FINAL
WORK PLAN

Definitive Data Collection Activities and Off-site Residential Monitoring Investigation
at
Air Force Plant 59
Johnson City, New York

Prepared for:

Air Force Center for Engineering and the Environment
Brooks City-Base, Texas

and

Wright Patterson Air Force Base
Fairborn, Ohio

Prepared by:

AECOM
675 North Washington Street, Suite 300
Alexandria, Virginia 22314

Contract No. FA8903-08-D-8770
Task Order No. 0058

November 2009

PREFACE

This *Work Plan (WP)* was written by AECOM to describe the field activities associated with the definitive data collection activities and off-site residential monitoring investigation at the Air Force Plant 59 (AFP 59). The work will be conducted from July 2009 through August 2010. The work is to be completed under the Air Force Center for Engineering and the Environment (AFCEE) Contract No. FA8903-08-D-8770, Task Order No. 0058.

Government agencies and their contractors registered with the Defense Technical Information Center should direct requests for copies of this report to Defense Technical Information Center, 8725 John J. Kingman Road, Suite 0944, Fort Belvoir, Virginia 22060-6218. Non-government agencies may purchase copies of this document from National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161.

The AFCEE Restoration Team Chief is Eric Bowden. The Air Force Aeronautical Systems Center Remedial Project Manager is George Walters. The AECOM Project Manager is Dave Parse.

REPORT DOCUMENTATION PAGE

Form Approved OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
05-11-2009	Final	July 2009 – August 2010

4. TITLE AND SUBTITLE

Final Definitive Data Collection Activities and Off-site Residential Monitoring Investigation at Air Force Plant 59

5a. CONTRACT NUMBER
FA8903-08-D-8770; T.O. 0058

5b. GRANT NUMBER
N/A

5c. PROGRAM ELEMENT NUMBER
N/A

6. AUTHOR(S)

AECOM

5d. PROJECT NUMBER
N/A

5e. TASK NUMBER
N/A

5f. WORK UNIT NUMBER
N/A

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) AND ADDRESS(ES)

AECOM
675 North Washington Street, Suite 300
Alexandria, VA 22314

8. PERFORMING ORGANIZATION REPORT NUMBER
N/A

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)

Air Force Center for Engineering and the Environment
3300 Sidney Brooks
Brooks City Base, TX 78235-5344

10. SPONSOR/MONITOR'S ACRONYM(S)
AFCEE

11. SPONSOR/MONITOR'S REPORT NUMBER(S)
N/A

12. DISTRIBUTION / AVAILABILITY STATEMENT

Approved for Public Release; Distribution is Unlimited.

13. SUPPLEMENTARY NOTES
N/A

14. ABSTRACT

This *WP* describes the field activities associated with the definitive data collection activities and off-site residential monitoring investigation at AFP 59. The objectives of this study are: (1) to collect three rounds of co-located indoor air and soil gas samples inside AFP 59; (2) to collect off-site residential co-located indoor air and sub slab vapor samples from up to 10 residences adjacent to AFP 59; (3) to further characterize trichloroethene and trichloroethane contamination around the fire suppression reservoir; and (4) to collect geotechnical parameters to be used for a feasibility study.

15. SUBJECT TERMS
Vapor Intrusion, Well Abandonment, Groundwater Monitoring and Fire Suppression Reservoir, Air Force Plant 59

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			David Parse
Unclassified	Unclassified	Unclassified	SAR	21	19b. TELEPHONE NUMBER *(include area code)* (703) 549-8728

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39.18

TABLE OF CONTENTS

SECTION **PAGE**

TABLE OF CONTENTS (CONTINUED)

List of Figures

Figure **Page No.**

List of Tables

Table **Page No.**

LIST OF ACRONYMS AND ABBREVIATIONS

AFCEE	Air Force Center for Engineering and the Environment
AFP 59	Air Force Plant 59
ASC	Aeronautical Systems Center
ASTM	American Society for Testing and Materials
bgs	Below Ground Surface
CoC	Chain of Custody
DQO	Data Quality Objective
ERPIMS	Environmental Resources Program Information Management System
FSP	Field Sampling Plan
LTM	Long-Term Monitoring
$\mu g/m^3$	Micrograms per Cubic Meter
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PID	Photoionization Detector
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
ROI	Radius of Influence
SSD	Sub-slab Depressurization
SVE	Soil Vapor Extraction
USAF	United States Air Force
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOC	Volatile Organic Compounds
WP	Work Plan

