

**On-Base Groundwater AOCs  
Monitoring Program  
Former Griffiss Air Force Base  
Rome, New York**

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**MONITORING  
REPORT  
(Fall 2007)**



**Contract No. F41624-03-D-8601  
Delivery Order No. 0027**

**Revision 0.0  
May 2008**

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**MEMORANDUM**

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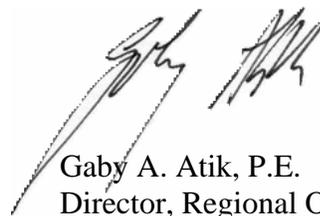
Re: Monitoring Report  
On-Base Groundwater AOCs  
Monitoring Program, Fall 2007  
Former Griffiss Air Force Base, Rome, New York  
Contract No. F41624-03-D-8601-0027  
Revision 0.0  
May 2008

On behalf of the Air Force Real Property Agency (AFRPA), through the Air Force Center for Engineering and the Environment (AFCEE) Performance-Based Contract (PBC) for Long-Term Monitoring (LTM) and Remedial Action-Operations (RA-O), FPM Group, Ltd. is pleased to submit the above-referenced report. This report is being distributed in accordance with the attached distribution list.

This version of the report incorporates data through Fall 2008.

If you have any questions or require additional information, please feel free to contact Mark Rabe, AFRPA Project Engineer, at 315-356-0810 ext. 203 or myself at 315-336-7721 ext. 202, or by e-mail at [g.atik@fpm-group.com](mailto:g.atik@fpm-group.com).

Very truly yours,



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**MONITORING  
REPORT  
(Fall 2007)**

**Prepared for:**

**On-Base Groundwater AOCs  
Former Griffiss Air Force Base  
Rome, NY**

**through**

**The Air Force Center for Engineering and the Environment  
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**APPENDIX**

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C Raw Lab Data ..... (electronic copy only)

## **LIST OF ACRONYMS AND ABBREVIATIONS**

<b>AFB</b>	Air Force Base
<b>AFCEE</b>	Air Force Center for Engineering and the Environmental
<b>AOC</b>	Area of Concern
<b>BADP</b>	Battery Acid Disposal Pit
<b>BADrP</b>	Battery Acid Drainage Pit
<b>bgs</b>	below ground surface
<b>BTOIC</b>	below top of inner casing
<b>COC</b>	Contaminant of Concern
<b>CQCR</b>	Chemical Quality Control Report
<b>CSM</b>	Conceptual site model
<b>DCE</b>	dichloroethylene/dichloroethene
<b>DO</b>	Delivery Order
<b>E&amp;E</b>	Ecology and Environment, Inc.
<b>EPA</b>	Environmental Protection Agency
<b>FPM</b>	FPM Group, Ltd.
<b>FPTA</b>	Fire Protection Training Area
<b>FSP</b>	Field Sampling Plan
<b>ft</b>	feet
<b>ft<sup>2</sup></b>	square feet
<b>HRC<sup>®</sup></b>	Hydrogen Release Compound
<b>K</b>	Hydraulic conductivity
<b>LAW</b>	LAW engineering and environmental services, Inc.
<b>LTM</b>	long term monitoring
<b>Mg/kg</b>	milligram per kilogram
<b>MSL</b>	mean sea level
<b>NFS</b>	No Further Sampling
<b>NYSBC</b>	New York State Barge Canal
<b>NYSDEC</b>	New York State Department of Environmental Conservation
<b>PAH</b>	polynuclear aromatic hydrocarbon

**LIST OF ACRONYMS AND ABBREVIATIONS (cont'd.)**

<b>PCB</b>	polychlorinated biphenyl
<b>PCE</b>	tetrachloroethylene/perchloroethylene/tetrachloroethene/perchloroethene
<b>POC</b>	Point of compliance
<b>QAPP</b>	Quality Assurance Project Plan
<b>RI</b>	Remedial Investigation
<b>RL</b>	Reporting Limit
<b>ROD</b>	Record of Decision
<b>RSCO</b>	Recommended Soil Cleanup Objective
<b>SAP</b>	Sampling and Analysis Plan
<b>SI</b>	Supplemental Investigation
<b>SVOC</b>	semi-volatile organic compound
<b>TAGM</b>	Technical and Administrative Guidance Memorandum
<b>TBC</b>	To Be Considered
<b>TCE</b>	trichloroethylene/trichloroethene
<b>TOC</b>	total organic carbon
<b>UST</b>	Underground Storage Tank
<b>VOC</b>	volatile organic compound
<b>µg/L</b>	micrograms per liter
<b>µg/kg</b>	micrograms per kilogram

## **1 INTRODUCTION**

FPM Group, Ltd. (FPM), under contract with the Air Force Center for Engineering and the Environment (AFCEE), is conducting a groundwater monitoring program at several sites associated with the On-Base Groundwater Contamination Area of Concern (AOC) at the former Griffiss Air Force Base (AFB), New York (see Figure 1-1). The monitoring program will be conducted in accordance with provisions of the Basic Contract # F41624-03-D-8601 and Delivery Order (DO) #0027.

The purpose of the program is to monitor the presence of contaminants of concern (COCs), assess the potential for migration of the COCs, identify statistically valid groundwater trends, and establish an early warning, monitoring well system for assuring compliance with potential COC receptors.

Data evaluation and report preparation for the groundwater monitoring program includes semi-annual summary updates and a more detailed annual report. The monitoring program will also be reviewed periodically to revise sampling location and/or sampling frequencies for optimal functioning. This semi-annual groundwater monitoring report includes collection, analysis, and reporting of COCs for the following On-Base Groundwater Areas of Concern:

- ST-06: Building 101 AOC
- SS-60: Building 35 AOC

Closure was recommended for the following site in the August 2007 Semi-annual On-base Groundwater AOCs Monitoring Report (FPM, August 2007):

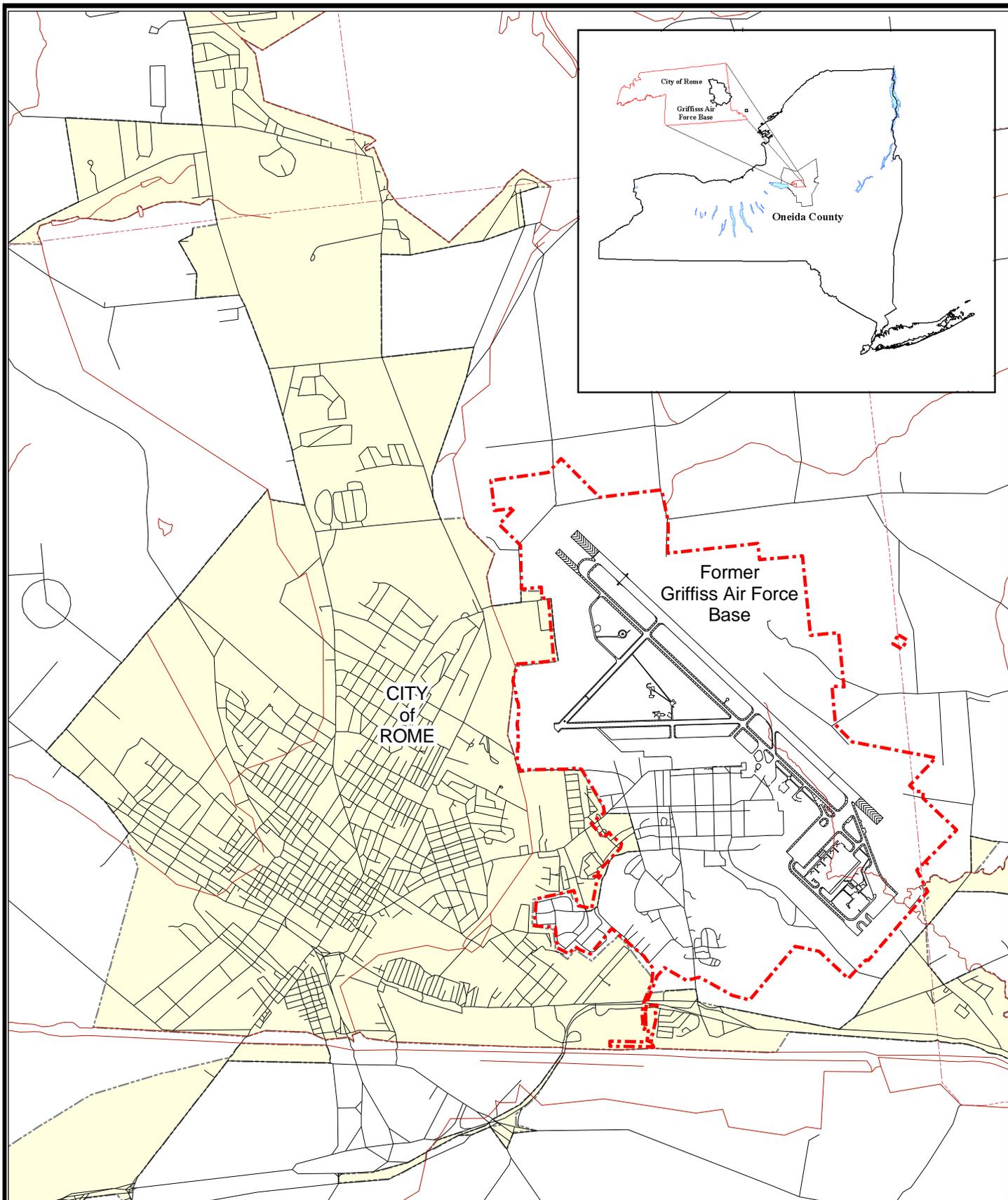
- FT-30: Fire Protection Training Area (FPTA)

Therefore, no samples were collected at the FPTA after March 2007.

As part of the performance based contract, it should be noted that the following sites were previously sampled under long-term monitoring (LTM), and No Further Sampling (NFS) was proposed or sampling was suspended until a Record of Decision (ROD) is signed.

- SD-52: Nosedocks / Apron 2 Chlorinated Plume
- SS-23: Building 20 AOC
- DP-12: Building 301 AOC
- SS-17: Lot 69 AOC

The locations of the On-Base Groundwater AOCs can be viewed in Figure 1-2.

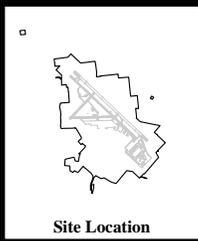
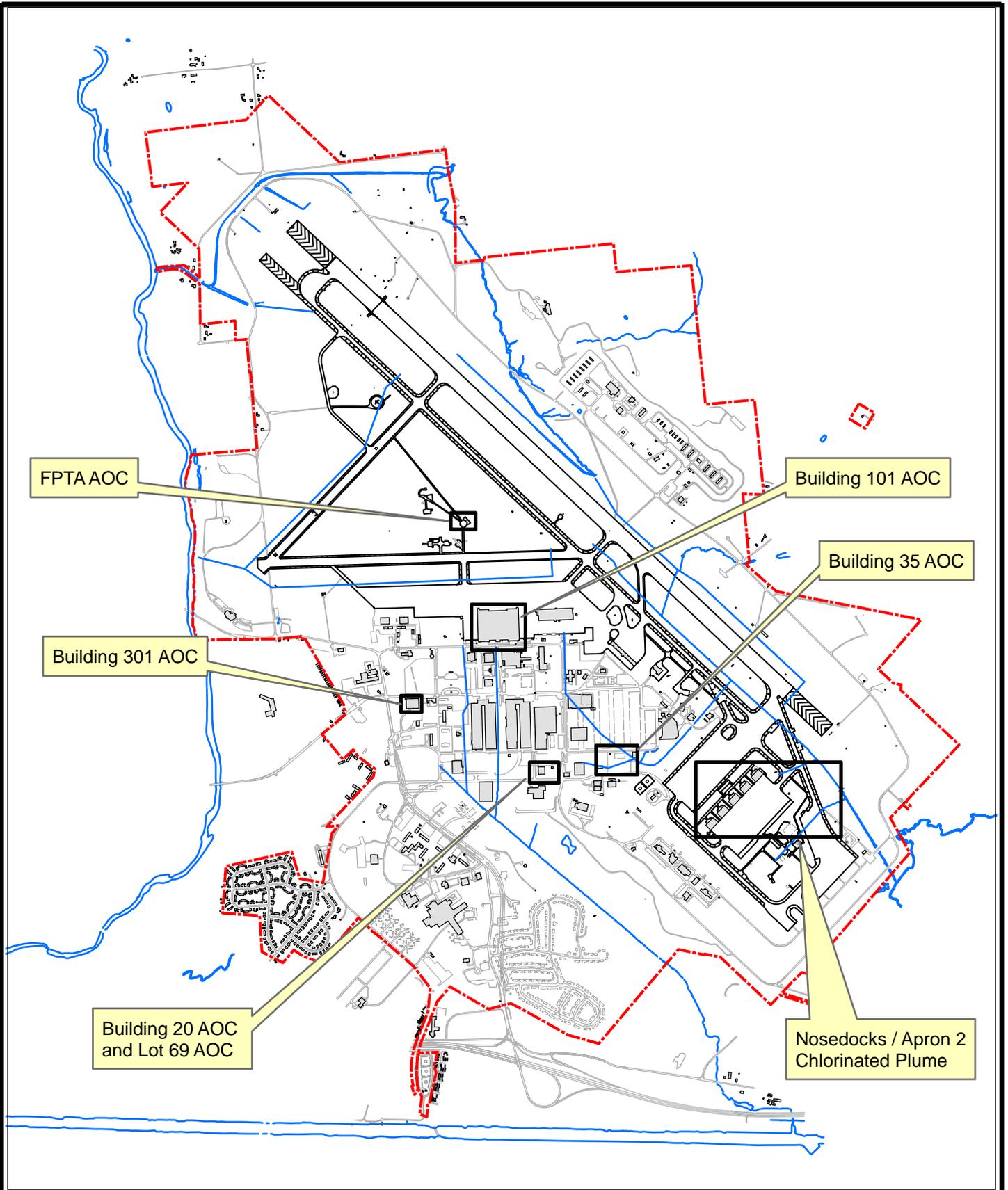


**FIGURE 1-1**  
**Base Location Map**



**UNITED STATES AIR FORCE**  
**GRIFFISS AIR FORCE BASE**  
**ROME, NEW YORK**





**Legend**

Boundary	<b>Facilities</b>
Hydro	Existing
Airfield	Demolished
Road	

750 375 0 750 1,500 Feet

N

United States Air Force  
Former Griffiss Air Force Base  
Rome, New York



**Figure 1-2**  
**On-Base Groundwater AOC**  
**Location Map**

FPM group

Page 1-3

Groundwater samples were collected from each of the sites listed and analyzed for the respective COCs as identified during previous investigations. Groundwater elevations were measured at well sampling locations to ascertain groundwater flow pattern. Both existing data and the information from new sampling are utilized for overall performance evaluation.

Groundwater samples were collected and analyzed at existing monitoring wells located to sufficiently track the migration and/or attenuation of the COC plume(s).

New monitoring wells were installed according to the protocol described in the Field Sampling Plan (FSP) (FPM, March 2005). Reference is also made to the AFCEE Quality Assurance Project Plan (QAPP), Version 3.1 (AFCEE, August 2001) or later, with project-specific variances. The QAPP, together with the FSP, form the Sampling and Analysis Plan (SAP).

## **1.1 GROUNDWATER MONITORING APPROACH**

### **1.1.1 Groundwater Monitoring Background**

To illustrate how this groundwater monitoring program will operate, the following highlights the overall objectives, components, and constraints of the groundwater monitoring program.

The objectives of groundwater monitoring are:

1. To continue refining the conceptual site model (CSM) for groundwater flow so that the predictions regarding the fate and transport of COCs are accurate;
2. To provide data regarding groundwater and surface water elevations needed to evaluate groundwater flow and surface water/groundwater interactions which control the fate and transport of COCs;
3. To establish an early warning monitoring system for the protection of potential receptors prior to completion of exposure pathways;
4. To evaluate COC degradation due to remedial action or natural attenuation processes; and
5. To collect data that support attainment of regulatory requirements and site closure.

Typical components of a groundwater monitoring system include:

1. One or more upgradient well(s) representative of background conditions;
2. Monitoring wells that track the COC migration or degradation trend; and
3. Point-of-compliance (POC) well(s) located downgradient of the plume or contaminated area in unimpacted groundwater (downgradient background).

Constraints associated with a groundwater monitoring system include:

1. All monitoring wells must be screened in the same hydrogeologic unit as the COC plume or known/probable groundwater pathway from a potential source;
2. Downgradient monitoring wells must be located to detect unexpected variations in groundwater quality as efficiently as possible (i.e., with respect to groundwater migration rates and downgradient flow direction);
3. POC wells must be located upgradient from the potential receptors to provide sufficient early warning; and
4. Regulatory requirements must be taken into account.

Given the above objectives and constraints, the design of a monitoring system considers the following tasks:

1. Selecting water-level observation wells and water quality monitoring wells from existing monitoring wells and piezometers, or selecting locations for new wells, depending on the evaluation of existing data (i.e., well logs, water-level measurements, proximity to natural flow boundaries, trends and uncertainties in the existing data) and the specific intended and distinct role of that monitoring point;
2. Providing a statistical evaluation of water-level elevation data for groundwater flow direction, existing COC concentrations, and groundwater chemistry to predict long-term trends;
3. Identifying performance evaluation criteria (e.g., statistical tests), including appropriate analysis methods for evaluating data variations or closure attainment;
4. Identifying water quality sampling frequency at each monitoring point both for
  - a. understanding the trends of COCs and/or their indicator analytes, and
  - b. minimizing the costs and maximizing the benefits of the program;
5. Identify physical and chemical parameters (e.g., transport and attenuation properties) for the COCs; and
6. Periodically assessing the groundwater monitoring well network for possible decommissioning of monitoring wells from the program.

