (100) 15:32 511 2:67 6:64 140.6 " Clear (1333) 15: (100) 15:32 511 2:67 6:64 141.1 " Clear (1333) 15: (105) 15:67 502 2:74 6:64 141.1 " Clear (1333) 15: (105) 15:67 502 2:74 6:64 141.1 " Clear (110) 15:98 465 2:94 6:58 145.0 " Clear (1120) 16:13 435 3:17 6:49 150:2 " Clear (1120) 16:13 435 3:17 6:49 150:2 " Clear (1120) 16:13 435 3:17 6:43 156:9 " Clear (1125) 15:93 417 3:05 6:35 168:9 " Clear (1340) 15: (140) 16:05 401 2:95 6:33 176:2 " Clear (1340) 15 (140) 16:05 401 2:95 6:33 176:2 " Clear (1340) 15 (140) Readings Stable (1207) 15:61 325 2:96 6:23 179:1 postlinge Clear (135) 15:93 8260 (1245) 8240, (2)8270 (1) TM 6-5			DAS /700	=		1		
Rest Purge DTW - 71.83 To. Fell Purge-Clear Time Temple Cendles DO Fell 2 Ht CR (few) Resettles Do Fell 1315 14; (1050) 1506 420 5.80 6.69 13552 0.3 Mm Creat (1320) 14; (1055) 15.08 425 2.24 6.72 138.5 Chear (1320) Rea (1100) 15.32 511 2.67 6.64 140.6 Clear (1320) Rea (1105) 15.67 502 2.14 6.64 141.1 Clear (1335) 15; (1105) 15.93 465 2.94 6.58 145.0 Clear (1100) 15.92 465 2.94 6.58 145.0 Clear (1126) 16.13 435 3.17 6.42 156.9 Clear (1126) 16.13 435 3.17 6.42 156.9 Clear (1126) 15.93 417 3.05 6.35 168.9 Clear (1126) 15.93 405 2.95 6.32 170.1 Clear (1140) 15.05 401 2.95 6.32 170.1 Clear (1340) 15 (1140) 16.05 401 2.95 6.33 176.2 Clear (1410) 15 (1140) Readings Stable (1207) 15.61 325 2.96 6.23 199.1 postenge Clear (1410) 15 (1207) 15.61 325 2.96 6.23 199.1 postenge Clear (1410) 15 Samples Time (1145) Samples Conclus Do Fell 145 Sam Clear (1207) 15.62 421 3.05 7.15 193.0 (238)	16WC1B							
Time Temple Condins Dorre at Cream Punck (gas) Bosc (1315) 14; (1050) 1506 420 5:80 6:69 13572 0.34min Cream (1320) 14; (1055) 15:08 425 2.24 6.72 138.5 "Cream (1320) Rea (1320) Rea (1320) 15:05 15:07 502 2.14 6:64 140.6 "Cream (1333) 15: (105) 15:07 502 2.14 6:64 141.1 "Cream (1333) 15: (1105) 15:07 502 2.14 6:64 141.1 "Cream (1333) 15: (1105) 15:07 465 2.94 6:58 145.0 "Cream (1110) 15:92 465 2.94 6:58 145.0 "Cream (1126) 16:13 435 3.17 6:42 156.9 "Cream (1126) 16:13 435 3.17 6:42 156.9 "Cream (1125) 15:93 417 3.05 6:35 168.9 "Cream (1125) 15:93 405 2.94 6:32 170.1 "Cream (1340) 15 (1140) 16:05 401 2.95 6:32 170.1 "Cream (1340) 15 (1140) 16:05 401 2.95 6:33 176.2 "Cream (1410) 15 (1140) Readings Stable (1207) 15:61 385 2.96 6:23 199.1 postfuge Cream Samples Time (1145) Samples Collected; (3)8260, (2)8270, (1)770 6-5	DTW-71.16	-	Beg,	in Parg	e(1047))		16-5 (Car