1.0 INTRODUCTION

This supplemental *Work Plan (WP)* describes the procedures and techniques that will be used to conduct the definitive data collection activities and off-site residential monitoring investigation at Air Force Plant 59 (AFP 59) in Johnson City, New York and supplements the *Final Work Plan for the Vapor Intrusion Investigation, Monitoring Well Abandonment, Groundwater Monitoring, and Fire Suppression Reservoir Investigation, AFP 59, Johnson City, New York* (AECOM, 2009a). This supplemental *WP* further expands on the on the project scope and objectives based on the initial findings from the completed activities. AECOM has prepared this supplemental *WP* under contract to the Air Force Center for Engineering and the Environment (AFCEE) as part of the requirements for Contract FA8903-08-D-8770, Task Order 0058. This supplemental *WP* contains proposed project scope and objectives, reporting requirements, and project schedule.

1.1 PROPOSED PROJECT ACTIVITIES

The following activities will be completed during the execution of this task order:

1. Preparation of *WP's* and other supporting documents.
2. Collection of indoor air, sub-slab air, outside air, air duct vapor, air duct sludge, intake air, soil, soil gas, and groundwater samples from inside AFP 59. Samples will be analyzed for volatile organic compounds (VOCs).
3. Collection of up to 15 geotechnical soil samples from the concrete floor at AFP 59.
4. Abandonment of eight United States Geological Survey (USGS) monitoring wells on properties in the vicinity of AFP 59.
5. One round of groundwater sampling of six on-site AFP 59 monitoring wells and five off-site monitoring wells. Samples will be analyzed for VOCs and 1,4-dioxane.
6. Collection of one groundwater sample at the Camden Street Well Field. The sample will be analyzed for 1,4-dioxane.
7. Collection of up to 70 soil samples and 35 groundwater and soil gas samples around the reservoir area to be analyzed for VOCs.
8. Collection of up to 10 co-located indoor air and sub slap vapor samples from the residential houses adjacent to AFP 59. Samples will be analyzed for VOCs.
9. Preparation of a report presenting the data collected during the field investigation.

1.2 SUMMARY OF PREVIOUS INVESTIGATIONS

For a summary of previous investigations at AFP 59, refer to the *Final Work Plan for the Vapor Intrusion Investigation, Monitoring Well Abandonment, Groundwater Monitoring, and Fire Suppression Reservoir Investigation, AFP 59, Johnson City, New York* (AECOM, 2009a).

2.0 PROJECT SCOPE AND OBJECTIVES

2.1 OBJECTIVES

The objectives of the current study are to further evaluate vapor intrusion inside the AFP 59 building, evaluate potential vapor intrusion in adjacent residences, collect information to be used to develop remedial alternatives, and to further investigate the fire suppression reservoir area. This supplemental *WP* further expands on the on the project scope and objectives based on the initial findings from the completed activities.

2.1.1 Data Quality Objectives

Data quality objectives (DQOs) are quantitative and qualitative goals that specify the quantity and quality of the data required to support decisions during remedial response activities. Guidelines followed in the preparation of DQOs for the definitive data collection activities and off-site residential monitoring investigation at AFP 59 are detailed in the *Guidance for the DQO Process, United States Environmental Protection Agency (USEPA) QA/G-4* (USEPA, 1994a) and the New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation *Draft Technical Guidance for Site Investigation and Remediation* (NYSDEC, 2002).

DQOs are determined based on the end use(s) of the data. For the AFP 59 vapor samples, the primary objective is to determine the impact of subsurface vapors on the indoor air quality. For the off-site residential monitoring activities, the primary objective is to determine the potential impact subsurface vapors have on the residential houses adjacent to AFP 59. For the subsurface reservoir investigation, the primary objective will be to further characterize the nature and extent of VOC contamination around the fire suppression reservoir area.

The DQO process for the definitive data collection activities and off-site residential monitoring investigation are presented below. The discussion provides a step-by-step description of the development of DQOs and rationale for the definitive data collection activities and off-site residential monitoring investigation.

1. **Problem.** In January 2008, six on-site, co-located indoor air and sub-slab vapor samples exceeded the New York State Department of Health (NYSDOH) guidance values requiring monitoring and/or mitigation according to the *Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (NYSDOH, 2006).

   VOC contamination has been confirmed in the area around the fire suppression reservoir; however, limited information is available. Additional data is needed to further characterize the nature and extent of contamination in this area.

   The groundwater plume originating on the AFP 59 properties passes beneath off-site residential properties posing a potential vapor intrusion issue. Sampling within the adjacent residential properties is needed to determine the vapor intrusion impact to the houses.