### **1.1.2 Purpose of Groundwater Monitoring Program**

The respective groundwater monitoring plans have identified sampling locations that will best detect groundwater COCs that are known to exist at the On-Base Groundwater AOCs, and track their transport over time to support a decision for either continued monitoring, remedial measures, or site closure. The monitoring program will use historic data and new information from annual and quarterly sampling rounds at specified existing and new monitoring wells, and surface water sampling sites.

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## **2 ENVIRONMENTAL SETTING**

### **2.1 PHYSIOGRAPHY AND TOPOGRAPHY**

The former Griffiss AFB is located in the city of Rome in Oneida County, New York (refer to Figure 1-1). The former Base lies within the Mohawk Valley between the Appalachian plateau and the Adirondack Mountains. A rolling plateau northeast of the former Base reaches an elevation of 1300 feet (ft) above mean sea level (MSL). The New York State Barge Canal (NYSBC) and the Mohawk River valley south of the former Base lie below 430 ft above MSL. The topography across the former Base is relatively flat with elevations ranging from 435 ft above MSL in the southwest portion to 595 ft above MSL in the northwest portion of the former Base.

### **2.2 GEOLOGY**

Unconsolidated sediments at the former Griffiss AFB consist primarily of glacial till with minor quantities of clay and sand and significant quantities of silt and gravel. The thickness of these sediments range from 0 ft in the northeast portion to more than 130 ft in the southern portion of the former Base. The average thickness of the unconsolidated sediments is 25 to 50 ft in the central portion and 100 to 130 ft in the south and southwest portions of the former Base. The bedrock beneath the former AFB generally dips from the northeast to the southwest and consists of Utica Shale, a gray and black carbonaceous unit with a high/medium organic content (LAW engineering and environmental services, Inc. [LAW], December 1996).

### **2.3 HYDROLOGY**

The shallow water table aquifer lies within the unconsolidated sediments, where depth to groundwater ranged from just below ground surface to 59 ft below ground surface (bgs) during the June 2003 synoptic Basewide water-level measurement of wells. Groundwater across the former Base generally flows from the topographic high in the northeast to the Mohawk River and the NYSBC to the south. Several creeks, drainage culverts, and sewers (mostly acting as drains for shallow groundwater), intercept surface water runoff.

A comprehensive description of regional and local geology, hydrogeology, lithology, and hydrology for the former Griffiss AFB was given in Section 4 of the Baseline Study (FPM, July 2000), and in the Remedial Investigation (RI) (LAW, December 1996), and in the Supplemental Investigation (SI) prepared by Ecology and Environment, Inc. [E&E] (E&E, November 1998). Detailed site descriptions and the hydrology for AOCs are presented with each site-specific section.

## **2.4 CLIMATE**

The former Griffiss AFB experiences a continental climate characterized by warm, humid, moderately wet summers and cold winters with moderately heavy snowfalls. The mean annual precipitation is 45.6 inches, which includes the mean annual snowfall of 107 inches. The annual evapotranspiration rate is 23 inches. The average temperature during the winter season is 20 degrees Fahrenheit; temperatures during the spring, summer, and fall vary from 31 to 81 degrees Fahrenheit. The prevailing winds are from the southwest, with an average wind speed of 5 knots.

The former Griffiss AFB is located in a region prone to acid precipitation; the annual average pH of precipitation recorded for 1992 at the three closest stations ranged from 4.25 to 4.28. Fluctuations in pH have an inverse correlation to precipitation, such that lower pH levels correlate with higher amounts of precipitation (LAW, December 1996).

### **3 BUILDING 101 AOC (ST-06)**

#### **3.1 SITE LOCATION AND HISTORY**

Building 101 Battery Acid Disposal Pit/Battery Acid Drainage Pit/Yellow Submarine Underground Storage Tank (BADP/BADrP/UST) is located south of Apron 3, in the central portion of the former Base. Figure 3-1 illustrates the building, together with the location of the existing monitoring wells, temporary well, and March 2004 groundwater contours.

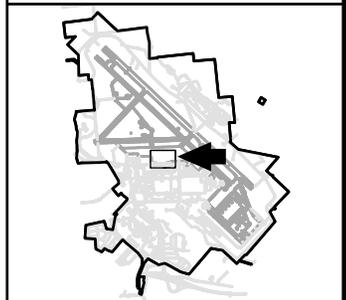
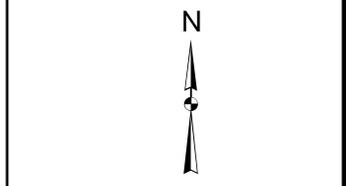
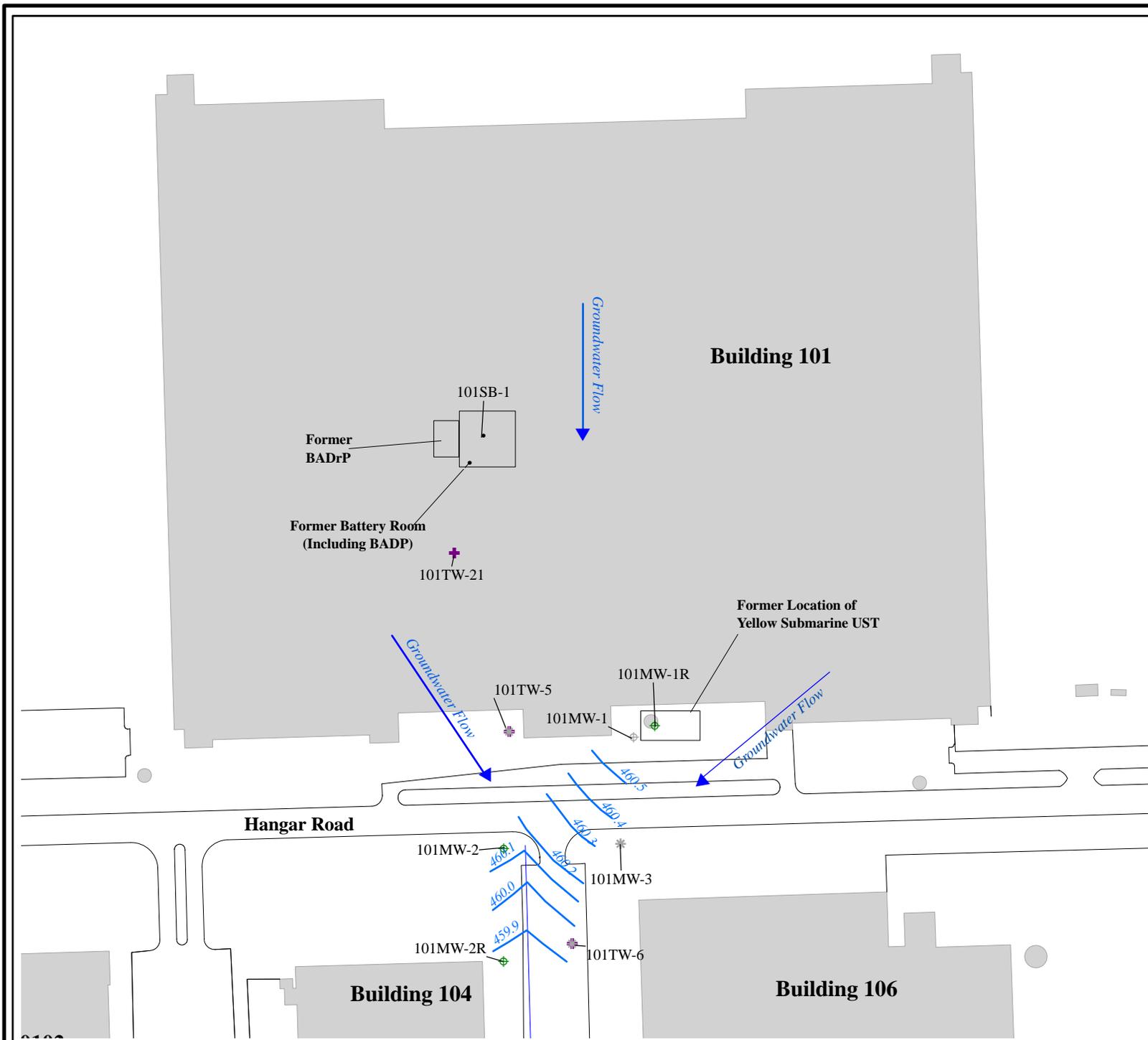
The former BADP was located in the central portion of the building in an area designated as the Lead Battery Room. The BADP was in use from the early 1940s until 1985, when it was excavated. The BADP consisted of a pit beneath the concrete floor and was covered with a steel grate. Acids from spent batteries were neutralized with baking soda and poured into the BADP, where the neutralized liquid was allowed to percolate into the underlying soils. A 4-inch overflow pipe ran west from the BADP to the BADrP which was located beyond the west wall of the Lead Battery Room. Following the removal of the BADP, a new 4-inch floor drain was installed and piped to the BADrP. Investigation and remedial activity of the drainage pit was completed during closure activities from June 1997 through January 1998. Remedial activities consisted of the removal of residual sludge from the BADrP with subsequent removal of the concrete pit floor and underlying soils. Following the removal and endpoint sampling, the drainage pit was backfilled and sealed with concrete (OHM, July 1998).

The Yellow Submarine UST, which was located 15 ft from the south edge of Building 101, was used as a holding and dilution tank for plating wastes from a metal plating shop housed in Building 101, until June 1993 when it was excavated (LAW, December 1996).

The Baseline Study (FPM, July 2000) found that the COCs reported in earlier investigations for this site (i.e., chlorinated ethenes and chloroform) had substantially stabilized at levels close to or below NYS Groundwater Standards.

#### **3.2 HYDROGEOLOGICAL SETTING**

Building 101, approximately 1,440,000 square feet (ft<sup>2</sup>) in area, has a topographic relief of less than 1 foot across the site. The soils below 0.5 ft of asphalt and concrete are characterized by borings as predominantly brown to gray, fine to medium sand with silt and gravel. Subsurface soils encountered range from predominantly gray to brown gravelly sand to gray and brown, fine to coarse sand with variable silt and gravel. Figure 3-2 illustrates the geological cross section A-A' (LAW, December 1996).



- Well Inventory**
- ⊕ Decommissioned
  - \* Destroyed
  - ⊕ Monitoring Well
  - ⊕ Temporary Well (2002)
  - GW Contour March 2004
  - Road
  - Storm Drain
  - Facilities
  - Yellow Submarine UST



United States Air Force  
 former Griffiss Air Force Base  
 Rome, New York



**Figure 3-1**  
**Building 101 AOC**  
**Site Location Map**



The Building 101 AOC is located approximately 3,200 ft north of Three Mile Creek (LAW, December 1996). Runoff from the site is intercepted at the site and conveyed by the storm drains running north-south to Three Mile Creek.

As reported in the Baseline Study (FPM, July 2000), the storm drains intercept the water table along their north-south course. Groundwater contouring in this area (Figure 4-1) reflects groundwater drainage to the storm drain system. The influence of the storm drains on groundwater flow is as a constant-head line sink. This causes an acute shape to the contour lines in the vicinity of the storm drains. Groundwater discharge to the storm drains may be intermittent and varies in extent because of fluctuations of the water table in relation to the storm drain invert elevation (458.6 ft MSL).

Measurements in the December 1998 Base-wide synoptic indicated groundwater depths adjacent to the Building 101 AOC were fairly level, varying from 14.14 ft bgs in monitoring well 101MW-4 located on the north to 13.63 ft bgs to the south (FPM, July 2000). Subsequently, the groundwater flow at the Building 101 AOC is southwesterly. Water level measurements collected during the March 2005 sampling round indicated the same flow direction (see Figure 3-1).

The reported average site-specific hydraulic conductivity (K) for the Building 101 AOC was 18.4 feet per day, with a hydraulic gradient of 0.0028 feet per foot. Estimating the porosity to be 20 percent, the groundwater flow was calculated to be 94 feet per year (LAW, December 1996).

### **3.3 SUMMARY OF PREVIOUS INVESTIGATIONS**

#### BADP Sampling

Soil sampling of the BADP conducted in 1985 by Roy F. Weston Inc. found high concentrations of antimony (193 mg/kg), lead (83,000 mg/kg), copper (784 mg/kg), and zinc (262 mg/kg) (101SB-1) (Figure 3-1). A 1994 analysis at soil sample location 101SB-1 detected various metals as well as tetrachloroethylene (also known as perchloroethylene or tetrachloroethene) (PCE) (0.8 µg/kg), toluene (3 µg/kg), and polynuclear aromatic hydrocarbon (PAH) compounds; of these, benzo(a)pyrene, phenol, and six metals (including antimony, arsenic, lead, and mercury) exceeded soil to-be-considereds (TBCs) (LAW, December 1996).

#### BADrP Closure

During 1997 closure activities of the adjacent BADrP, soil sampling results indicated the presence of several semi-volatile organic compounds (SVOCs) and metals. All of the constituents detected were below their respective New York State Department of Environmental Conservation (NYSDEC) guidance level (according to the Technical and Administrative Guidance Memorandum [TAGM] 3028), with the exception of 1,4-dichlorobenzene at 100 mg/kg. Following additional soil removal and endpoint sampling, 1,4-dichlorobenzene was also reported below its respective TAGM level of 8.5 mg/kg (OHM, July 1998).

In June 2002, soil and groundwater confirmatory sampling was conducted at the Building 101 BADrP (located inside Building 101; see Figure 3-1). Soil and groundwater samples were analyzed for volatile organic compounds (VOCs), SVOCs, metals and polychlorinated biphenyls (PCBs). No VOC or PCB exceedances were reported at the seven soil sampling locations. The only SVOC reported at levels exceeding TAGM Recommended Soil Cleanup Objectives (RSCO) was phenol (310 F micrograms per kilogram ( $\mu\text{g}/\text{kg}$ ) (F indicating the detection was between the method detection limit [MDL] and the reporting limit [RL]) detected at 101SB-10 (located in the southeast corner of the former BADrP; not shown on map) at the 4 to 6 ft interval. The detected concentration is almost at one order of magnitude of the RSCO ( $30 \mu\text{g}/\text{kg}$ ) and is below the laboratory reporting limit ( $330 \mu\text{g}/\text{kg}$ ) (FPM, August 2002).

Five metals were reported at levels exceeding RSCO and/or Background Soil Screening Levels (from the RI, LAW, December 1996) at two sampling locations (101SB-10 and -12, not on figure but within BADrP): cadmium, mercury and silver were reported in the 4 to 8 ft interval. Each of the five metals exceedances was within one order of magnitude or less of the respective RSCO or site background level. While cadmium and silver were found at levels exceeding their respective RSCOs, the levels measured at the two sample locations are below Environmental Protection Agency (EPA) Region III Residential Risk-Based Concentrations ( $39 \text{ mg}/\text{kg}$  and  $390 \text{ mg}/\text{kg}$ , respectively). Mercury slightly exceeds the RSCO, but the mercury level in the deeper sample was below the RSCO ( $0.03 \text{ mg}/\text{kg}$ ) (FPM, August 2002).

Neither VOCs, SVOCs, nor PCBs were reported above NYSDEC Groundwater Standards in the single temporary groundwater well 101TW-21, located approximately 100 ft south of the BADP. The amount of suspended solids observed during groundwater sample collection is believed to have compromised the integrity of the sample for metals evaluation (FPM, August 2002).

Based on this 2002 confirmation sampling, the 1997 removal action was successful at eliminating the presence of residual soil contamination at levels posing a threat to the human health and the environment.

#### Yellow Submarine UST

Monitoring well 101MW-1, located near the Yellow Submarine UST, was analyzed three times during the 1992-1993 quarterly groundwater sampling program; PCE, trichloroethylene (TCE), manganese, and zinc were detected at concentrations up to  $290 \mu\text{g}/\text{L}$ ,  $270 \mu\text{g}/\text{L}$ ,  $2.44 \text{ mg}/\text{L}$ , and  $0.363 \text{ mg}/\text{L}$ , respectively. Soil samples from the site of the UST excavation collected in 1993 showed metal and PCE ( $10 \mu\text{g}/\text{kg}$ ) contamination. The results of the RI (from samples collected in June 1994) reported the PCE concentration in monitoring well 101MW-1 at  $7.7 \mu\text{g}/\text{L}$ , a marked decline from  $290 \mu\text{g}/\text{L}$  (measured in June 1993). Groundwater samples from monitoring well 101MW-2 (also collected in June 1994), located south and downgradient of Building 101, had concentrations of  $130 \mu\text{g}/\text{L}$  of chlorinated solvents, comprised mostly of cis-1,2-dichloroethylene (DCE) ( $120 \mu\text{g}/\text{L}$ ).

### Groundwater Sampling

Groundwater sampling during the SI (E&E, November 1998) reported chloroform concentrations in both wells 101MW-1 and 101MW-3 at 19 µg/L. TCE was also detected in wells 101MW-1 (where PCE was also found), 101MW-2, 101MW-3, 101TW-5, and 101TW-6. All levels were below cleanup criteria.

Due to construction activities related to the widening of Hangar Road in 1998, monitoring wells 101MW-1 and 101MW-2 were replaced by newly installed wells 101MW-1R and 101MW-2R, respectively. 101MW-2 was rediscovered in 2001 and added to the well sampling list. During the Baseline Study (FPM, July 2000), PCE and TCE were detected in all four rounds in well 101MW-1R below the reporting limit of 1.4 µg/L and 1 µg/L, respectively. The PCE results were lower than the 7.7 µg/L detected in well 101MW-1 during the RI (LAW, December 1996). cis-1,2-DCE was reported at 0.2 F µg/L in the January 1999 sampling round and was undetected in the following three sampling rounds. TCE was also detected in wells 101MW-2R and 101MW-3, but no samples exceeded the NYS Groundwater Standard or the reporting limit of 1.0 µg/L.