(1050) 1506 420 5.80 6.69 13572 0.34mm Creat (1320) 14: (1055) 15.08 425 2.84 6.72 138.5 "Creat (1320) Rea (100) 15.32 511 2.67 6.64 140.6 "Creat (1320) Rea (1100) 15.32 511 2.67 6.64 140.6 "Creat (1335) 15: (1105) 15.67 502 2.74 6.64 141.1 "Creat (1335) 15: (1105) 15.69 465 2.94 6.58 145.0 "Creat (110) 15.98 465 2.94 6.58 145.0 "Creat (1120) 16.13 435 3.17 6.42 156.9 "Creat (1125) 15.93 417 3.05 6.35 168.9 "Creat (1120) 15.69 406 2.95 6.32 170.1 "Creat (1330) 15.69 406 2.95 6.32 170.1 "Creat (1340) 15 (1140) 16.05 401 2.95 6.33 176.2 "Creat (1340) 15 (1140) 16.05 401 2.95 6.33 176.2 "Creat (1410) 15 (1140) Readings Stable (1207) 15.61 325 2.96 6.23 199.1 postfuige Creat Samples Time (1145) Samples Time (1145) Samples Collected (3)8260, (2)8270, (1) True (1235) 15.62 421 3.05 7.15 193.0 0.34mm Creat (1240) 16.09 490 2.57 7.08 193.2 "Creat (1250) 15.53 505 1.25 7.07 192.4 "Creat (1250) 15.53 505 1.25 7.07 192.4 "Creat (1250) 15.43 509 2.14 7.07 137.7	Post Purge DTW -11.8	3				:		Time Ten
(1850) 1506 420 5180 6.69 13572 0.34min Crear (1820) 14. (1053) 15.08 485 2.84 6.72 138.5 " Clear (1320) Rea (1320) Rea (1320) 15.08 485 2.84 6.72 138.5 " Clear (1320) Rea (1320) Rea (1320) 15.32 511 2.67 6.64 140.6 " Clear (1333) 15. (105) 15.67 502 2.74 6.64 141.1 " Clear (110) 15.98 465 2.94 6.58 145.0 " Clear (1115) 16.36 446 3.07 6.49 150.2 " Clear (1120) 16.13 435 3.17 6.49 150.2 " Clear (1125) 15.93 417 3.05 6.35 168.9 " Clear (1125) 15.93 405 2.94 6.32 170.1 " Clear (1340) 15 (130) 15.69 406 2.95 6.32 170.1 " Clear (1340) 15 (140) 16.05 401 2.95 6.33 176.2 " Clear (1340) 15 (140) Readings Stable (1207) 15.61 385 2.96 6.23 199.11 postfuge Clear (1410) 15 Sample Time (1145) Sample Time (1145) Sample Time (1145) Sample Time (1145) Sample Time (1145) Sample Time (1145) 15.62 421 3.05 7.15 193.0 0.34min Clear (1240) 16.09 490 2.57 7.08 193.2 " Clear (1250) 15.53 505 1.85 7.07 192.4 " Clear (1250) 15.93 509 2.14 7.07 137.7	Time Temple)	(and (us)	Do"9/c	_att	ORP(MU)	- Pungcklaps	Desc	(1315) 14.1
(1100) 15.32 511 2.67 4.64 140.6 " Clear (1335) 15. (1105) 15.67 502 2.74 6.64 141.1 " Clear San (1110) 15.98 465 2.94 6.58 145.0 " Clear Samp (1115) 16.36 446 3.07 6.49 150.2 " Clear (126) 16.13 435 3.17 6.42 156.9 " Clear (1125) 15.93 417 3.05 6.35 168.9 " Clear (1130) 15.69 406 2.95 6.32 170.1 " Clear (1340) 15.69 406 2.95 6.32 170.1 " Clear (1340) 15.69 401 2.95 6.33 176.2 " Clear (1340) 15 (1140) 16.05 401 2.95 6.33 176.2 " Clear (1410) 15 (1140) Readings Stable. (1207) 15.61 385 2.96 6.23 199.1 