2. **Boundaries of Study.** The boundaries of the study area were determined based on analytical data from previous investigations and property boundaries. The study area for the definitive data collection activities includes the manufacturing building at AFP 59. In

July 2009, 109 sub-slab vapor sampling locations were installed to monitor the potential for vapor intrusion inside AFP 59 (see Figure 2-1). Soil and soil gas will be sampled at up to 15 additional locations around the fire suppression reservoir within the AFP 59 boundary. The study area for the off-site residential monitoring investigation includes the properties adjacent to AFP 59 to the west where the VOC plume migrates beneath the houses.

3. **Sampling Approach.** Screening data are collected to provide preliminary field data, qualitatively evaluate the nature and extent of contamination, identify samples to send to the laboratory, and to provide health and safety monitoring. Field equipment, such as a photoionization detector (PID), will be used to collect the screening level data.

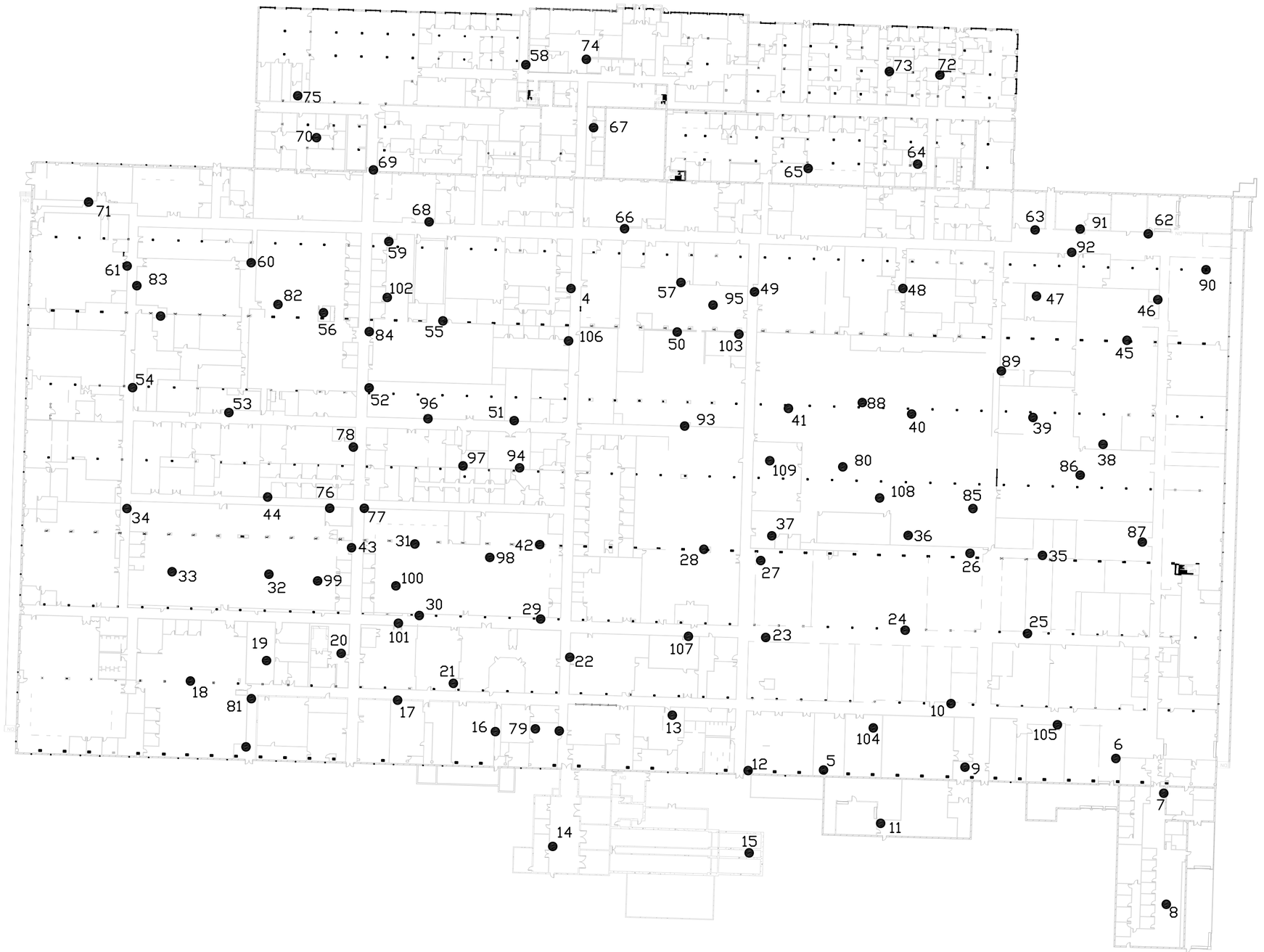
   Three additional rounds of co-located indoor air and sub-slab vapor samples will be collected from the existing 109 sample locations. Also, an additional 11 sample locations will be installed and sampled to fill data gaps from the screening level sub-slab and First Quarter investigation. Up to 75 co-located indoor air and sub-slab locations will be sampled during the November and May sampling round. The February sampling round will consist of co-located indoor air and sub-slab vapor samples from the 120 sampling points. Deeper soil gas sample locations will be installed from 11 locations to evaluate deeper vapor intrusion sources. Upwind air samples will be collected to address background vapor concentrations. Samples from the heating, ventilation, and air conditioning air intakes will be collected to determine the contribution of contaminants from outside air. The data will be used to determine the source of vapors to the AFP 59 building. The vapor samples will be analyzed for VOCs by USEPA Method TO-15. The soil and groundwater samples will be analyzed for VOCs by USEPA Method 8260B.