Samples collected from monitoring wells 101MW-1R and 101MW-3 in the Baseline Study in January 1999, showed decreases in chloroform concentrations from the 19 µg/L reported during the SI to 4.72 µg/L and 6.33 µg/L, respectively. Subsequent sampling for chloroform showed an increase in concentration to 11.4 µg/L in well 101MW-3 in August 1999.

Concentrations of chloroform in well 101MW-1R generally showed a decrease to a level of about 2 µg/L for the remainder of 1999 (FPM, July 2000). The chloroform detections are likely to be associated with potable water leaks from a nearby water supply main; potable water commonly contains chloroform (E&E, November 1998).

No VOCs were detected above ARARs in monitoring well 101MW-2R. This result suggests that the TCE plume does not migrate beyond the 42-inch storm drain from the direction of the UST. Chloroform was also detected in well 101MW-2R below the NYS Groundwater Standards. No exceedances were reported for upgradient monitoring well 101MW-4 in any of the Baseline Study sampling rounds.

### **3.4 BUILDING 101 AOC GROUNDWATER SAMPLING PLAN**

The purpose of the sampling at the Building 101 AOC is to monitor the presence and movement of chlorinated hydrocarbon COCs. Sampling is performed quarterly for one monitoring well (101MW-2). The sample is analyzed for VOCs (EPA Method SW8260) for the specified short list. The original sample analysis summary, which has since been updated / modified, is provided in Table 3-1.

**Table 3-1**  
**Building 101 AOC Groundwater Monitoring Sample Analysis Summary**

Sampling Locations	Screen Interval Depth (ft MSL)	Sampling Rationale	Target Analytes/ EPA Method Numbers	# of Samples <sup>1</sup>	Sampling Frequency	Evaluation Criteria
101MW-1R <sup>2</sup> 101MW-2 101MW-2R <sup>2</sup> 101MW-3 <sup>3</sup>	463.14' – 453.14' 464.75' – 454.75' 461.87' – 451.87' 463.20' – 453.20'	Downgradient from source Downgradient from plume Downgradient from plume Downgradient from plume	<u>VOCs</u> – (Specified COC Short List) <sup>4</sup> / SW8260  <u>COCs</u> - PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, chloroform.	1	Quarterly	If downgradient wells do not exhibit exceedances of NYS Groundwater Standards or Base background levels for two successive monitoring events, evaluate monitoring frequency and number of wells.

Notes:

- <sup>1</sup> Please refer to the FSP for details concerning the number of QA/QC samples and their locations. At least one MS/MSD and two field duplicates were collected per SDG; one equipment blank per day and one ambient blank per day; one trip blank per cooler containing VOCs.
- <sup>2</sup> Sampling of monitoring wells 101MW-1R and 101MW-2R was discontinued in the July 2004 sampling round as recommended in the Draft Monitoring Report (FPM, July 2004).
- <sup>3</sup> Monitoring well 101MW-3 was decommissioned and removed in November 2002 due to construction work at the site.
- <sup>4</sup> During March 2002, samples were analyzed for the complete AFCEE QAPP 3.1 List. In addition, samples were submitted for SVOCs (SW8270, AFCEE QAPP 3.1 List) and Metals (SW6010).

### 3.5 GROUNDWATER SAMPLING RESULTS 2001 THROUGH 2007

FPM performed quarterly groundwater sampling from September 2001 through October 2007 (in total, 23 sampling rounds). Monitoring wells 101MW-1R, 101MW-2, and 101MW-2R were sampled in September and December 2001, March, June, September, and December 2002, March, June, September, and December 2003 and March 2004 for the target VOCs. Monitoring Well 101MW-2 was also sampled in June, September and December 2004, and March, June, September, and December 2005, May, September, December 2006, April and October 2007. Well 101MW-3 was sampled only during the first five sampling rounds (September 2001 through September 2002). Monitoring well 101MW-3 was decommissioned in November 2002 during the removal of the asphalt parking lot where it was located.

The field activities summary table is provided in Table 3-2. The analytical results are given in Table 3-3. The daily Chemical Quality Control Reports (CQCRs) are attached in Appendix A. The validated lab data are attached in Appendix B and the raw lab data are attached in Appendix C.

**Table 3-2**  
**Building 101 AOC Field Activity Summary**

Activity	Rationale	Analytical Parameters
Confirmation of groundwater flow direction.	The groundwater flow direction and elevation was confirmed using existing monitoring wells.	<u>VOCs</u> – (Specified COC Short List) / SW8260  <u>COCs</u> - PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, VC, and chloroform.
Sampling of four on-site monitoring wells.	Annual sampling was started in September 2001 for VOCs. Sampling was discontinued at monitoring well 101MW-3 due to well destruction during parking lot repaving. Sampling was discontinued in April 2004 at monitoring wells 101MW-1R and -2R due to the lack of detections/exceedances related to the site.	
HRC <sup>®</sup> injection at the Building 101 AOC.	Hydrogen Release Compound (HRC <sup>®</sup> ) was injected in December 2005 at the Building 101 AOC in a 50-ft wall with 5 injection points (see Figure 3-3). HRC <sup>®</sup> was injected from 20 to 10 ft bgs at a rate of 8 pounds of product per foot.	
2 <sup>nd</sup> HRC <sup>®</sup> injection at the Building 101 AOC.	HRC <sup>®</sup> was injected in August 2006 at the Building 101 AOC in a 50-ft wall with 5 injection points (see Figure 3-3). HRC <sup>®</sup> was injected from 20 to 10 ft bgs at a rate of 8 pounds of product per foot.	

**Table 3-3  
Building 101 AOC Detected Groundwater Results**

Sample Location	NYSDEC GW Standards (µg/L)	Results Baseline Study (FPM, 2000)	101MW-1R										
			101M1R14 EA	101M113 BA	101M01R18 CA	101M01R12 DA	101M01R14 EA	101M0112 DA	101M01R13 EA	101M0113 FA	101M0113 GA	101M01R12 HA	101M01R12 IA
Sample ID			9/27/01	12/21/01	3/13/02	6/14/02	9/10/02	12/20/02	3/6/03	6/24/03	9/16/03	11/26/03	4/5/04
Date of Collection													
Water Depth (ft BTOIC)			13.58	13.27	12.24	12.40	13.75	12.47	12.79	12.65	13.18	12.35	11.93
<b>Chlorinated VOCs (µg/L)</b>													
PCE	5*	0.21 F-0.54 F	0.54	0.96	0.33 F	0.50	0.44 F	0.40 F	0.32 F	U	0.8	U	0.65
TCE	5*	0.42 F-0.7 F	0.64	0.79	0.31 F	0.34 F	0.56	0.31 F	0.31 F	U	0.64	3.4	0.32 F
chloroform	7	0.24 F - 11.4	1.7 B	1.1 B	1.3	2.0	1.8	1.2	0.96	1.2	1.2	U	1.9
<b>SVOCs (µg/L)</b>													
All SVOCs			N/A	N/A	U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Metals (µg/L)</b>													
aluminum	--	**	N/A	N/A	116 F	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
barium	1,000	**	N/A	N/A	26.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
calcium	--	**	N/A	N/A	60,800	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
chromium	50	**	N/A	N/A	65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
iron	300	**	N/A	N/A	415	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
magnesium	35,000	**	N/A	N/A	6,460	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
manganese	300	**	N/A	N/A	31.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
molybdenum	--	**	N/A	N/A	2.7 F	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
nickel	100	**	N/A	N/A	12.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
potassium	--	**	N/A	N/A	3,010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
sodium	20,000	**	N/A	N/A	18,800	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Sampling was discontinued after April 2004 due to lack of exceedances of the  
NYSDEC Groundwater Standards.

Notes:  
B - The analyte was detected in a blank.  
F - The analyte was detected above the MDL, but below the RL.  
N/A - The analyte was not analyzed during sampling.  
U - The analyte was undetected.  
\* - The principal organic contaminant standard for groundwater applies to this substance.  
\*\* Analysis was not included in the Baseline Study.  
-- No NYS Groundwater Standard is available for this compound.  
█ Indicates an exceedance of the NYSDEC GW Standards.

**Table 3-3 (continued)**  
**Building 101 AOC Detected Groundwater Results**

Sample Location	NYSDEC GW Standards (µg/L)	Results Baseline Study (FPM, 2000)	101MW-2																								
			101M02 17EA	101M02 16BA	101M02 22CA	101M02 16DA	101M02 17EA	101M02 15DA	101M02 16EA	101M02 16FA	101M02 16GA	101M02 16HA	101M02 15IA	101M02 15JA	101M02 15KA	101M02 15LA	101M02 16MA	101M02 16NA	101M02 17OA	101M02 16PA	101M02 16PA	101M02 16RA	101M02 16SA	101M02 16TA	101M02 17UA		
Sample ID			9/27/01	12/21/01	3/13/02	6/14/02	9/10/02	12/20/02	3/6/03	6/24/03	9/16/03	11/26/03	4/5/04	6/16/04	9/10/04	12/29/04	3/29/05	6/23/05	9/9/05	12/30/05	5/23/06	9/21/06	12/20/06	3/27/07	10/10/07		
Date of Collection																											
Water Depth (ft BTOIC)			16.52	16.34	15.81	15.76	16.77	15.75	15.95	15.85	16.21	15.64	15.33	15.83	15.84	15.35	16.02	16.37	16.74	15.61	16.22	16.22	15.77	15.52	17.13		
<b>Chlorinated VOCs (µg/L)</b>																											
TCE	5*	0.38F-0.43F	1.6	1.3	1.1	0.73	0.39 F	1.0	1.1	0.58	1.1 ♦	0.93	0.82	0.95	U	0.91	0.85	0.88	0.79	1.2	1.7	0.73	0.9 F	0.39 F	0.210 F		
cis-1,2-DCE	5*	0.12U-0.23	20	26 ♦	14	19	U	14	16	12	15	U	8.3	11	U	9.9	7.5	8.5	12	8.1	11	15.5	14.1	9.53	9.18		
VC	2	U	U	0.11M	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0.33	0.21 F	U	0.110 F		
chloroform	7	0.24F - 11.4	U	0.15 M	U	U	U	U	U	U	U	U	1.1	0.56	2 B	0.97	1.8	0.96	0.61	0.73	0.58	U	2	U	U		
1,2-DCB	3	--	N/A	N/A	0.28 F	N/A																					
toluene	5*	--	N/A	N/A	0.59	N/A																					
<b>SVOCs (µg/L)</b>																											
All SVOCs			N/A	N/A	U	N/A																					
<b>Metals (µg/L)</b>																											
aluminum	--	**	N/A	N/A	556	N/A																					
barium	1,000	**	N/A	N/A	119	N/A																					
calcium	--	**	N/A	N/A	72,900	N/A																					
iron	300	**	N/A	N/A	932	N/A																					
magnesium	35,000	**	N/A	N/A	13,900	N/A																					
manganese	300	**	N/A	N/A	523	N/A																					
potassium	--	**	N/A	N/A	1,330	N/A																					
sodium	20,000	**	N/A	N/A	58,500	N/A																					
vanadium	--	**	N/A	N/A	1.8 F	N/A																					
zinc	2,000	**	N/A	N/A	5.7 F	N/A																					

Notes:  
DCB - dichlorobenzene, DCE - dichloroethylene, TCE - trichloroethylene, VC - vinyl chloride.  
F - Analyte was detected above the MDL, but below the RL.  
M - A matrix effect present.  
N/A - Analyte was not analyzed during sampling.  
U - Analyte analyzed for, but not detected. The associated numerical value is at or below the method detection limit.  
\* - The principal organic contaminant standard for groundwater applies to this substance.  
♦ - Concentration from the duplicate sample is reported since it is greater than the parent sample concentration.  
\*\* Analysis was not included in the Baseline Study.  
No NYS Groundwater Standard is available for this compound.  
█ Indicates an exceedance of the NYSDEC GW Standards.

**Table 3-3 (continued)**  
**Building 101 AOC Detected Groundwater Results**

Sample Location	NYSDEC GW Standards (µg/L)	Results Baseline Study (FPM, 2000)	101MW-2R										
			101M2R17 EA	101M02R16 BA	101M02R22 CA	101M02R16 DA	101M02R17 EA	101M02R16 DA	101M02R16 EA	101M02R16 FA	101M02R17 GA	101M02R16 HA	101M02R16 IA
Sample ID			9/27/01	12/21/01	3/13/02	6/14/02	9/10/02	12/20/02	3/6/03	6/24/03	9/16/03	11/26/03	4/5/04
Date of Collection			16.87	16.34	16.25	16.23	17.10	16.17	16.34	16.22	16.56	16.05	15.81
Water Depth (ft BTOIC)													
<b>Chlorinated VOCs (µg/L)</b>													
PCE	5*	0.21F-0.54F	0.33 F	U	U	U	U	U	U	U	U	U	U
TCE	5*	0.38F-0.60F	0.31 F	0.51	0.35 F	0.32 F	0.37 F	0.36 F	0.35 F	0.25 F	0.38 F	1.2	0.28 F
chloroform	7	0.24 F-11.4	1.3	U	U	U	U	U	U	U	U	U	U
toluene	5*	--	N/A	N/A	0.89	N/A	N/A	U	U	U	U	U	U
<b>SVOCs (µg/L)</b>													
All SVOCs			N/A	N/A	U	N/A							
<b>Metals (µg/L)</b>													
aluminum	--	**	N/A	N/A	1010	N/A							
barium	1,000	**	N/A	N/A	26.2	N/A							
cadmium	5	**	N/A	N/A	0.80 F	N/A							
calcium	--	**	N/A	N/A	65,700 M	N/A							
iron	300	**	N/A	N/A	1,320 M	N/A							
magnesium	35,000	**	N/A	N/A	8,220	N/A							
manganese	300	**	N/A	N/A	68.1	N/A							
molybdenum	--	**	N/A	N/A	3.6 F	N/A							
nickel	100	**	N/A	N/A	5.1 F	N/A							
potassium	--	**	N/A	N/A	1,840	N/A							
sodium	20,000	**	N/A	N/A	14,600	N/A							
vanadium	--	**	N/A	N/A	2.0 F	N/A							
zinc	2,000	**	N/A	N/A	8.2 F	N/A							

Sampling was discontinued after April 2004 due to lack of exceedances of the NYSDEC Groundwater Standards.

Notes:  
F - Analyte was detected above the MDL, but below the RL.  
M - A matrix effect present.  
N/A - Analyte was not analyzed during sampling.  
U - Analyte analyzed for, but not detected. The associated numerical value is at or below the method detection limit.  
\* - The principal organic contaminant standard for groundwater applies to this substance.  
\*\* Analysis was not included in the Baseline Study.  
-- No NYS Groundwater Standard is available for this compound.  
█ Indicates an exceedance of the NYSDEC GW Standards.

**Table 3-3 (Continued)**  
**Building 101 AOC Detected Groundwater Results**

Sample Location	NYSDEC GW Standards (µg/L)	Results Baseline Study (FPM, 2000)	101MW-3					Sampling was discontinued because the well was decommissioned in November 2002.
Sample ID			101M0313 EA	101M0312 BA	101M0317 CA	101M0312 DA	101MW03 13EA	
Date of Collection			9/27/01	12/21/01	03/13/02	06/14/02	9/10/02	
Water Depth (ft BTOIC)			12.90	12.76	12.52	12.12	13.12	
<b>Chlorinated VOCs (µg/L)</b>								
TCE	5	0.38 F-0.92 F	0.68	0.70	0.59	0.45 F	0.68	
chloroform	7	0.24 F-11.4	3.4 B	4.3 B	3.4	2.2	3.2	
toluene	5	--	N/A	N/A	0.31 F	N/A	N/A	
bromodichloromethane	50	--	N/A	N/A	0.21 F	N/A	N/A	
<b>SVOCs (µg/L)</b>								
All SVOCs			N/A	N/A	U	N/A	N/A	
<b>Metals (µg/L)</b>								
aluminum	--	**	N/A	N/A	634	N/A	N/A	
barium	1,000	**	N/A	N/A	14.8	N/A	N/A	
cadmium	5	**	N/A	N/A	0.70 F	N/A	N/A	
calcium	--	**	N/A	N/A	48,800	N/A	N/A	
chromium	50	**	N/A	N/A	1.9 F	N/A	N/A	
iron	300	**	N/A	N/A	921	N/A	N/A	
magnesium	35,000	**	N/A	N/A	6,260	N/A	N/A	
manganese	300	**	N/A	N/A	131	N/A	N/A	
potassium	--	**	N/A	N/A	1,190	N/A	N/A	
sodium	20,000	**	N/A	N/A	14,400	N/A	N/A	

Notes:

B - Result is a positive value; however analyte was detected in associated blank at concentration above the RL.

F - Analyte was detected above the MDL, but below the RL.

N/A - Analyte was not analyzed during sampling.

U - Analyte analyzed for, but not detected. The associated numerical value is at or below the method detection limit.

\*\* Analysis was not included in the Baseline Study.

-- No NYS Groundwater Standard is available for this compound.

█ Indicates an exceedance of the NYSDEC GW Standards.

In order to increase the readability of the report, all discussion of past sampling rounds has been eliminated. Only the sampling relevant to this report (October 2007) is discussed in detail. Detailed descriptions of past sampling rounds can be found in the Spring 2007 Monitoring Report (FPM, August 2007). The discussion on site activities has been preserved to inform the reader of pertinent information.