postfuige Clear Sam Samples Collected: (3)8260, (2)8270, (1) TM 16-5 DTW-5.43 Bejin Purge (1233) Bost Purge DTW- Initial Purge Clear Sam Image Temple Contleted: (3)8260, (2)8270, (1) TM 16-5 DTW-5.43 Bejin Purge (1233) Bost Purge DTW- Thital Purge Clear Sam [1235) 15.62 421 3.05 7.15 193.0 0.34min Clear (1240) 16.09 490 2.57 7.08 193.2 " Clear (1245) 15.76 500 1.92 7.07 192.4 " Clear (1250) 15.53 505 1.85 7.07 190.8 " Clear (1255) 15.42 509 2.14 7.07 187.7 " Clear (1250) 15.43 509 2.14 7.07 187.7 " Clear (1250) 15.43 509 2.14 7.07 187.7 " Clear (1250) 15.43 509 2.14 7.07 187.7 " Clear (1250) 15.43 509 2.14 7.07 187.7 " Clear (1250) 15.43 509 2.12 7.05 188.6 " Clear (1260)		420	5,80	6.69	135,2	0.3 Yum	Clear	
(1105) 15.67 502 2.74 6.64 141.1 "Clear (1355) 15.67 502 2.74 6.64 141.1 "Clear (1110) 15.98 465 2.94 6.58 145.0 "Clear (1115) 16.36 446 3.07 6.49 150.2 "Clear (1126) 16.13 435 3.17 6.42 156.9 "Clear (1126) 15.93 417 3.05 6.35 148.9 "Clear (1130) 15.69 406 2.95 6.32 170.1 "Clear (1340) 15.69 406 2.95 6.32 170.1 "Clear (1340) 15 (1140) 16.05 401 2.95 6.33 176.2 "Clear (1340) 15 (1140) Readings Stable (1207) 15.61 325 2.96 6.23 199.1 postluige Clear Sample Time (1145) Samples Collected: (3)8260, (2)8270, (1)71111 16-5 DTW-5.43 Begin Page (1233) Rest Page DTW- Finitial Page Clear Sam Time Temple Contacted: (3)8260, (2)8270, (1)71111 16-5 DTW-5.43 Begin Page (1233) Rest Page DTW- Finitial Page Clear (1245) 15.62 421 3.05 7.15 193.0 0.34min Clear (1240) 16.09 490 2.57 7.08 193.2 "Clear (1245) 15.76 500 1.92 7.07 192.4 "Clear (1250) 15.53 505 1.25 7.07 190.8 "Clear (1255) 15.42 509 2.14 7.07 192.4 "Clear (1250) 15.43 509 2.14 7.07 192.4 "Clear (1250) 15.43 509 2.14 7.07 187.7 "Clear (1250) 15.43 509 2.14 7.07 187.7 "Clear (1250) 15.43 509 2.14 7.07 187.7 "Clear (1250) 15.43 509 2.14 7.07 187.7 "Clear (1250) 15.43 509 2.14 7.05 188.6 "Clear (1260)	(1055) 15.08	485	2.84	6.72	138.5	: 1	Clear	(1320) Rea
(1105) 15.67 502 2.74 6.64 141. Clear (1110) 15.92 465 2.94 6.58 145.0 "Clear (1115) 16.36 446 3.07 6.49 150.2 "Clear (1126) 16.13 435 3.17 6.42 156.9 "Clear (1127) 15.93 417 3.05 6.35 168.9 "Clear (1130) 15.69 406 2.95 6.32 170.1 "Clear (1130) 15.69 406 2.95 6.32 170.1 "Clear (1140) 16.05 401 2.95 6.33 176.2 "Clear (1140) 16.05 401 2.95 6.33 176.2 "Clear (1140) Readings Stable (1207) 15.61 385 2.96 6.23 199.1 postluige Clear Sample Time (1145) Samples Collected: (3)8260, (2)8270, (1) TM 16-5 DTW-5.43 Begin Rurge (1233) Rost Purge DTW- Initial Purge Clear Time Temple Condus Dout DH ORP (MD) Purgetypu Desc (1235) 15.62 421 3.05 7.15 193.0 0.34 min Clear (1240) 16.09 490 2.57 7.08 193.2 "Clear (1245) 15.76 500 1.92 7.07 192.4 "Clear (1250) 15.63 505 1.85 7.07 190.8 "Clear (1255) 15.42 509 2.14 7.07 187.7 "Clear (1300) 15.43 509 2.18 7.05 188.6 "Clear	(1100) 15.32	511	2.67	4.64	140.6	4	Clear	(1335) 151
(1110) 15.98 465 2.94 6.58 145.0 Clear (1115) 16.36 446 3.07 6.49 150.2 in Clear (1120) 16.13 435 3.17 6.42 156.9 in Clear (1125) 15.93 417 3.05 6.35 168.9 in Clear (1130) 15.69 406 2.95 6.32 170.1 in Clear (1135) 15.93 405 2.94 6.32 172.3 in Clear (1140) 16.05 401 2.95 6.33 176.2 in Clear (1340) 15 (1140) Readings Stable (1207) 15.61 325 2.96 6.23 199.1 postflage Clear Sample Time (1145) Samples Collected: (3)8260, (2)8270, (1)7m 16-5 DTW-5.43 Begin Rurge (1233) Rost Rurge DTW- Finitial Rurge Clear Time Temple Condus Dough pt ORP(M) Rurgetgon Desc (1235) 15.62 421 3.05 7.15 193.0 0.34min Clear (1240) 16.09 490 2.57 7.08 193.2 in Clear (1245) 15.76 500 1.92 7.07 192.4 in Clear (1250) 15.53 505 1.25 7.07 190.8 in Clear (1255) 15.42 509 2.14 7.07 187.7 in Clear (1300) 15.43 509 2.18 7.05 188.6 in Clear	[1105] 15.67	502	2,74	6.64	141.1		Clear	San
(1115) 16.36 446 3.07 6.49 150.2 " Clear (1126) 16.13 435 3.17 6.42 156.9 " Chear (1127) 15.93 417 3.05 6.35 168.9 " Clear (1130) 15.69 406 2.95 6.32 170.1 " Clear (1130) 15.69 406 2.95 6.32 170.1 " Clear (1135) 15.93 405 2.94 6.32 172.3 " Clear (1140) 16.05 401 2.95 6.33 176.2 " Clear (1140) 16.05 401 2.95 6.33 176.2 " Clear (1207) 15.61 325 2.96 6.23 199.1 postfage Clear Sample Time (1145) Samples Collected: (3)8260, (2)8270 (1) TM 16-5 DTW-5.43 Begin Parge (1233) Rost Parge DTW- Initial Parge Crear Time Temple Condus Double pt ORP(M) Pargettym Desc (1235) 15.62 421 3.05 7.15 193.0 0.34min Clear (1240) 16.09 490 2.57 7.08 193.2 " Clear (1245) 15.76 500 1.92 7.07 192.4 " Clear (1250) 15.53 505 1.85 7.07 190.8 " Clear (1255) 15.42 509 2.14 7.07 187.7 " Clear (1300.) 15.43 509 2.18 7.05 188.6 " Clear	(1110) 15.98	465	2.94	6,58	145,0	11	Clear	Samp
(1126) 16,13 435 3,11 6,42 156.9 Char (1125) 15,93 417 3.05 6,35 148.9 " Clear (1130) 15.69 406 2,95 6.32 170.1 " Clear (1135) 15.93 405 3.94 6.32 172.3 " Clear (1140) 16.05 401 2,95 6.33 176.2 " Clear (1140) Readings Stable. (1207) 15.61 325 2.96 6.23 199.1 postfuige Clear Sample Time (1145) Samples Collected: (3)8260, (2)8270, (1) TM 16-5 DTW-5.43 Begin Rurge (1233) Rot Rurge DTW- Initial Rurge Clear Time Temple Conduct Dom L pH ORP (MW) Rurge Agam Des C (1235) 15.62 421 3.05 7.15 193.0 0.34min Clear (1240) 16.09 490 2.57 7.08 193.2 " Clear (1245) 15.76 500 1.92 7.07 192.4 " Clear (1250) 15.53 505 1.85 7.07 190.8 " Clear (1255) 15.42 509 2.14 7.07 137.7 " Clear (1300.) 