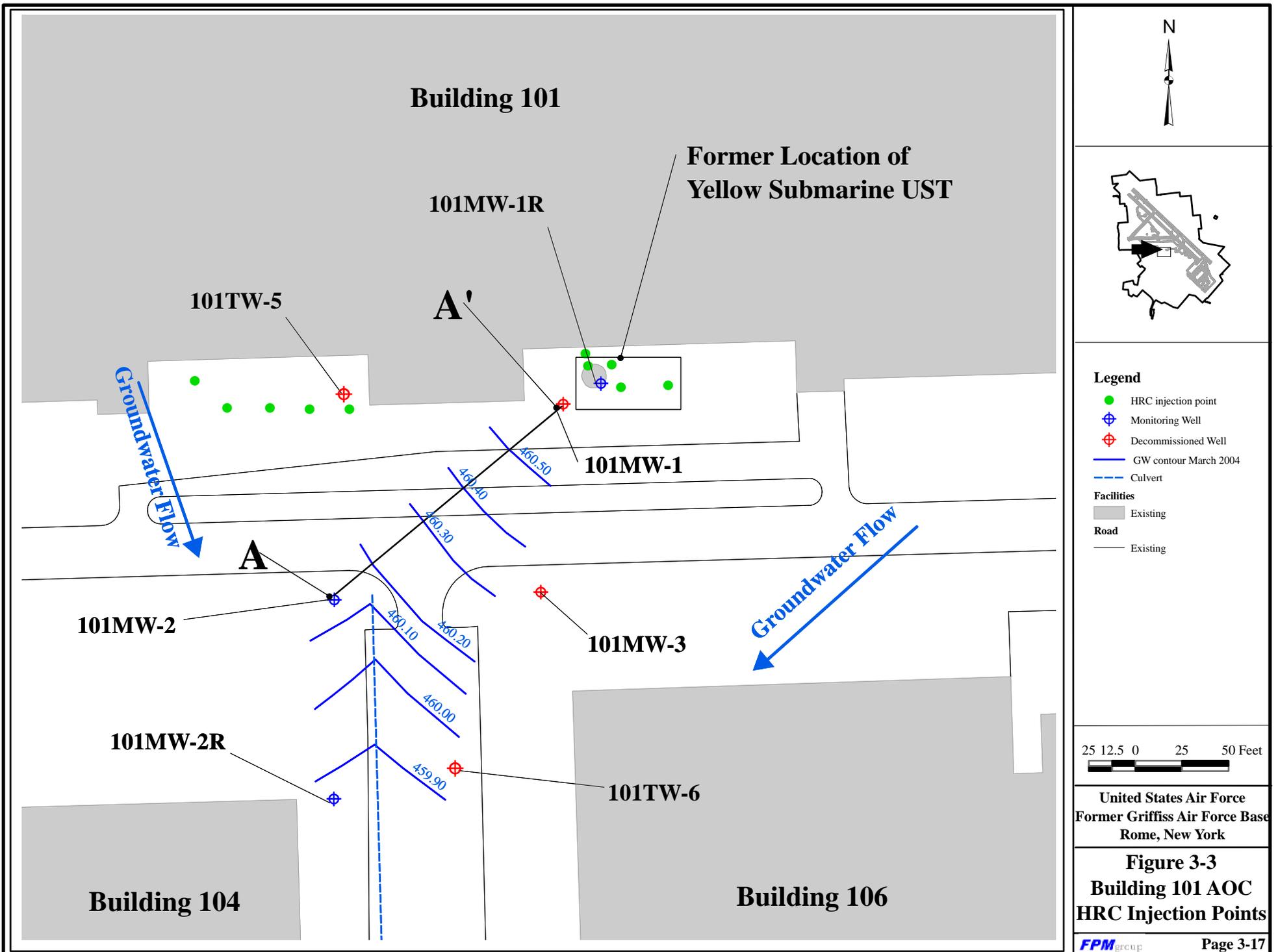
As recommended in the August 2005 monitoring report (FPM, August 2005), Hydrogen Release Compound (HRC) Advanced™ was injected at the Building 101 AOC in December 2005. HRC Advanced™ is “a product designed specifically for the in-situ treatment of chlorinated solvent based contamination or any anaerobically degradable substance in the groundwater environment. HRC is a viscous liquid that is pressure injected directly into the subsurface. Upon contact with water, HRC Advanced™ slowly hydrolyzes and is broken down by microbial action. During this process, lactic acid is released and utilized by microbes to produce hydrogen. The resulting hydrogen is then used in a microbially mediated process known as reductive dechlorination. This step-by-step biodegradation process (reductive dechlorination) reduces harmful contaminants into harmless end products.” (Regenesis website, 9 January 2006). Five injection points were planned in a 50-ft wide injection wall. True locations were spaced differently due to utility interference, as can be seen in Figure 3-3. HRC Advanced™ was injected from 20 to 10 ft bgs with an application rate of 8 pounds of product per ft of depth.

HRC Advanced™ was also applied in monitoring well 101MW-2 in February 2006. The light-brown syrupy HRC Advanced™ turned solid and opaque after contact with the groundwater and fouled up the monitoring well screen. Monitoring well maintenance activities performed in March and April 2006 included adding hot water to solubilize the HRC Advanced™ and surging the water column to mobilize the solidified HRC Advanced™. Additional well development was conducted in May 2006. A total of 170 gallons of water containing HRC Advanced™ was removed from the well during redevelopment. The well was left to stabilize and was sampled a week after redevelopment.

As recommended in the August 2006 monitoring report (FPM, August 2006), a second HRC Advanced™ injection was performed in August 2006 at the Building 101 AOC. This second injection was performed because of the groundwater flow pattern at the Building 101 AOC. As can be seen on Figure 3-1, the groundwater at the Building 101 AOC converges from the northwest and northeast on the storm drains. The first injection was performed near the Yellow Submarine UST. Since groundwater also flows across the site from the northwest, an additional injection was deemed necessary at that location. The 2<sup>nd</sup> injection area was located west of the first injection area, as seen in Figure 3-3. HRC® was injected from 20 to 10 ft bgs at a rate of 8 pounds of product per foot.

October 2007:

Only monitoring well 101MW-2 was sampled during this sampling round.



cis-1,2-DCE was the only VOC in exceedance of the NYS Groundwater Standards; it was reported at 9.18 µg/L. Three additional detections were reported for TCE, chloroform, and vinyl chloride but none exceeded their respective Groundwater Standards.

- VOC exceedance concentration: cis-1,2-DCE at 9.18 µg/L at monitoring well 101MW-2.

Additional analyses performed during the October 2007 sampling round, included alkalinity (410 mg/L), nitrate (0.083 F mg/L), sulfate (3.2 mg/L) and total organic carbon (TOC) [64 mg/L]. These analyses were performed to gather information to evaluate the possibility of enhanced anaerobic bioremediation at the Building 101 AOC. The evaluation was performed with the Final Principles and Practices of Enhanced Anaerobic Bioremediation of Chlorinated Solvents (AFCEE, August 2004).

The groundwater contours for the March 2004 sampling round are depicted in Figure 3-1. The groundwater flow is in a similar direction as reported in earlier sampling events (southwesterly). The groundwater elevations are reported higher (459.45 - 459.89 ft MSL) than the invert of the storm drain (458.6 ft MSL). This indicates that the storm drain acts as a groundwater drain, which was also reported by E&E in 1998 (E&E, July 1998).

### **3.5.1 2001 - 2007 Results Summary**

In the March 2002 sampling round, all monitoring wells at the Building 101 AOC were sampled for SVOCs and metals, in addition to VOCs. No SVOCs were detected and a few metals exceedances were reported for iron, manganese, sodium and chromium.

VOC samples have been collected from 2001 to 2007 for 23 sampling rounds. The number of exceedances reported at the Building 101 AOC has changed little in the 23 sampling rounds; cis-1,2-TCE has consistently been reported at 2 to 3 times the NYSDEC Groundwater Standard of 5 µg/L. Several other VOC detections have been reported, but all are significantly below their respective NYS Groundwater Standards.

The results of the additional analyses performed in October 2007 indicate that the Building 101 AOC is a good candidate for enhanced anaerobic bioremediation. The virtually absent nitrate and low sulfate levels show that the Building 101 AOC is between a Type 2 and Type 1 environment, both of which are good candidates for enhanced anaerobic bioremediation (Figure 3-3, AFCEE, August 2004).

The level of organic carbon is one of the differentiating factors between a Type 1 and 2 environment; Type 1 has a higher TOC concentration than Type 2, often leading to rapid and complete dechlorination of chlorinated VOCs. However, the relatively high TOC content reported in October 2007, is not believed to indicate that the Building 101 AOC is a Type 1 environment, but is believed to be the result of the failed injection of HRC Advanced™ in

monitoring well 101MW-2 in February 2006. HRC is partly a carbon source and remnants of it in the sand pack of the well are believed to be responsible for the elevated TOC concentrations. Furthermore, if the high TOC levels reported in October 2007 were representative for the entire site, rapid and complete dechlorination would have been expected to have occurred within the LTM sampling period (2001-2007) and therefore no chlorinated VOCs would be expected. The consistent cis-1,2-DCE detections reported between 2001 and 2007 indicate that the Building 101 AOC environment is not supporting a complete reductive dechlorination pathway and thus the Building 101 AOC environment is believed to be a Type 2 environment.

### **3.6 CONCLUSIONS AND MONITORING RECOMMENDATIONS**

The VOC results reported for the October 2007 sampling round are similar to those reported in past sampling rounds (FPM, August 2007). cis-1,2-DCE concentrations remain at levels which slightly exceed the NYS Groundwater Standard of 5 µg/L. Several other COCs have consistently been detected throughout the LTM sampling, but they remain at concentrations below their NYS Groundwater Standards.

Additional enhanced anaerobic bioremediation techniques will be evaluated for application at the Building 101 AOC. Due to the Type 2 environment at the site, an injection with an emulsified vegetable oil would likely be the most efficient application of a carbon source. Due to the complex utilities at the site, injection into monitoring well 101MW-2 appears the only viable option.

FPM researched various injection applications and identified the Newman Zone injection as the most efficient vegetable oil emulsion for in well application. Newman Zone is a proprietary emulsion of soybean oil in water with surfactants. A Newman Zone injection is planned for November 2007.

Following injection, performance monitoring will be implemented to monitor the effect of the emulsion injection.

Table 3-4 shows the historical and proposed groundwater sampling and analysis plan.

**Table 3-4**  
**Building 101 AOC Proposed Groundwater Sampling and Analysis Plan**

Sampling Locations	Sampling Rationale	Target Analytes / Method Numbers	Sampling Frequency	Evaluation Criteria / Modification Justification
101MW-2	Downgradient from plume	<u>VOCs</u> – (Specified COC Short List) / SW8260  <u>COCs</u> - PCE, TCE, cis-1,2-DCE, vinyl chloride, and chloroform.	Annually	Slight exceedance for cis-1,2-DCE at this sampling location.
<b>Recommended LTM Network Changes</b>				
<b>None</b>				

<b>Historical LTM Network Changes</b>				
<b>May 2006</b>				
<b>Analysis/ Frequency changes</b>				
101MW-2	Downgradient from plume	<u>VOCs</u> – (Specified COC Short List) / SW8260  <u>COCs</u> - PCE, TCE, cis-1,2-DCE, vinyl chloride, and chloroform.	Annually	The sampling frequency is changed from quarterly to annual because no significant changes to the detections/ exceedances in the last 6 sampling rounds.
<b>November 2004</b>				
<b>Removed Sampling Locations</b>				
101MW-1R 101MW-2R	Downgradient from source Downgradient from plume	Same as above.	Discontinued from quarterly basis.	Discontinued sampling after April 2004 based on no reported exceedances.
101MW-3	Downgradient from plume	Same as above.		Decommissioned and removed from groundwater monitoring network in November 2002 due to construction work at the site.

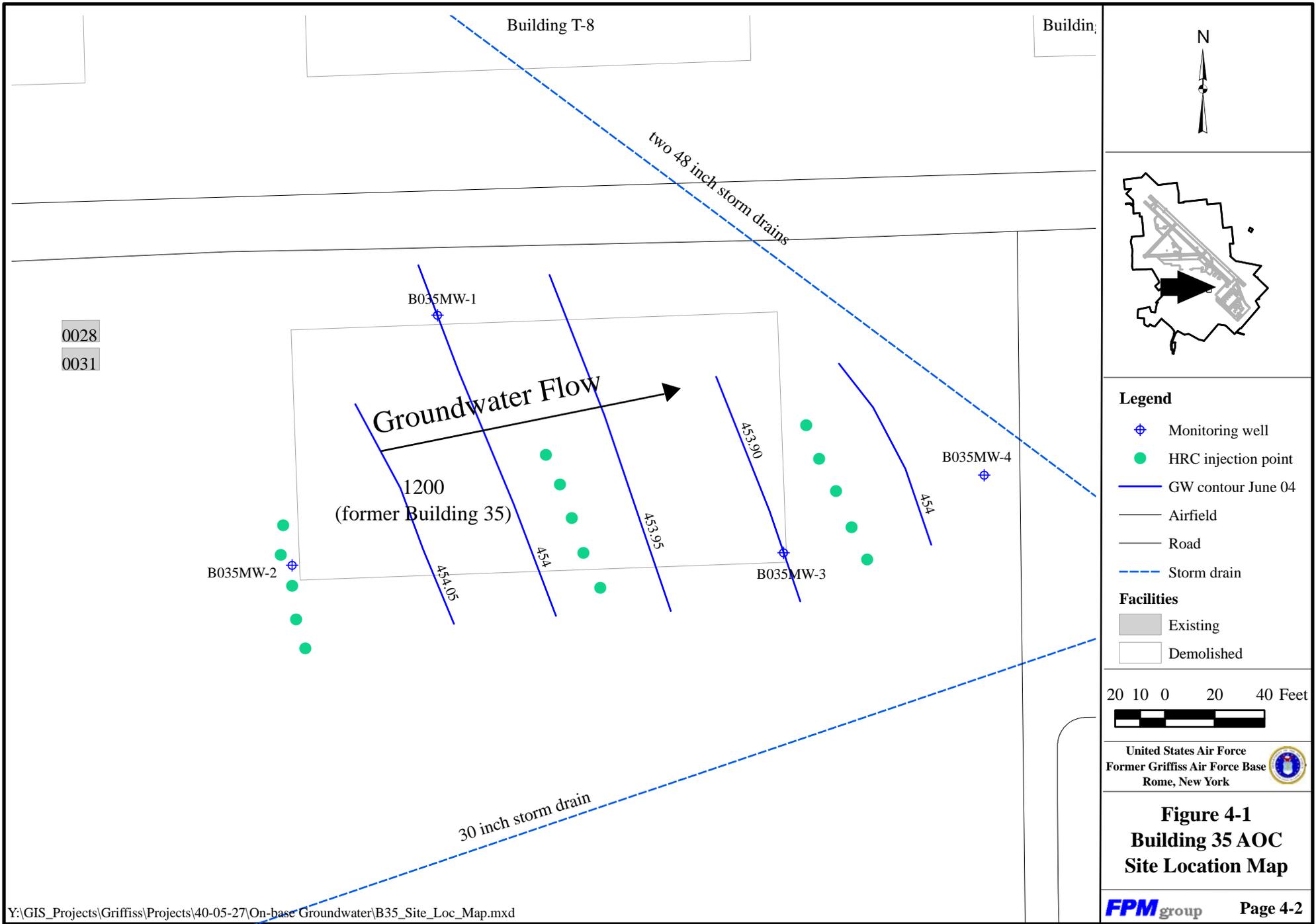
*This page is intentionally left blank.*

#### 4 BUILDING 35 AOC (SS-60)

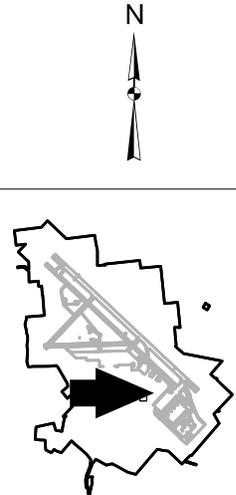
No sampling has been performed at the Building 35 AOC since the Spring 2007 Monitoring Report (FPM, August 2007) and this report. Annual groundwater monitoring will resume in March 2008 to monitor the effect of the HRC<sup>®</sup> injections on the COCs at the site. Sampling will be performed as shown in the Building 35 AOC Proposed Groundwater Sampling and Analysis Plan in Table 4-2. The LTM network will be re-evaluated following review of the March 2008 sampling data. The site layout map is shown in Figure 4-1. The field activities summary table is shown in Table 4-1.

**Table 4-1**  
**Building 35 AOC Field Activity Summary**

Activity	Rationale	Analytical Parameters
Confirmation of groundwater flow direction.	The groundwater flow direction and elevation was confirmed using the existing and newly installed monitoring wells.	<u>VOCs</u> – (Specified COC Short List) / SW8260.  <u>COCs</u> - PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and VC.
Sampling of four on-site monitoring wells.	Annual sampling was started in March 2002 for VOCs, SVOCs and total and dissolved metals. SVOC and metals sampling was discontinued after July 2004. Three sampling locations (B035MW-01, -02, and -03) were discontinued also due to the lack of detections/ exceedances related to the site.	
HRC <sup>®</sup> injection at the Building 35 AOC.	HRC <sup>®</sup> was injected in December 2005 at the Building 35 AOC in a 50-ft wall with 5 injection points (Figure 4-1). HRC <sup>®</sup> was injected from 20 to 10 ft bgs at a rate of 8 pounds of product per foot.	
2 <sup>nd</sup> HRC <sup>®</sup> injection at the Building 35 AOC.	HRC <sup>®</sup> was injected in August 2006 at the Building 35 AOC in two 50-ft walls with 5 injection points (Figure 4-1). HRC <sup>®</sup> was injected from 20 to 10 ft bgs at a rate of 8 pounds of product per foot.	