15.43 509 2.14 7.07 137.7 " Clear (1300.) 15.43 509 2.14 7.07 137.7 " Clear	(1115) 16.36	446	3.07	6.49	150,2		Clear	
[1125] 15.93 417 3.05 6.35 168.9 " Clear (130) 15.69 406 2.95 6.32 170.1 " Clear (1340) 15 (1135) 15.93 405 2.94 6.32 172.3 " Clear (1340) 15 (1140) 16.05 401 2.95 6.33 176.2 " Clear (1410) 15 (1140) Readings Stable. (1207) 15.61 385 2.96 6.23 199.1 postfuige Clear Sample Time (1145) Samples Collected: (3)8260, (2)8275, (1) TM. 16-5 DTW-5.43 Beginn Parge (1233) Rost Parge DTW- Initial Parge Clear Time Temple Condus Domy pt pt ORP (MW) Pargetty Desc (1235) 15.62 421 3.05 7.15 193.0 0.34 min Clear (1249) 16.09 490 2.57 7.08 193.2 " Clear (1249) 16.09 490 2.57 7.08 193.2 " Clear (1250) 15.73 505 1.85 7.07 190.8 " Clear (1255) 15.42 509 2.14 7.07 187.7 " Clear (1255) 15.43 509 2.14 7.07 187.7 " Clear (1255) 15.43 509 2.14 7.07 187.7 " Clear (1300) 15.43 509 2.14 7.07 187.7 " Clear (1300) 15.43 509 2.14 7.07 188.6 " Clear	(1120) 16.13	435	3,17	6,42	156,9		Cheer	
(1130) 15.69 406 2.95 6.32 170.1 " Clear (1340) 15 (1135) 15.93 405 2.94 6.32 172.3 " Clear (1340) 15 (1140) 16.05 401 2.95 6.33 176.2 " Clear (1410) 15 (1140) Readings Stable. (1207) 15.61 385 2.96 6.23 199.1 postluige Clear Sample Time (1145) Samples Collected: (3)8260, (2)8270, (1) TM 16-5 DTW-5.43 Bejin Runge (1233) Bost Ringe DTW- Initial Runge Clear Time Temple Contlus DOM/L pH ORP(MW) Rungettgow Desc (1235) 15.62 421 3.05 7.15 193.0 0.34 min Clear (1240) 16.09 490 2.57 7.08 193.2 " Clear (1245) 15.76 500 1.92 7.07 192.4 " Clear (1250) 15.53 505 1.85 7.07 190.8 " Clear (1255) 15.42 509 2.14 7.07 187.7 " Clear (1255) 15.43 509 2.14 7.07 187.7 " Clear (1300) 15.43 509 2.18 7.05 188.6 " Clear		417	3.05		168.9		Clear	165 pring
(1135) 15.93 405 2.44 6.32 172.3 Clear (1340) 15 (1140) 16.05 401 2.95 6.33 176.2 " Clear (1410) 15 (1140) Readings Stable. (1207) 15.61 385 2.96 6.23 199.1 postfurge Clear Samples Time (1145) Samples Collected: (3)8260, (2)8270, [1) Tim 16-5 DTW-5.43 Begin Purge (1233) Bost Purge DTW- Initial Purge Clear Time Temple Condus Dough pt Organia Desc (1235) 15.62 421 3.05 7.15 193.0 0.34min Clear (1240) 16.09 490 2.57 7.08 193.2 " Clear (1245) 15.76 500 1.92 7.07 192.4 " Clear (1250) 15.53 505 1.85 7.07 190.8 " Clear (1255) 15.42 509 2.14 7.07 127.7 " Clear (1255) 15.43 509 2.14 7.07 127.7 " Clear (1300.) 15.43 509 2.18 7.05 188.6 " Clear	(1130) 15.69	406	2.95		170.1	. 11	Clear	Time Te