0028  
0031



**Legend**

-  Monitoring well
-  HRC injection point
-  GW contour June 04
-  Airfield
-  Road
-  Storm drain

**Facilities**

-  Existing
-  Demolished



United States Air Force  
Former Griffiss Air Force Base  
Rome, New York 

**Figure 4-1**  
**Building 35 AOC**  
**Site Location Map**

**Table 4-2**  
**Building 35 AOC Proposed Groundwater Sampling and Analysis Plan**

<b>Sampling Locations</b>	<b>Sampling Rationale</b>	<b>Target Analytes / Method Numbers</b>	<b>Sampling Frequency</b>	<b>Evaluation Criteria / Modification Justification</b>
B035MW-4	Downgradient of potential source	<u>VOCs</u> – (Specified COC Short List) / SW8260  <u>COCs</u> - PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and VC.	Annual	Continue in the monitoring network to verify the attenuation of cis-1,2-DCE. Analysis for VOCs (chlorinated ethenes short list only) will occur for four rounds, after which the results will be evaluated to assess future monitoring frequency.

**Table 4-2 (continued)**  
**Building 35 AOC Proposed Groundwater Sampling and Analysis Plan**

<b>Historical LTM Network Changes</b>				
<b>July 2004</b>				
<b>Analysis / Frequency Changes</b>				
B035MW-4	Downgradient of potential source	<p><u>VOCs</u> – (Specified COC Short List) / SW8260</p> <p><u>COCs</u> - PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and VC.</p>	Annual	<p>Continue in the monitoring network to verify the attenuation of cis-1,2-DCE but at a lower frequency due to low groundwater velocities</p> <p>Discontinue sampling for SVOCs since no detections have been reported in any sampling round.</p> <p>Discontinue metals sampling at the Building 35 AOC since none of the reported exceedances can be attributed specifically to the site.</p>
<b>Removed Sampling Location</b>				
B035MW-1 B035MW-2 B035MW-3	Upgradient Crossgradient Potential Source Area		Discontinued	Discontinue sampling based on no reported exceedances.

## **5 REFERENCES**

- Air Force Center for Environmental Excellence, Quality Assurance Project Plan, Version 3.1, August 2001.
- Air Force Center for Environmental Excellence, Principles and Practices of Enhanced Anaerobic Bioremediation of Chlorinated Solvents, Final, August 2004.
- Ecology and Environment, Inc., Final Report for Supplemental Investigation of Areas of Concern, Former Griffiss Air Force Base, July 1998 (G-103A).
- FPM Group Ltd., Draft Confirmation Sampling Report, Building 101 Battery Acid Drainage Pit Area of Concern, former Griffiss Air Force Base, Rome, New York, Revision 0.0, August 2002 (G-267).
- FPM Group Ltd., Draft Monitoring Report, On-Base Groundwater AOCs, Revision 1.0, November 2004 (G-353).
- FPM Group, Ltd., Draft Report, AOC Long-Term Monitoring Baseline Study, Griffiss Air Force Base, Revision 1.0, July 2000 (G-208).
- FPM Group Ltd., Field Sampling Plan, Long-Term Monitoring Program, Revision 3.0, March 2005 (G-435).
- FPM Group, Ltd., Monitoring Report, On-Base Groundwater AOCs Monitoring Program, Former Griffiss Air Force Base, Rome, New York, Revision 0.0, August 2005 (G-446).
- FPM Group, Ltd., Monitoring Report, On-Base Groundwater AOCs Monitoring Program, Former Griffiss Air Force Base, Rome, New York, Revision 0.0, August 2006 (G-494).
- FPM Group Ltd., Monitoring Report (Spring 2007), On-Base Groundwater AOCs, Revision 0.0, August 2007 (G-353).
- LAW Engineering and Environmental Services, Inc., Draft Final Primary Report, Remedial Investigation at Griffiss Air Force Base, December 1996 (G-018).
- OHM Remediation Services Corp., Closure of Building 101 Battery Acid Drainage Pit: Revised Results and Recommendations Report, July 1998 (G-105).

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**Appendix A**  
**Daily Chemical Quality Control Reports**

### Daily Chemical Quality Control Report

Project/Delivery Order Number: F41624-03-D-8601-0027

Date: 10/10/07

Project Name/Site Number: Griffiss AOCs sampling (Building 101).

Weather conditions: Temperature: 72 Barometric reading: 29.69  
Wind direction and speed: south-southeast 2.0 mph  
Significant wind changes: none.

General description of tasks completed: Bailer sampling at Site Building 101 (101MW-2) after extraction test.

---

Explain any departures from the SAP or deviations from approved procedures during the day's field activities: None.

---

Explain any technical problems encountered in the field or field equipment/field analytical instrument malfunction: None.

---

Corrective actions taken or instructions obtained from AFCEE personnel: No corrective actions necessary.

---

Sampling shipment completed:  Yes  No LSL Courier.

DCQCR Prepared by: Niels van Hoesel, FOM

Date: 12 October 2007

CQCC Signature: Concordia van Hoesel Date: 10/14/07

#### ATTACHMENTS:

Checklist	Daily Chemical Quality Control Report Attachments
✓	✓ Field sampling forms
	✓ Equipment Calibration Log
✓	✓ Copies of COCs
	✓ SDG Table (See accompanying COCs)
✓	✓ Daily Health and Safety Meeting Form

## WELL PURGING & SAMPLING FORM

Project: 40-05-27/AH      Sampled by: NVH / CS  
 Location and Site Code (SITEID): B101  
 Well No. (LOCID): 101mW-2      Well Diameter (SDIAM): 2"  
 Date (LOGDATE): 10/10/07      Weather: 60s Sunny

CASING VOLUME INFORMATION:

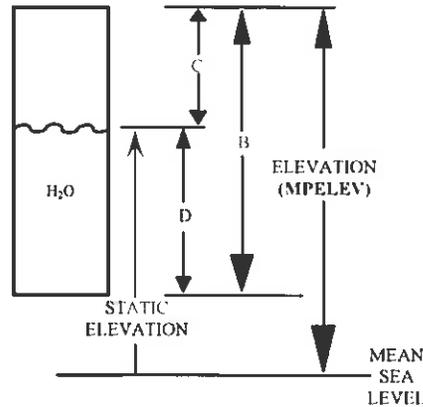
Casing ID (inch)	1.0	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	
Unit Casing Volume (A) (gal/ft)	0.04	0.09	0.16	0.2	0.37	0.65	0.75	1.0	1.5	2.0	2.6

PURGING INFORMATION:

Measured Well Depth (B) (TOTDEPTH) 23.91 ft.  
 Measured Water Level Depth (C) (STATDEP) 16.87 ft.  
 Length of Static Water Column (D) =  $\frac{23.91}{(B)} - \frac{16.87}{(C)} = \frac{7.04}{(D)}$  ft.

Casing Water Volume (E) =  $\frac{0.16}{(A)} \times \frac{7.04}{(D)} = \frac{1.13}{(E)}$  gal

Minimum Purge Volume = 3.38 gal (3 well volumes)



Purge Date and Method: 10/10/07      via truck  
 Physical Appearance/Comments: slightly silty      no odor / sheen

FIELD MEASUREMENTS:

Allowable Range:      ± 0.1      ± 5%      ± 1°C

Time	Volume Removed (gal)	pH	EC (µS/cm)	Temp. (F or C)	Turbidity (NTU)	D.O. (mg/L)	ORP (mV)
1330	55	8.06	0.12	20.0	180	3.67	-114

Sample Time: 1400      Sample ID: 101m0217UA

Note: Attempt to get at least 5 sets of field measurements during purging. Sample may be collected after 3 to 5 well volumes have been removed and parameters have stabilized. Sample may be collected after 6 well volumes if parameters do not stabilize. VOC and gas sensitive (e.g. alkalinity, Fe<sup>2+</sup>, CH<sub>4</sub>, H<sub>2</sub>S) parameters should be sampled first.



**MATRIX**

WG = Ground water  
WQ = Water Quality Control Matrix  
SO = Soil

**SMCODE**

B = Bailor  
G = Grab (only for EB).  
NA = Not Applicable (only for AB/TB)  
PP = Peristaltic Pump  
BP = Bladder Pump  
SP = Submersible Pump  
SS = Split Spoon

**SACODE**

N = Normal Sample  
AB = Ambient Blank  
TB = Trip Blank  
EB = Equipment Blank  
FD = Field Duplicate  
MS = Matrix Spike  
SD = Matrix Spike Duplicate

**Daily Health and Safety Meeting Form**

Date: 10/10/07 Time: 8:30

Location: FPM office (garage)

Weather Conditions: 60s Sunny

Meeting Type: Daily Health and Safety

Personnel Present:

Niels van Haezel Caleb Smith

Visitors Present: —

Visitor Training: —

PPE Required: Modified D

Possible risks, injuries, concerns:

slip trip fall. stinging insects

Anticipated Releases to Environment (if so, describe and detail response action/control measures implemented):

none

Property Damage:

—

Description (include sequence of events describing step by step how incident happened):

—

Analysis for, and Implementation of Corrective/Preventative Procedure to Prevent Future Occurrences (to be formulated by SSHO + FOM, approved by PM, and SSHO implemented):

—

Report made by (Name): Niels van Haezel

SSHP Organization Title: Site Safety and Health Officer

**Appendix B**  
**Validated Laboratory Data**

**FPM-GROUP**  
**Data Verification and Usability Report**  
**GRIFFISS AIR FORCE BASE**  
**Site Griffiss AFB Building 101**  
**Water Sampling**  
**Contract No. F41624-03-D-8601**

**FPM Project No. 40-05-27**

**LSL Job # 0710074**

Laboratory: Life Sciences Laboratories, Inc.  
Sample Matrix: Water  
Number of Samples: 2  
Analytical Protocol: AFCEE QAPP, Version 4.0, with AFCEE-approved lab variances  
Data Reviewer: Connie van Hoesel  
Sample Date: October 10, 2007

---

**LIST OF DATA VERIFICATION SAMPLES**

This verification report pertains to the following environmental samples and corresponding QC samples:

<i>Sample ID</i>	<i>Date</i>	<i>QC Samples</i>	<i>Date</i>
101M0217UA	10/10/07	101007UE	10/10/07

Notes:

Refer to attached chain-of-custody for detailed sampling information and sample specific analyses requested.  
UA – Primary environmental samples

## **DELIVERABLES**

The data deliverable report was per requirements of the AFCEE QAPP 4.0 and approved variances. The report consisted of the following major sections: lab attachment letter, case narrative, chain-of-custody, lab qualifier definitions, analytical results (sheet 2) based on analytical batch, calibration summaries, method blank summaries, laboratory control sample summaries, matrix spike/matrix spike duplicate summaries, holding time forms, performance checks, surrogate and internal standard recoveries, as applicable.

## **ANALYTICAL METHODS**

The analytical test methods and QA/QC requirements used for the soil sample analysis was per methods as specified in the AFCEE Quality Assurance Project Plan, Version 4.0 and AFCEE approved laboratory variances. The analytical methods employed included SW-846: Volatile Organic Compounds (VOCs) by Method SW8260B (short list), Nitrate and sulfate by Method SW9056, Total Organic Carbon (TOC) by Method SW9060, and Total Alkalinity by EPA Method 310.1.

## **VERIFICATION GUIDANCE**

The analytical work was performed by Life Sciences Laboratories, Inc. in accordance with the Air Force Center for Environmental Excellence (AFCEE), Quality Assurance Project Plan (QAPP), Version 4.0, with AFCEE-approved laboratory variances. The data was verified according to the protocols and QC requirements of the respective analytical methods and of the QAPP Version 4.0. For data usability purposes all values were further evaluated, including positive and non-detect results that were qualified “Q” according to the QAPP. The data usability analysis was based on the reviewer’s professional judgment and on an assessment of how this data would fare with respect to the U.S. Environmental Protection Agency (USEPA) Contract Laboratory Program (CLP) National Functional Guidelines for Organic (and Inorganic) Data Review (February 1994), and the AFCEE QAPP, Version 4.0.

## **QA/QC CRITERIA**

The following QA/QC criteria were reviewed, as applicable and available:

- Method detection limits and reporting limits (MDL, RL)
- Holding times, sample preservation and storage
- MS tune performance
- Initial and Continuing calibration summaries
- Second source calibration verification summary
- Method blanks
- Ambient, equipment, and trip blanks (as applicable)
- Field duplicate results
- Surrogate spike recoveries
- Internal standard areas counts and retention times
- Laboratory control samples (LCS)

- Results reported between MDL and RL (F-flag)
- Sample storage and preservation
- Data system printouts
- Qualitative and quantitative compound identification
- Chain-of-custody (COC)
- Case narrative and deliverables compliance

The items listed above were in compliance with AFCEE QAPP and USEPA criteria and protocols with exceptions discussed in the text below. The data have been verified according to the procedures outlined above and qualified accordingly.

***GENERAL NOTES:***

**MISSING SAMPLES**

None. All samples documented on the chain of custody were received by the laboratory.

**BLANKS**

Whenever blanks, including method, ambient, equipment, and trip, contained low levels of contaminants (between MDL and RL), the laboratory and/or data verifier qualified the subject results with an “F” flag. Since no qualification of associated field samples are required for blanks less than half the RL, no further action was taken in such instances.

## **VOLATILE ORGANIC COMPOUNDS (VOCs)**

- There were no exceedances for VOCs.

## **WET CHEMISTRY ANALYSES**

- According to the case narrative, sample 101M0217UA was originally analyzed at a dilution of 1:5 for TOC. The dilution results only are reported and are used in data verification as representing original results.

## **DATA USABILITY RESULTS**

### **VOCs**

Based on the evaluation of all information in the analytical data groups, the results of the samples for VOCs are highly usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable.

### **Wet Chemistry**

Based on the evaluation of all information in the analytical data groups, the wet chemistry results are highly usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable.

## **AFCEE SUMMARY**

All data in Job # 0710074 are valid and usable with qualifications as noted in the data review.

Signed Concordia van Hoesel Date: 1/3/08

## ***ATTACHMENTS***

- Chain-of-Custody
- Laboratory's Case Narrative
- Definition of AFCEE Data Qualifiers
- Definition of USEPA Data Qualifiers
- Qualified final data verification results on annotated Lab Sheet 2s

## **Analytical Results**



AFCEE  
ORGANIC ANALYSES DATA SHEET 2  
RESULTS

Analytical Method: SW8260B                      Preparatory Method:                      AAB #:                      R11462  
 Lab Name:                      Life Science Laboratories, Inc.                      Contract #:                        
 Field Sample ID:                      101M0217UA                      Lab Sample ID:                      0710074-001A                      Matrix:                      Groundwater  
 % Solids:                      0                      Initial Calibration ID:                      1060                      File ID:                      T0781.D  
 Date Received:                      11-Oct-07                      Date Extracted:                                           Date Analyzed:                      12-Oct-07  
 Concentration Units (ug/L or mg/Kg dry weight):                      ug/L                      Sample Size:                      10 mL

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Chloroform	0.0290	0.500	0.0290	1		U
cis-1,2-Dichloroethene	0.0320	1.00	9.18	1		
Tetrachloroethene	0.0300	1.00	0.0300	1		U
trans-1,2-Dichloroethene	0.0270	1.00	0.0270	1		U
Trichloroethene	0.0270	1.00	0.210	1		F
Vinyl chloride	0.0380	1.00	0.110	1		F

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4	115	72 - 119	
4-Bromofluorobenzene	104	76 - 119	
Dibromofluoromethane	101	85 - 115	
Toluene-d8	109	81 - 120	

Internal Std	Area Counts	Area Count Limits	Qualifier
1,4-Dichlorobenzene-d4	734943	443553 - 1774212	
Chlorobenzene-d5	1440063	698816 - 2795262	
Fluorobenzene	3228996	1526695 - 6106780	

*CAK*  
*11/3/08*

Comments:

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AFCEE  
ORGANIC ANALYSES DATA SHEET 2  
RESULTS

Analytical Method: SW8260B                      Preparatory Method:                      AAB #:                      R11462  
 Lab Name:                      Life Science Laboratories, Inc.                      Contract #:                      \_\_\_\_\_  
 Field Sample ID:                      101007AR                      Lab Sample ID:                      0710074-002A                      Matrix:                      Water Q  
 % Solids:                      0                      Initial Calibration ID:                      1060                      File ID:                      T0782.D  
 Date Received:                      11-Oct-07                      Date Extracted:                      \_\_\_\_\_                      Date Analyzed:                      12-Oct-07  
 Concentration Units (ug/L or mg/Kg dry weight):                      ug/L                      Sample Size:                      10 mL

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Chloroform	0.0290	0.500	0.0290	1		U
cis-1,2-Dichloroethene	0.0320	1.00	0.0320	1		U
Tetrachloroethene	0.0300	1.00	0.0300	1		U
trans-1,2-Dichloroethene	0.0270	1.00	0.0270	1		U
Trichloroethene	0.0270	1.00	0.0270	1		U
Vinyl chloride	0.0380	1.00	0.0380	1		U

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4	111	72 - 119	
4-Bromofluorobenzene	96	76 - 119	
Dibromofluoromethane	101	85 - 115	
Toluene-d8	108	81 - 120	

Internal Std	Area Counts	Area Count Limits	Qualifier
1,4-Dichlorobenzene-d4	582106	443553 - 1774212	
Chlorobenzene-d5	1309816	698816 - 2795262	
Fluorobenzene	2908958	1526695 - 6106780	

*chk  
1/3/08*

Comments:

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**AFCEE  
WET CHEM ANALYSES DATA PACKAGE**

Analytical Method: SW9056                      AAB #: R11446  
Lab Name: Life Science Laboratories, Inc.      Contract Number:  
Base/Command:                      Prime Contractor: FPM Group

[REDACTED]
101M0217UA                      0710074-001B

Comments:

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I certify this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager's designee, as verified by the following signature.

Signature: Monika Santucci                      Name: Monika Santucci  
Date: 11/5/07                      Title: Project Manager

**AFCEE  
WET CHEM ANALYSES DATA SHEET 2  
RESULTS**

**Analytical Method:** SW9056 **AAB #:** R11446  
**Lab Name:** Life Science Laboratories, Inc. **Contract #:**  
**Field Sample ID:** 101M0217UA **Lab Sample ID:** 0710074-001B **Matrix:** Groundwater  
**% Solids:** 0 **Initial Calibration ID:** 1069  
**Date Received:** 11-Oct-07 **Date Prepared:** **Date Analyzed:** 11-Oct-07  
**Concentration Units (mg/L or mg/kg dry weight):** mg/L

	MDL	RL	Concentration	Dilution	Qualifier
Nitrate (as N)	0.030	1.0	0.083	2	F
Sulfate (as SO4)	0.30	2.0	3.2	2	

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1/3/08*

**Comments:**

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**AFCEE  
WET CHEM ANALYSES DATA SHEET 2  
RESULTS**

**Analytical Method:** SW9060 **AAB #:** R11558  
**Lab Name:** Life Science Laboratories, Inc. **Contract #:**  
**Field Sample ID:** 101M0217UA **Lab Sample ID:** 0710074-001C **Matrix:** Groundwater  
**% Solids:** 0 **Initial Calibration ID:** 1084  
**Date Received:** 11-Oct-07 **Date Prepared:** **Date Analyzed:** 18-Oct-07  
**Concentration Units (mg/L or mg/kg dry weight):** mg/L

Analyte	MDL	RI	Concentration	Dilution	Qualifier
Total Organic Carbon	0.40	1.0	57.04	# 5	± *

*CAF*  
1/3/08

\* Result transferred from dilution sample 101M0217UADL

**Comments:**

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**Appendix C**  
**Raw Laboratory Data**



**Life Science Laboratories, Inc.**

5000 Brittonfield Parkway, Suite 200

East Syracuse, NY 13057

(315) 437-0200

Wednesday, November 28, 2007

Niels van Hoesel  
FPM Group  
153 Brooks Road  
Rome, NY 13441

TEL:

Project: GRIFFISS AFB - BUILDING 101

RE: Analytical Result

Order No.: 0710074

Dear Niels van Hoesel:

Life Science Laboratories, Inc. received 2 sample(s) on 10/11/2007 for the analyses presented in the following report.

Very truly yours,  
Life Science Laboratories, Inc.

A handwritten signature in black ink that reads 'Monika Santucci'.

Monika Santucci  
Project Manager

# **Laboratory Report**

## Project Management Case Narrative

### INTRODUCTION/ANALYTICAL RESULTS

This report summarizes the laboratory results for samples from FPM, for the Griffiss AFB-Building 101-Rome, NY project.

### CONDITION UPON RECEIPT/CHAIN OF CUSTODY

The cooler(s) were received intact. When the cooler(s) were received by the laboratory, the sample custodian(s) opened and inspected the shipment(s) for damage and custody inconsistencies. Chains of custody documenting receipt are presented in the chain of custody section. Each sample was assigned a unique laboratory number and a custody file created. The samples were placed in a secured walk-in cooler and signed in and out by the chemists performing the tests. The sign out record, or lab chronicle, is presented in the chain of custody section.

There were no discrepancies noted. The temperature of the cooler was 0.4°C.

### METHODOLOGY

The following methods were used to perform the analyses:

PARAMETER	METHOD	REFERENCE
Volatile Organics	SW8260B	1
Anions	SW9056	1
TOC	SW9060	1
Total Alkalinity	EPA 310.1	2

- 1) Test Methods for Evaluating Solid Wastes, SW-846 Third Edition, Final Update III, December 1996 (including the QC requirements specified in AFCEE 4.0 + variances).
- 2) Methods for Chemical Analysis of Water and Wastes, EPA---600/4-79-020, 1983.

### QUALITY CONTROL

QA/QC results are summarized in the Laboratory Report.

### RAW DATA

The raw data is not requested for this report. Life Science Laboratories, Inc. will keep the raw data on file.

Total # of pages in this report: \_\_\_\_\_

## GC/MS Volatile Organics Case Narrative

Client: FPM  
Project/Order: Griffiss AFB – Building 101  
Work Order #: 0710074  
Methodology: 8260B

Analyzed/Reviewed by (Initials/Date): GD 11/27/07  
Supervisor/Reviewed by (Initials/Date): GD 11/27/07  
QA/QC Review (Initials/Date): DK 11/27/07

File Name: G:\Narratives\MSVoa\0710074vnar.doc

### GC/MS Volatile Organics

The GC/MS Volatile instrument used a Restek Rtx-VMS, 40 m x 0.18 mm ID capillary column and a Vocab 3000 trap.

There were no excursions to note. All QC results were within established control limits.

### Holding Times and Sample Preservation

All samples were prepared and analyzed within the method and/or QAPP specified holding time requirements. Samples had a pH of < 2.

### Laboratory Control Sample

All spike recoveries met method and/or project specific QC criteria.

### Surrogate Standards

All surrogate standard recoveries met method and/or project specific QC criteria.

### Internal Standards

All internal standard areas met method and/or project specific QC criteria.

### Calibrations

All initial calibrations and calibration verifications met method and/or project specific QC criteria.

### Preparation Blanks

All preparation blanks met method and/or project specific QC criteria.

## Wet Chemistry Case Narrative

Client ID: FPM  
Project/Order: Griffis AFB – Building 101  
Work Order #: 0710074  
Methodology: Anions - Ion Chromatography - SW9056  
TOC – SW9060  
Total Alkalinity – EPA 310.1

Analyzed/Reviewed by (Date/Initials): 10-25-07 MT

Supervisor/Reviewed by (Date/Initials): 10-25-07 MT

QA/QC Review (Date/Initials): 10/25/07 Jle

### Wet Chemistry

#### **Holding Times**

All samples were prepared and analyzed within the method and/or QAPP specified holding times.

#### **Laboratory Control Sample**

All spike recoveries met method and/or project specified QC criteria.

#### **MS/MSD AND MS/MSD RPD**

All spike recovery and RPD data met method and/or project specific QC criteria.

#### **Calibrations**

All calibrations and calibration verifications met method and/or project specific QC criteria.

#### **Preparation Blanks**

All preparation blanks met method and/or project specific QC criteria.

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**CLIENT:** FPM Group  
**Project:** Griffiss AFB - Building 101  
**Lab Order:** 0710074

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**Work Order Sample Summary**

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<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>Tag Number</b>	<b>Collection Date</b>	<b>Date Received</b>
0710074-001A	101M0217UA	WL-101MW-2	10/10/2007	10/11/2007
0710074-001B	101M0217UA	WL-101MW-2	10/10/2007	10/11/2007
0710074-001C	101M0217UA	WL-101MW-2	10/10/2007	10/11/2007
0710074-001D	101M0217UA	WL-101MW-2	10/10/2007	10/11/2007
0710074-002A	101007AR	FIELDQC	10/10/2007	10/11/2007

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Lab Order: 0710074  
 Client: FPM Group  
 Project: Griffiss AFB - Building 101

**DATES REPORT**

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
0710074-001A	101M0217UA	10/10/2007 2:00:00 PM	Groundwater	Volatile Organic Compounds by GC/MS			10/12/2007
0710074-001B				Inorganic anions by IC			10/11/2007
0710074-001C				Total Organic Carbon			10/18/2007
				Total Organic Carbon			10/18/2007
0710074-001D				Alkalinity, as CaCO3			10/15/2007
0710074-002A	101007AR	10/10/2007 11:30:00 AM	Water Q	Volatile Organic Compounds by GC/MS			10/12/2007

# **Chain of Custody**

## **External Chain of Custody**

# AFCEE CHAIN OF CUSTODY RECORD

COC#: 1\_SDG#: 169 (Open/Closed) Cooler ID#: A

Ship to: <b>Monika Santucci</b> Life Science Laboratories, Inc. 5000 Brittonfield Pkwy, Suite 200 East Syracuse, NY 13057    Tel: (315)437-0200	Project Name: <b>Griffiss AFB B101 Sampling</b> Sampler Name: <b>Niels van Hoesel</b> Sampler Signature:
Send Results to: <b>Niels van Hoesel</b> FPM Group Ltd. 153 Brooks Road Rome, NY 13441 Phone: (315) 336-7721 Ext. 205	
Carrier: <b>LSL courier</b>	

**Analyses requested**

Field Sample ID	LocID	Date	Time	MATRIX	SACODE	SBD/SED	# of Containers	VOCs <sup>note 1</sup>	40mL vials (HCl)	Metals, Hardness <sup>note 2</sup>	250 mL poly (HNO <sub>3</sub> )	Metals <sup>note 3</sup>	250 mL poly (HNO <sub>3</sub> )	PCBs <sup>note 4</sup>	1 L amber	Phenols <sup>note 5</sup>	8 oz amber (H <sub>2</sub> SO <sub>4</sub> )	Anions, <sup>note 6</sup>	250 mL poly	NH <sub>3</sub> , COD, TKN <sup>note 7</sup>	125 mL poly (H <sub>2</sub> SO <sub>4</sub> )	TOC <sup>note 8</sup>	40 mL vials (HCL)	Cyanide <sup>Note 9</sup>	8 oz poly (NaOH)	BOD, <sup>note 10</sup>	1 L poly	Alkalinity <sup>note 11</sup>	8 oz glass (zero headspace)	Comments			
101M0217UA	WL-101MW-2	10/10	1400	WG	B	N	0/0	8	3	-	-	-	-	-	-	-	-	-	1	-	-	3	-	-	-	-	-	-	-	-	-	-	-
101007AR	FIELDQC	10/10	1130	WQ	NA	TB	0/0	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sample Condition Upon Receipt at Laboratory: Good, Custody Seal Intact Cooler temperature: 0-4°C OR ICE

Special Instructions/Comments: Parameter List: (According to AFCEE QAPP 4.0 and NYSDEC Landfill Part 360 Baseline Parameters)

Note 1: VOCs: 8260B AFCEE QAPP 4.0 List + NYS Part 360 Baseline Parameters.  
 Note 2: Metals: SW6010 AFCEE QAPP 4.0 List (Total), Hardness: 130.2.  
 Note 3: Metals: SW6010 AFCEE QAPP 4.0 List (Dissolved)  
 Note 4: PCBs: SW8082.  
 Note 5: Phenols: SW9065.  
 Note 6: Anions: SW9056 SULFATE AND NITRATE ONLY  
 Note 7: NH<sub>3</sub>: 350.1, COD: 410.4, TKN: 351.2  
 Note 8: TOC: SW9060.  
 Note 9: Cyanide: SW9012.  
 Note 10: BOD: 405.1.  
 Note 11: Alkalinity: 310.1.

#1 Released by: (Sig)	Date:	#2 Released by: (Sig)	Date: 10/10/07	#3 Released by: (Sig)	Date: 10/10/07
Company Name:	Time:	Company Name: FPM Group Ltd.	Time: 15:30	Company Name:	Time: 8:10
#1 Received by: (Sig) Niels van Hoesel	Date: 9/03/07	#2 Received by: (Sig)	Date: 10/10	#3 Received by: (Sig)	Date: 10/10/07
Company Name: FPM Group Ltd.	Time: 1000	Company Name:	Time: 16:41	Company Name:	Time: 08:10

**MATRIX**

WG = Ground water  
WQ = Water Quality Control Matrix  
SO = Soil

**SMCODE**

B = Bailer  
G = Grab (only for EB)  
NA = Not Applicable (only for AB/TB)  
PP = Peristaltic Pump  
BP = Bladder Pump  
SP = Submersible Pump  
SS = Split Spoon

**SACODE**

N = Normal Sample  
AB = Ambient Blank  
TB = Trip Blank  
EB = Equipment Blank  
FD = Field Duplicate  
MS = Matrix Spike  
SD = Matrix Spike Duplicate

**Life Science Laboratories, Inc.**

**Sample Receipt Checklist**

Client Name: **FPM**

Date and Time Received: **10/11/2007 8:10:00 AM**

Work Order Number **0710074**

Received by: **ads**

Checklist completed by: *[Signature]* 10/11/07  
Initials Date

Reviewed by: *[Signature]* 10/11/07  
Initials Date

Matrix:

Carrier name: Hand Delivered

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on shipping container/cooler? Yes  No  Not Present
- Custody seals intact on sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time? Yes  No
- Container/Temp Blank temperature in compliance? Yes  No
- Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted
- Water - pH acceptable upon receipt? Yes  No  Not Applicable

<u>pH</u>	<u>Preservative</u>	<u>pH Acceptable</u>	<u>Sample ID</u>	<u>Volume of Preservative added in Lab.</u>
>12	NaOH	Yes <input type="checkbox"/> N <input type="checkbox"/> NA <input checked="" type="checkbox"/>		
<2	HNO3	Yes <input type="checkbox"/> N <input type="checkbox"/> NA <input checked="" type="checkbox"/>		
<2	HSO4	Yes <input type="checkbox"/> N <input type="checkbox"/> NA <input checked="" type="checkbox"/>		
<2	1:1 HCL	Yes <input checked="" type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>	TOC	
5-9	Pest/PCBs (608/8081)	Yes <input type="checkbox"/> N <input type="checkbox"/> NA <input checked="" type="checkbox"/>		

Comments:

Corrective Action::



## **Analytical Results**



AFCEE  
ORGANIC ANALYSES DATA SHEET 2  
RESULTS

Analytical Method: SW8260B                      Preparatory Method:                      AAB #:                      R11462  
 Lab Name:                      Life Science Laboratories, Inc.                      Contract #:                      \_\_\_\_\_  
 Field Sample ID:                      101M0217UA                      Lab Sample ID:                      0710074-001A                      Matrix:                      Groundwater  
 % Solids:                      0                      Initial Calibration ID:                      1060                      File ID:                      T0781.D  
 Date Received:                      11-Oct-07                      Date Extracted:                      \_\_\_\_\_                      Date Analyzed:                      12-Oct-07  
 Concentration Units (ug/L or mg/Kg dry weight):                      ug/L                      Sample Size:                      10 mL

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Chloroform	0.0290	0.500	0.0290	1		U
cis-1,2-Dichloroethene	0.0320	1.00	9.18	1		
Tetrachloroethene	0.0300	1.00	0.0300	1		U
trans-1,2-Dichloroethene	0.0270	1.00	0.0270	1		U
Trichloroethene	0.0270	1.00	0.210	1		F
Vinyl chloride	0.0380	1.00	0.110	1		F

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4	115	72 - 119	
4-Bromofluorobenzene	104	76 - 119	
Dibromofluoromethane	101	85 - 115	
Toluene-d8	109	81 - 120	

Internal Std	Area Counts	Area Count Limits	Qualifier
1,4-Dichlorobenzene-d4	734943	443553 - 1774212	
Chlorobenzene-d5	1440053	698816 - 2795262	
Fluorobenzene	3228996	1526695 - 6106780	

Comments:

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AFCEE  
ORGANIC ANALYSES DATA SHEET 2  
RESULTS

Analytical Method: SW8260B                      Preparatory Method:                      AAB #:                      R11462  
 Lab Name:                      Life Science Laboratories, Inc.                      Contract #:                        
 Field Sample ID:                      101007AR                      Lab Sample ID:                      0710074-002A                      Matrix:                      Water Q  
 % Solids:                      0                      Initial Calibration ID:                      1060                      File ID:                      T0782.D  
 Date Received:                      11-Oct-07                      Date Extracted:                                           Date Analyzed:                      12-Oct-07  
 Concentration Units (ug/L or mg/Kg dry weight):                      ug/L                      Sample Size:                      10 mL

Analyte	MDL	RL	Concentration	Dilution	Confirm	Qualifier
Chloroform	0.0290	0.500	0.0290	1		U
cis-1,2-Dichloroethene	0.0320	1.00	0.0320	1		U
Tetrachloroethene	0.0300	1.00	0.0300	1		U
trans-1,2-Dichloroethene	0.0270	1.00	0.0270	1		U
Trichloroethene	0.0270	1.00	0.0270	1		U
Vinyl chloride	0.0380	1.00	0.0380	1		U

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4	111	72 - 119	
4-Bromofluorobenzene	96	76 - 119	
Dibromofluoromethane	101	85 - 115	
Toluene-d8	108	81 - 120	

Internal Std	Area Counts	Area Count Limits	Qualifier
1,4-Dichlorobenzene-d4	582106	443553 - 1774212	
Chlorobenzene-d5	1309816	698816 - 2795262	
Fluorobenzene	2908958	1526695 - 6106780	

Comments:

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**AFCEE  
WET CHEM ANALYSES DATA SHEET 2  
RESULTS**

**Analytical Method:** SW9056 **AAB #:** R11446  
**Lab Name:** Life Science Laboratories, Inc. **Contract #:**  
**Field Sample ID:** 101M0217UA **Lab Sample ID:** 0710074-001B **Matrix:** Groundwater  
**% Solids:** 0 **Initial Calibration ID:** 1069  
**Date Received:** 11-Oct-07 **Date Prepared:** **Date Analyzed:** 11-Oct-07  
**Concentration Units (mg/L or mg/kg dry weight):** mg/L

Analyte	MDL	RL	Concentration	Dilution	Qualifier
Nitrate (as N)	0.030	1.0	0.083	2	F
Sulfate (as SO4)	0.30	2.0	3.2	2	

**Comments:**

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## **Quality Control Results**

## **GC/MS Volatile Organics Data**

AFCEE  
ORGANIC ANALYSES DATA SHEET 3  
INITIAL MULTIPOINT CALIBRATION-GC/MS ANALYSIS

Analytical Method: 8260B

AAB #:

Lab Name: Life Science Laboratories, Inc.