(1140) 16.05 401 2.95 6.33 176.2 " Clear (1410) 35 (1140) Readings Stable (1207) 15.61 325 2.96 6.23 199.1 postfurge Clear Sample Time (1145) Sample Time (1145) Samples Collected: (3) 8260, (2) 8270, [1) TM 16-5 DTW-5.43 Begin Purge (1233) Rest Purge DTW- Finitial Purge Clear Time Temple Condus Dough pH ORP(MW) Purgedgew Desc (1235) 15.62 421 3.05 7.15 193.0 0.34 min Clear (1240) 16.09 490 2.57 7.08 193.2 " Clear (1245) 15.76 500 1.92 7.07 192.4 " Clear (1255) 15.42 509 2.14 7.07 190.8 " Clear (1255) 15.43 509 2.14 7.07 187.7 " Clear (1300.) 15.43 509 2.12 7.05 188.6 " Clear	(1135) 15.93	405	2.94	6,32	172.3	71	Clear	(1340) 15
(140) Readings Stable. (1207) 15.61 325 2.96 6.23 199.1 postfluige Clear Sample Time (1145) Samples Collected: (3)8260, (2)8270, (1) TM 16-5 DTW-5.43 Begin Purge (1233) Post Purge DTW- Time Temple Condus Double pt ORP (MW) Purgetlypw Desc (1235) 15.62 421 3.05 7.15 193.0 0.34min Clear (1240) 16.09 490 2.57 7.08 193.2 11 Clear (1245) 15.76 500 1.92 7.07 192.4 11 Clear (1250) 15.53 505 1.85 7.07 190.8 11 Clear (1255) 15.42 509 2.14 7.07 187.7 11 Clear (1255) 15.42 509 2.14 7.07 187.7 11 Clear (1300.) 15.43 509 2.18 7.05 188.6 1 Clear	(1140) 16.05	401	2.95		176.2	11	Clear	(14/0) 15
(1207) 15:61 385 2.96 6.23 199.1 postfluige Clear Sample Time (1145) Samples Collected: (3)8260, (2)8270, (1) TM 16-5 DTW-5.43 Begin Purge (1233) Post Purge DTW- Time Temple Conclus Double pt ORP(MW) Purgekapm Desc (1235) 15.62 421 3.05 7.15 193.0 0.34min Clear (1240) 16.09 490 2.57 7.08 193.2 11 Clear (1245) 15.76 500 1.92 7.07 192.4 11 Clear (1250) 15.53 505 1.85 7.07 190.8 11 Clear (1255) 15.42 509 2.14 7.07 187.7 11 Clear (1300.) 15.43 509 2.14 7.05 188.6 11 Clear	(1140) Readin	er 51-	sble	:				5
Sample Time (145) Samples Collected: (3)8260, (2)8270, (1) TM 16-5 DTW-5.43 Begin Purge (1233) Post Purge DTW- Time Temple Condlus Dough pH ORP (MW) Purget gray Desc (1235) 15.62 421 3.05 7.15 193.0 0.34min Clear (1240) 16.09 490 2.57 7.08 193.2 11 Clear (1245) 15.76 500 1.92 7.07 192.4 11 Clear (1250) 15.53 505 1.85 7.07 190.8 11 Clear (1255) 15.42 509 2.14 7.07 187.7 11 Clear (1300.) 15.43 509 2.18 7.05 188.6 11 Clear		1		6.23	199,1	Dos Huise	Clear	Sam
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