Contract #:

Instrument ID: HP5973 GCMS#1

Date of Initial Calibration: 25-SEP-07

Initial Calibration ID: 1060

Concentration Units (ug/L or mg/kg): ug/L

SEE ATTACHED

Comments:

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Response Factor Report #1MS11

Method : C:\HPCHEM\1\METHODS\T925VOCW.M (RTE Integrator)  
 Title : VOC's w/Restek Rtx-VMS, 0.18 mm x 40 m, 1.0 df  
 Last Update : Wed Sep 26 06:37:38 2007  
 Response via : Continuing Calibration

*ICAL #1060*

Calibration Files

0.3 =T0469.D      0.5 =T0470.D      2.0 =T0471.D  
 10 =T0472.D      20 =T0473.D      30 =T0474.D

Compound	0.3	0.5	2.0	10	20	30	Avg	%RSD
-----ISTD-----								
1) I Fluorobenzene								
2) Dichlorodifluoromet	0.511	0.418	0.389	0.526	0.504	0.514	0.478	11.09
3) P Chloromethane	0.607	0.543	0.501	0.602	0.579	0.600	0.570	6.80
4) CP Vinyl chloride	0.499	0.448	0.407	0.535	0.521	0.541	0.494	9.94
5) Bromomethane	0.401	0.361	0.257	0.315	0.324	0.354	0.336	13.33
6) Chloroethane	0.419	0.360	0.322	0.384	0.371	0.378	0.370	7.99
7) Trichlorofluorometh	0.595	0.561	0.506	0.663	0.673	0.639	0.605	9.80
8) Acetone		0.076	0.058	0.058	0.060	0.058	0.061	11.58
9) Acrolein	0.034	0.031	0.027	0.030	0.034	0.031	0.031	7.99
10) CPM 1,1-Dichloroethene	0.187	0.173	0.167	0.207	0.215	0.207	0.195	9.75
11) Methyl iodide	0.201	0.174	0.190	0.257	0.258	0.270	0.232	<u>18.22</u>
12) 1,1,2-Trichloro-1,2	0.236	0.209	0.210	0.257	0.266	0.254	0.241	9.59
13) Methyl acetate	0.190	0.177	0.175	0.187	0.205	0.186	0.186	5.33
14) Acrylonitrile	0.067	0.071	0.067	0.073	0.077	0.071	0.070	5.29
15) Methylene chloride	0.553	0.441	0.297	0.285	0.277	0.268	0.341	<u>32.61</u>
16) Carbon disulfide	0.939	0.821	0.780	1.001	0.974	0.936	0.901	9.23
17) trans-1,2-Dichloroe	0.240	0.223	0.211	0.256	0.272	0.256	0.245	8.78
18) Methyl tert-Butyl e	0.526	0.576	0.529	0.636	0.678	0.633	0.600	9.57
19) P 1,1-Dichloroethane	0.484	0.473	0.429	0.510	0.522	0.490	0.483	6.20
20) Vinyl acetate	0.262	0.252	0.259	0.313	0.343	0.352	0.303	14.71
21) 2-Butanone	0.094	0.098	0.086	0.096	0.100	0.097	0.095	4.68
22) cis-1,2-Dichloroeth	0.260	0.258	0.237	0.281	0.298	0.280	0.270	7.40
23) Bromochloromethane	0.120	0.132	0.110	0.122	0.127	0.126	0.123	5.87
24) CP Chloroform	0.498	0.440	0.408	0.485	0.496	0.465	0.463	7.15
25) 2,2-Dichloropropane	0.337	0.293	0.286	0.388	0.407	0.414	0.362	<u>15.43</u>
26) Cyclohexane	0.455	0.408	0.399	0.566	0.574	0.561	0.502	<u>15.63</u>
27) S Dibromofluoromethan	0.224	0.207	0.184	0.225	0.235	0.225	0.218	7.88
28) S 1,2-Dichloroethane-	0.283	0.273	0.255	0.292	0.302	0.278	0.280	5.33
29) 1,2-Dichloroethane	0.338	0.329	0.306	0.348	0.357	0.332	0.334	4.89
30) 1,1,1-Trichloroetha	0.394	0.347	0.323	0.428	0.436	0.426	0.397	11.29
31) 1,1-Dichloropropene	0.326	0.303	0.293	0.386	0.396	0.390	0.355	<u>12.77</u>
32) Carbon tetrachlorid	0.272	0.239	0.234	0.314	0.334	0.335	0.295	<u>15.55</u>
33) M Benzene	1.097	1.018	0.975	1.196	1.161	1.104	1.085	7.25
34) M Trichloroethene	0.286	0.248	0.230	0.293	0.303	0.302	0.281	10.59
35) Dibromomethane	0.148	0.126	0.130	0.143	0.151	0.144	0.141	6.66
36) Methylcyclohexane	0.391	0.357	0.370	0.496	0.506	0.500	0.446	<u>15.59</u>
37) CP 1,2-Dichloropropane	0.276	0.274	0.246	0.291	0.302	0.296	0.283	6.85
38) Bromodichloromethan	0.296	0.263	0.276	0.339	0.352	0.344	0.316	11.64
39) 2-Chloroethylvinyl	0.070	0.081	0.078	0.110	0.120	0.113	0.096	<u>20.42</u>
40) 4-Methyl-2-pentanon			0.175	0.213	0.220	0.228	0.212	10.09
41) cis-1,3-Dichloropro	0.344	0.334	0.313	0.419	0.441	0.439	0.389	14.45
42) S Toluene-d8	0.886	0.816	0.793	1.019	0.991	0.995	0.923	9.89
43) CPM Toluene	0.610	0.610	0.608	0.781	0.770	0.786	0.705	12.76

*David M. DeLeon*

Response Factor Report #1MS11

Method : C:\HPCHEM\1\METHODS\T925VOCW.M (RTE Integrator)  
 Title : VOC's w/Restek Rtx-VMS, 0.18 mm x 40 m, 1.0 df  
 Last Update : Wed Sep 26 06:37:38 2007  
 Response via : Continuing Calibration

Calibration Files

0.3 =T0469.D      0.5 =T0470.D      2.0 =T0471.D  
 10 =T0472.D      20 =T0473.D      30 =T0474.D

Compound	0.3	0.5	2.0	10	20	30	Avg	%RSD
44) trans-1,3-Dichlorop	0.236	0.247	0.255	0.341	0.367	0.374	0.315	<u>20.80</u>
45) 1,1,2-Trichloroetha	0.174	0.162	0.152	0.178	0.185	0.177	0.172	6.60
46) 2-Hexanone			0.107	0.140	0.146	0.156	0.141	14.35
47) I Chlorobenzene-d5	-----ISTD-----							
48) 1,2-Dibromoethane	0.401	0.378	0.353	0.410	0.425	0.401	0.398	6.20
49) 1,3-Dichloropropane	0.812	0.758	0.744	0.835	0.859	0.798	0.801	5.05
50) Dibromochloromethan	0.378	0.368	0.368	0.453	0.494	0.476	0.433	13.66
51) Tetrachloroethene	0.677	0.523	0.488	0.597	0.598	0.585	0.581	10.51
52) 1-Chlorohexane	0.589	0.577	0.608	0.860	0.837	0.842	0.739	<u>8.73</u>
53) 1,1,1,2-Tetrachloro	0.451	0.446	0.387	0.481	0.515	0.495	0.469	9.67
54) PM Chlorobenzene	1.679	1.625	1.476	1.769	1.741	1.688	1.661	5.75
55) CP Ethylbenzene	3.142	2.894	2.655	3.332	3.219	2.966	2.990	8.48
56) (m+p)-Xylene	0.918	0.868	0.880	1.122	1.108	1.062	1.003	11.01
57) o-Xylene	0.864	0.803	0.820	1.070	1.065	1.040	0.961	13.04
58) Styrene	1.137	1.042	1.235	1.738	1.764	1.709	1.479	<u>21.91</u>
59) P Bromoform	0.188	0.200	0.174	0.245	0.267	0.277	0.235	<u>20.11</u>
60) S Bromofluorobenzene	0.884	0.628	0.602	0.777	0.776	0.755	0.742	13.03
61) I 1,4-Dichlorobenzene-d	-----ISTD-----							
62) trans-1,4-Dichloro-	0.091	0.073	0.076	0.120	0.139	0.153	0.116	<u>30.76</u>
63) P 1,1,2,2-Tetrachloro	0.986	0.986	0.909	0.916	0.892	0.901	0.923	4.91
64) Isopropylbenzene	4.545	4.223	3.915	4.692	4.524	4.125	4.246	8.55
65) 1,2,3-Trichloroprop	0.804	0.846	0.714	0.757	0.695	0.749	0.758	6.83
66) Bromobenzene	1.129	1.054	0.935	1.090	1.094	1.095	1.072	6.04
67) n-Propylbenzene	4.789	4.551	4.329	5.168	4.955	4.423	4.590	9.15
68) 2-Chlorotoluene	3.484	3.319	3.047	3.551	3.473	3.290	3.323	5.88
69) 4-Chlorotoluene	2.653	2.717	2.484	2.927	2.882	2.722	2.710	5.75
70) 1,3,5-Trimethylbenz	2.753	2.693	2.697	3.254	3.150	2.915	2.884	8.03
71) tert-Butylbenzene	2.677	2.562	2.439	2.869	2.787	2.654	2.644	5.69
72) 1,2,4-Trimethylbenz	2.551	2.287	2.457	2.939	2.847	2.632	2.592	8.98
73) sec-Butylbenzene	3.791	3.581	3.659	4.335	4.051	3.631	3.754	9.46
74) 1,3-Dichlorobenzene	1.658	1.542	1.448	1.734	1.733	1.691	1.638	6.47
75) p-Isopropyltoluene	2.453	2.496	2.554	3.241	3.140	2.911	2.778	11.51
76) 1,4-Dichlorobenzene	1.615	1.646	1.404	1.653	1.636	1.598	1.591	5.42
77) n-Butylbenzene	1.861	1.749	1.974	2.823	2.749	2.546	2.288	<u>19.04</u>
78) 1,2-Dichlorobenzene	1.453	1.442	1.400	1.623	1.615	1.563	1.519	5.81
79) 1,2-Dibromo-3-chlor	0.092	0.086	0.097	0.128	0.135	0.140	0.117	<u>21.01</u>
80) 1,2,4-Trichlorobenz	0.213	0.195	0.400	0.742	0.833	0.847	0.580	<u>51.73</u>
81) Hexachlorobutadiene	0.317	0.344	0.403	0.515	0.521	0.537	0.456	<u>21.64</u>
82) Naphthalene	0.388	0.387	0.510	1.348	1.564	1.524	1.021	<u>54.87</u>
83) 1,2,3-Trichlorobenz	0.184	0.162	0.423	0.753	0.827	0.824	0.569	<u>53.65</u>

Response Factor Report #1MS11

Method : C:\HPCHEM\1\METHODS\T925VOCW.M (RTE Integrator)  
 Title : VOC's w/Restek Rtx-VMS, 0.18 mm x 40 m, 1.0 df  
 Last Update : Wed Sep 26 06:56:48 2007  
 Response via : Initial Calibration

Calibration Files

40 =T0475.D = =  
 = = = =

Compound	40	Avg	%RSD
-----ISTD-----			
1) I Fluorobenzene			
2) Dichlorodifluoromet	0.483		
3) P Chloromethane	0.557		
4) CP Vinyl chloride	0.508		
5) Bromomethane	0.342		
6) Chloroethane	0.355		
7) Trichlorofluorometh	0.599		
8) Acetone	0.057		
9) Acrolein	0.031		
10) CPM 1,1-Dichloroethene	0.206		
11) Methyl iodide	0.275		
12) 1,1,2-Trichloro-1,2	0.255		
13) Methyl acetate	0.184		
14) Acrylonitrile	0.068		
15) Methylene chloride	0.269		
16) Carbon disulfide	0.852		
17) trans-1,2-Dichloroe	0.255		
) Methyl tert-Butyl e	0.618		
19) P 1,1-Dichloroethane	0.474		
20) Vinyl acetate	0.342		
21) 2-Butanone	0.095		
22) cis-1,2-Dichloroeth	0.278		
23) Bromochloromethane	0.127		
24) CP Chloroform	0.448		
25) 2,2-Dichloropropane	0.409		
26) Cyclohexane	0.554		
27) S Dibromofluoromethan	0.226		
28) S 1,2-Dichloroethane-	0.277		
29) 1,2-Dichloroethane	0.327		
30) 1,1,1-Trichloroetha	0.422		
31) 1,1-Dichloropropene	0.387		
32) Carbon tetrachlorid	0.338		
33) M Benzene	1.041		
34) M Trichloroethene	0.305		
35) Dibromomethane	0.144		
36) Methylcyclohexane	0.503		
37) CP 1,2-Dichloropropane	0.296		
38) Bromodichloromethan	0.341		
39) 2-Chloroethylvinyl	0.101		
40) 4-Methyl-2-pentanon	0.224		
41) cis-1,3-Dichloropro	0.434		
42) S Toluene-d8	0.960		
43) CPM Toluene	0.771		

Response Factor Report , #1MS11

Method : C:\HPCHEM\1\METHODS\T925VOCW.M (RTE Integrator)  
 Title : VOC's w/Restek Rtx-VMS, 0.18 mm x 40 m, 1.0 df  
 Last Update : Wed Sep 26 06:56:48 2007  
 Response via : Initial Calibration

Calibration Files

40 =T0475.D = =  
 = = =

	Compound	40	Avg	%RSD
44)	trans-1,3-Dichlorop	0.381		
45)	1,1,2-Trichloroetha	0.179		
46)	2-Hexanone	0.155		
47) I	Chlorobenzene-d5	-----ISTD----		
48)	1,2-Dibromoethane	0.416		
49)	1,3-Dichloropropane	0.797		
50)	Dibromochloromethan	0.492		
51)	Tetrachloroethene	0.602		
52)	1-Chlorohexane	0.859		
53)	1,1,1,2-Tetrachloro	0.512		
54) PM	Chlorobenzene	1.649		
55) CP	Ethylbenzene	2.722		
56)	(m+p)-Xylene	1.064		
57)	o-Xylene	1.066		
58)	Styrene	1.726		
59) P	Bromoform	0.293		
60) S	Bromofluorobenzene	0.772		
61) I	1,4-Dichlorobenzene-d	-----ISTD----		
62)	trans-1,4-Dichloro-	0.156		
63) P	1,1,2,2-Tetrachloro	0.871		
64)	Isopropylbenzene	3.698		
65)	1,2,3-Trichloroprop	0.740		
66)	Bromobenzene	1.110		
67)	n-Propylbenzene	3.916		
68)	2-Chlorotoluene	3.095		
69)	4-Chlorotoluene	2.588		
70)	1,3,5-Trimethylbenz	2.726		
71)	tert-Butylbenzene	2.523		
72)	1,2,4-Trimethylbenz	2.434		
73)	sec-Butylbenzene	3.229		
74)	1,3-Dichlorobenzene	1.658		
75)	p-Isopropyltoluene	2.653		
76)	1,4-Dichlorobenzene	1.582		
77)	n-Butylbenzene	2.316		
78)	1,2-Dichlorobenzene	1.540		
79)	1,2-Dibromo-3-chlor	0.144		
80)	1,2,4-Trichlorobenz	0.830		
81)	Hexachlorobutadiene	0.551		
82)	Naphthalene	1.427		
83)	1,2,3-Trichlorobenz	0.812		



AFCEE  
ORGANIC ANALYSES DATA SHEET 5  
CALIBRATION VERIFICATION

Analytical Method: 8260

AAB #:

Lab Name: Life Science Laboratories, Inc.

Contract #:

Instrument ID: HP5973 GCMS#1

Initial Calibration -ID: 1060

ICV ID: ICV-11177

CCV #1 ID: CCV-11462

SEE ATTACHED

Comments:

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Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\T0770.D  
 Acq On : 12 Oct 2007 7:39  
 Sample : CCV-11462  
 Misc : CCV ,8260WAF\_40CAL,  
 MS Integration Params: RTEINT.P

Vial: 16  
 Operator: DMB  
 Inst : #1MS11  
 Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\T925SHOR.M (RTE Integrator)  
 Title : VOC's w/Restek Rtx-VMS, 0.18 mm x 40 m, 1.0 df  
 Last Update : Mon Oct 15 07:37:27 2007  
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1 I	Fluorobenzene	1.000	1.000	0.0	127	0.00
2 CP	Vinyl chloride	0.494	0.496	-0.4	118	0.00
3	trans-1,2-Dichloroethene	0.245	0.222	9.4	110	0.00
4	cis-1,2-Dichloroethene	0.270	0.258	4.4	117	0.00
5 CP	Chloroform	0.463	0.454	1.9	119	0.00
6 S	Dibromofluoromethane	0.218	0.204	6.4	115	0.00
7 S	1,2-Dichloroethane-d4	0.280	0.286	-2.1	124	0.00
8 M	Trichloroethene	0.281	0.271	3.6	117	0.00
9 S	Toluene-d8	0.923	0.934	-1.2	116	0.00
10 I	Chlorobenzene-d5	1.000	1.000	0.0	128	0.00
11	Tetrachloroethene	0.581	0.517	11.0	111	0.00
12 S	Bromofluorobenzene	0.742	0.777	-4.7	128	0.00
I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	124	0.00

*Chris M. Sullivan*  
 10/15/07

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\T0770.D  
 Acq On : 12 Oct 2007 7:39  
 Sample : CCV-11462  
 Misc : CCV ,8260WAF\_40CAL,  
 MS Integration Params: RTEINT.P

Vial: 16  
 Operator: DMB  
 Inst : #1MS11  
 Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\T925SHOR.M (RTE Integrator)  
 Title : VOC's w/Restek Rtx-VMS, 0.18 mm x 40 m, 1.0 df  
 Last Update : Mon Oct 15 07:37:27 2007  
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1 I	Fluorobenzene	10.000	10.000	0.0	127	0.00
2 CP	Vinyl chloride	10.000	10.046	-0.5	118	0.00
3	trans-1,2-Dichloroethene	10.000	9.068	9.3	110	0.00
4	cis-1,2-Dichloroethene	10.000	9.567	4.3	117	0.00
5 CP	Chloroform	10.000	9.806	1.9	119	0.00
6 S	Dibromofluoromethane	10.000	9.362	6.4	115	0.00
7 S	1,2-Dichloroethane-d4	10.000	10.203	-2.0	124	0.00
8 M	Trichloroethene	10.000	9.636	3.6	117	0.00
9 S	Toluene-d8	10.000	10.122	-1.2	116	0.00
10 I	Chlorobenzene-d5	10.000	10.000	0.0	128	0.00
11	Tetrachloroethene	10.000	8.895	11.1	111	0.00
12 S	Bromofluorobenzene	10.000	10.469	-4.7	128	0.00
I	1,4-Dichlorobenzene-d4	10.000	10.000	0.0	124	0.00

(#) = Out of Range

SPCC's out = 0 CCC's out = 0

T0770.D T925SHOR.M

Mon Oct 15 07:42:11 2007

MS1

Page 1

*David M. B. Allen*  
 10/15/07

AFCEE  
ORGANIC ANALYSES DATA SHEET 7  
BLANKS

Analytical Method: SW8260B                      AAB #: R11462  
 Lab Name: Life Science Laboratories, Inc.      Contract Number:  
 Units: µg/L    Method Blank ID: MB-11462  
 Initial Calibration ID: 1060                      File ID: T0774.D

Analyte	Method Blank	RL	Q
Chloroform	0.0290	0.500	U
cis-1,2-Dichloroethene	0.0320	1.00	U
Tetrachloroethene	0.0300	1.00	U
trans-1,2-Dichloroethene	0.0270	1.00	U
Trichloroethene	0.0270	1.00	U
Vinyl chloride	0.0380	1.00	U

Surrogate	Recovery	Control Limits	Qualifier
1,2-Dichloroethane-d4	111	72 - 119	
4-Bromofluorobenzene	93	76 - 119	
Dibromofluoromethane	94	85 - 115	
Toluene-d8	106	81 - 120	

Internal Std	Area Counts	Area Count Limits	Qualifier
1,4-Dichlorobenzene-d4	571256	443553 - 1774212	
Chlorobenzene-d5	1470604	698816 - 2795262	
Fluorobenzene	3406550	1526695 - 6106780	

Comments:

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AFCEE  
 ORGANIC ANALYSES DATA SHEET 9  
 MATRIX SPIKE/MATRIX SPIKE DUPLICATE SAMPLE RECOVERY

Analytical Method: SW8260B AAB #: R11462

Lab Name: Life Science Laboratories, Inc. Contract #:

Concentration Units (mg/L or mg/kg): µg/L % Solids: 0

Parent Field Sample ID: LCSD-11462 MS ID: LCS-11462 MSD ID: LCSD-11462

Calibration ID: 1060

Analyte	Parent Sample Result	Spike Added	Spiked Sample Result	%R	Duplicate Spiked Sample Result	%R	%RPD	Control Limits %R	Control Limits %RPD	Q
Chloroform		10.0	9.96	100	9.83	98	1	69 - 128	20	
cis-1,2-Dichloroethene		10.0	9.76	98	9.39	94	4	72 - 126	20	
Tetrachloroethene		10.0	8.90	89	8.68	87	3	66 - 128	20	
trans-1,2-Dichloroethene		10.0	9.39	94	9.00	90	4	63 - 137	20	
Trichloroethene		10.0	11.4	114	11.8	118	3	70 - 127	20	
Vinyl chloride		10.0	9.75	98	9.70	97	1	50 - 134	20	

Comments:

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AFCEE  
ORGANIC ANALYSES DATA SHEET 10  
HOLDING TIMES

Analytical Method: SW8260B

AAB #: R11462

Lab Name: Life Science Laboratories, Inc.

Contract #:

Field Sample ID	Lab Sample ID	Date Collected	Date Received	Date Extracted	Max. Holding Time E	Time Held Ext	Date Analyzed	Max. Holding Time A	Time Held Anal.	Q
101M0217UA	0710074-001A	10-Oct-07	11-Oct-07	12-Oct-07			12-Oct-07	14	2	
101007AR	0710074-002A	10-Oct-07	11-Oct-07	12-Oct-07			12-Oct-07	14	2.2	

Comments:

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**AFCEE  
ORGANIC ANALYSES DATA SHEET 11  
INSTRUMENT ANALYSIS SEQUENCE LOG**

Analytical Method: SW8260B

AAB#:

Lab Name: Life Science Laboratories, Inc.

Contract #:

Instrument ID #: MS01 11

Calibration ID: 1060

Field Sample ID/Std ID/ Blank ID/QC Sample ID	Lab Sample ID	Date Analysis Started	Time Analysis Started	Date Analysis Completed	Time Analysis Completed
TB092507A1	TB092507A1	25-Sep-07	9:44	25-Sep-07	10:50
ICAL 0.3 PPB	ICAL 0.3 PPB	25-Sep-07	10:50	25-Sep-07	11:23
ICAL 0.5 PPB	ICAL 0.5 PPB	25-Sep-07	11:23	25-Sep-07	11:56
ICAL 2.0 PPB	ICAL 2.0 PPB	25-Sep-07	11:56	25-Sep-07	12:30
ICAL 10 PPB	ICAL 10 PPB	25-Sep-07	12:30	25-Sep-07	13:03
ICAL 20 PPB	ICAL 20 PPB	25-Sep-07	13:03	25-Sep-07	13:36
ICAL 30 PPB	ICAL 30 PPB	25-Sep-07	13:36	25-Sep-07	14:10
ICAL 40 PPB	ICAL 40 PPB	25-Sep-07	14:10	25-Sep-07	15:17
ICV-11177	ICV-11177	25-Sep-07	15:17	25-Sep-07	15:17
TB101207A1	TB101207A1	12-Oct-07	7:10	12-Oct-07	7:39
CCV-11462	CCV-11462	12-Oct-07	7:39	12-Oct-07	8:12
LCS-11462	LCS-11462	12-Oct-07	8:12	12-Oct-07	8:46
LCSD-11462	LCSD-11462	12-Oct-07	8:46	12-Oct-07	9:53
MB-11462	MB-11462	12-Oct-07	9:53	12-Oct-07	15:03
101M0217UA	0710074-001A	12-Oct-07	15:03	12-Oct-07	15:39
101007AR	0710074-002A	12-Oct-07	15:39	12-Oct-07	15:39

Comments:

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## **Wet Chemistry Data**

AFCEE  
WET CHEM ANALYSES DATA SHEET 3-10  
INITIAL MULTIPOINT CALIBRATION

Analytical Method: SW9056      AAB #: R11446  
 Lab Name: Life Science Laboratories, Inc.      Contract #: \_\_\_\_\_  
 Instrument ID: IC      Date of Initial Calibration: 28-Sep-07  
 Initial Calibration ID: 1069      Concentration Units (mg/L or mg/kg): mg/L

Analyte	STD 1	STD 2	STD 3	STD 4	STD 5	STD 6	STD 7	STD 8	STD 9	STD 10	r	Q
Nitrate (as N)	0	0.02	0.05	0.1	0.5	1	2	0	0	0	0.99997	
Sulfate (as SO4)	0	0.2	0.5	1	5	10	20	40	0	0	0.99999	

r = correlation coefficient

Comments:



AFCEE  
WET CHEM ANALYSES DATA SHEET 5  
BLANKS

Analytical Method: SW9056                      AAB #: R11446  
 Lab Name: Life Science Laboratories, Inc.      Contract Number:  
 Concentration Units (mg/L or mg/kg): mg/L  
 Calibrator Blank ID: ICB                      Initial Calibration ID: 1069  
 Method Blank ID: MB-R11446              Initial Calibration ID: 1069

Analyte	Calibration Blank	Method Blank	RL	Q
Nitrate (as N)	0.015	0.015	1.0	
Sulfate (as SO <sub>4</sub> )	0.15	0.15	1.0	

Comments:

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AFCEE  
WET CHEM ANALYSES DATA SHEET 5  
BLANKS

Analytical Method: SW9056                      AAB #: R11446  
Lab Name: Life Science Laboratories, Inc.      Contract Number:  
Concentration Units (mg/L or mg/kg): mg/L  
Calibration Blank ID: CCB1                      Initial Calibration ID: 1069  
Method Blank ID: MB-R11446                      Initial Calibration ID: 1069

Analyte	Calibration Blank	Method Blank	RL	Q
Nitrate (as N)	0.015	0.015	1.0	
Sulfate (as SO4)	0.15	0.15	1.0	

Comments:

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AFCEE  
WET CHEM ANALYSES DATA SHEET 8  
HOLDING TIMES

Analytical Method: SW9056

AAB #: R11446

Lab Name: Life Science Laboratories, Inc.

Contract #:

Field Sample ID	Lab Sample ID	Date Collected	Date Received	Date Analyzed	Max. Holding Time (days)	Time Held (days)	Q
101M0217UA	0710074-001B	10-Oct-07	11-Oct-07	11-Oct-07	2	1.0	

Comments:

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**AFCEE  
WET CHEM ANALYSES DATA SHEET 9  
INSTRUMENT ANALYSIS SEQUENCE LOG**

Analytical Method: SW9056

Lab Name: Life Science Laboratories, Inc.

Contract #:

Instrument ID #: IC

Field Sample ID/Std ID/ Blank ID/QC Sample ID	Lab Sample ID	Date Analyses Started	Time Analyses Started	Date Analyses Completed	Time Analyses Completed
ICAL 0	ICAL 0	28-Sep-07	13:07	28-Sep-07	13:25
ICAL 7	ICAL 7	28-Sep-07	13:25	28-Sep-07	13:43
ICAL 6	ICAL 6	28-Sep-07	13:43	28-Sep-07	14:01
ICAL 5	ICAL 5	28-Sep-07	14:01	28-Sep-07	14:19
ICAL 4	ICAL 4	28-Sep-07	14:19	28-Sep-07	14:37
ICAL 3	ICAL 3	28-Sep-07	14:37	28-Sep-07	14:55
ICAL 2	ICAL 2	28-Sep-07	14:55	28-Sep-07	15:13
ICAL 1	ICAL 1	28-Sep-07	15:13	28-Sep-07	15:13
CCV	CCV	11-Oct-07	9:06	11-Oct-07	9:24
ICV	ICV	11-Oct-07	9:24	11-Oct-07	9:42
ICB	ICB	11-Oct-07	9:42	11-Oct-07	10:00
MB-R11446	MB-R11446	11-Oct-07	10:00	11-Oct-07	10:18
LCS-R11446	LCS-R11446	11-Oct-07	10:18	11-Oct-07	12:49
101M0217UA	0710074-001B	11-Oct-07	12:49	11-Oct-07	13:07
CCV1	CCV1	11-Oct-07	13:07	11-Oct-07	13:25
CCB1	CCB1	11-Oct-07	13:25	11-Oct-07	13:25

Comments:

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**AFCEE  
WET CHEM ANALYSES DATA SHEET 2  
RESULTS**

**Analytical Method:** SW9060 **AAB #:** R11558  
**Lab Name:** Life Science Laboratories, Inc. **Contract #:**  
**Field Sample ID:** 101M0217UA DL **Lab Sample ID:** 0710074-001CDL **Matrix:** Groundwater  
**% Solids:** 0 **Initial Calibration ID:** 1084  
**Date Received:** 11-Oct-07 **Date Prepared:** **Date Analyzed:** 18-Oct-07  
**Concentration Units (mg/L or mg/kg dry weight):** mg/L

Analyte	MDL	RL	Concentration	Dilution	Qualifier
Total Organic Carbon	2.0	5.0	64	5	

**Comments:**

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AFCEE  
WET CHEM ANALYSES DATA SHEET 3-10  
INITIAL MULTIPOINT CALIBRATION

Analytical Method: SW9060      AAB #: R11558  
 Lab Name: Life Science Laboratories, Inc.      Contract #: \_\_\_\_\_  
 Instrument ID: IOC-5000A      Date of Initial Calibration: 18-Oct-07  
 Initial Calibration ID: 1064      Concentration Units (mg/L or mg/kg): mg/L

Analyte	STD 1	STD 2	STD 3	STD 4	STD 5	STD 6	STD 7	STD 8	STD 9	STD 10	r	Q
Total Organic Carbon	0	1	10	20	0	0	0	0	0	0	0.999952	

r = correlation coefficient

Comments:



AFCEE  
WET CHEM ANALYSES DATA SHEET 5  
BLANKS

Analytical Method: SW9060                      AAB #: R11558  
Lab Name: Life Science Laboratories, Inc.      Contract Number:  
Concentration Units (mg/L or mg/kg): mg/L  
Calibration Blank ID: ICB                      Initial Calibration ID: 1084  
Method Blank ID: MB-R11558                  Initial Calibration ID: 1084

Analyte	Calibration Blank	Method Blank	RL	Q
Total Organic Carbon	-0.031	0.40	1.0	

Comments:

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**AFCEE  
WET CHEM ANALYSES DATA SHEET 5  
BLANKS**

**Analytical Method:** SW9060                      **AAB #:** R11558  
**Lab Name:** Life Science Laboratories, Inc.      **Contract Number:**  
**Concentration Units (mg/L or mg/kg):** mg/L  
**Calibrator Blank ID:** CCB1                      **Initial Calibration ID:** 1084  
**Method Blank ID:** MB-R11558                      **Initial Calibration ID:** 1084

Analyte	Calibration Blank	Method Blank	RL	Q
Total Organic Carbon	0.056	0.40	1.0	

**Comments:**

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AFCEE  
WET CHEM ANALYSES DATA SHEET 8  
HOLDING TIMES

Analytical Method: SW9060

AAB #: R11558

Lab Name: Life Science Laboratories, Inc.

Contract #:

Field Sample ID	Lab Sample ID	Date Collected	Date Received	Date Analyzed	Max Holding Time (days)	Time Held (days)	Q
101M0217UA	0710074-001C	10-Oct-07	11-Oct-07	18-Oct-07	28	8.0	
101M0217UA DL	0710074-001CDL	10-Oct-07	11-Oct-07	18-Oct-07	28	8.0	

Comments:

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**AFCEE  
WET CHEM ANALYSES DATA SHEET 9  
INSTRUMENT ANALYSIS SEQUENCE LOG**

Analytical Method: SW9060

Lab Name: Life Science Laboratories, Inc.      Contract #:

Instrument ID #: TOC-5000A

Field Sample ID/Std ID/ Blank ID/QC Sample ID	Lab Sample ID	Date Analyses Started	Time Analyses Started	Date Analyses Completed	Time Analyses Completed
S0	S0	18-Oct-07	12:05	18-Oct-07	12:17
S1	S1	18-Oct-07	12:17	18-Oct-07	12:34
S10	S10	18-Oct-07	12:34	18-Oct-07	12:48
S20	S20	18-Oct-07	12:48	18-Oct-07	13:06
ICV	ICV	18-Oct-07	13:06	18-Oct-07	13:18
ICB	ICB	18-Oct-07	13:18	18-Oct-07	13:28
MB-R11558	MB-R11558	18-Oct-07	13:28	18-Oct-07	13:42
LCS-R11558	LCS-R11558	18-Oct-07	13:42	18-Oct-07	14:07
101M0217UA	0710074-001C	18-Oct-07	14:07	18-Oct-07	14:24
101M0217UA DL	0710074-001CDL	18-Oct-07	14:24	18-Oct-07	15:26
CCV1	CCV1	18-Oct-07	15:26	18-Oct-07	15:36
CCB1	CCB1	18-Oct-07	15:36	18-Oct-07	15:36

Comments:

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AFCEE  
WET CHEM ANALYSES DATA SHEET 5  
BLANKS

Analytical Method: E310.1                      AAB #: R11479  
Lab Name: Life Science Laboratories, Inc.      Contract Number:  
Concentration Units (mg/L or mg/kg): mg/L  
Calibrator Blank ID:                                      Initial Calibration ID: 0  
Method Blank ID: MB-R11479                      Initial Calibration ID: 0

Analyte	Calibration Blank	Method Blank	RL	Q
Alkalinity, as CaCO <sub>3</sub>		10	10	

Comments:

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AFCEE  
WET CHEM ANALYSES DATA SHEET 8  
HOLDING TIMES

Analytical Method: E310.1

AAB #: R11479

Lab Name: Life Science Laboratories, Inc.

Contract #:

Field Sample ID	Lab Sample ID	Date Collected	Date Received	Date Analyzed	Max. Holding Time (days)	Time Held (days)	Q
101M0217UA	0710074-001D	10-Oct-07	11-Oct-07	15-Oct-07	14	4.4	
101M0217UA	0710074-001DDUP	10-Oct-07	11-Oct-07	15-Oct-07	14	4.4	

Comments:

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AFCEE  
WET CHEM ANALYSES DATA SHEET 9  
INSTRUMENT ANALYSIS SEQUENCE LOG

Analytical Method: E310.1

Lab Name: Life Science Laboratories, Inc.

Contract #:

Instrument ID #: pH meter

Field Sample ID/Std ID/ Blank ID/QC Sample ID	Lab Sample ID	Date Analyses Started	Time Analyses Started	Date Analyses Completed	Time Analyses Completed
LCS-R11479	LCS-R11479	15-Oct-07	0:00	15-Oct-07	0:00
MB-R11479	MB-R11479	15-Oct-07	0:00	15-Oct-07	0:00
101M0217UA	0710074-001DDUP	15-Oct-07	0:00	15-Oct-07	0:00
101M0217UA	0710074-001D	15-Oct-07	0:00	15-Oct-07	0:00

Comments:

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