   One additional round of soil and soil gas samples will be collected from up to 15 direct push locations. Refer to Figure 2-2 for the additional sample locations. The samples will be sent to a fixed laboratory to obtain definitive data. Definitive data will be produced using standard methods in a fixed laboratory. The data will be used to characterize the contamination in the area of the fire suppression reservoir. Definitive data will be generated in accordance with the project-specific *Quality Assurance Project Plan (QAPP)*. The soil and soil gas samples collected for the fire suppression reservoir investigation will be analyzed for VOCs using USEPA Method SW8260B (soil) and USEPA Method TO-15 (soil gas).

   Co-located indoor air and sub-slab vapor samples will be collected from up to 10 residential properties adjacent to AFP 59. The data will be used to determine the potential impact of vapors to adjacent residential properties. The vapor samples will be analyzed for VOCs by USEPA Method TO-15.

2.2 SAMPLE ANALYSIS SUMMARY

The proposed additional laboratory analyses for the indoor air, sub-slab gas, soil, soil gas, and groundwater samples are based on the types of chemicals used at AFP 59 and the chemicals



0' 35' 70' 140'

AECOM

AIR FORCE PLANT 59 VAPOR INTRUSION INVESTIGATION

Co-located Indoor Air and Sub-Slab Vapor Sampling Locations

Johnson City, New York

Air Force Center for Engineering and the Environment
3300 Sidney Brooks, Brooks City-Base, TX 78235-5112

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
SL_Sample_Locs_1009.dwg	WFG	111886	10/09	2-1

Plotted By: geew
Plot File Date Created: Oct/23/2009 1:16 PM
Layout-Sheet Name: FULL
Filename: P:\PROJECTS\AFP59\111886 VAPOR INTRUSION STUDY\REPORTS\FIGURES\SL_SAMPLE_LOCS_1009.DWG

LEGEND:

- LTM Monitoring Well Sampling Location
- Proposed Soil-Gas Sampling Location
- Soil-Gas Sampling Point Aug. '09
- Soil-Gas Sampling Point Jun. '08
- Soil-Gas Sampling Point Oct. '06 not Analyzed
- Soil-Gas Sampling Point Nov. '04
- Property Boundary Fence

SW3
DW3
SG-34
DP-015
SG-31
DP-014
DP-020
DP-009
DP-012
SG-33
DP-005
DP-013
SG-32
SG-10
DP-002
SG-36
SG-2
DP-001
DP-016
DP-004
Fire Suppression Reservoir
DP-017
DP-003
SG-07
SG-08
DP-006
SG-09
DP-007
DP-008
DP-018
DP-019
SG-37
DP-010
DP-011

Approximate Scale in Feet

50' 25' 0 50'

AECOM

AIR FORCE PLANT 59 VAPOR INTRUSTION INVESTIGATION

Additional Fire Suppression Reservior Sample Locations

Johnson City, New York

Air Force Center for Engineering and the Environment
3300 Sidney Brooks, Brooks City-Base, Texas 78235

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
PropSG09-rev.dwg	WFG	111886	10/09	2-2

Plotted By: geew
Layout-Sheet Name: LAYOUT1
Plot File Date Created: Nov/04/2009 4:22 PM

Filename: P:\PROJECTS\AFP59\111886 VAPOR INTRUSION STUDY\REPORTS\FIGURES\PROPSG09-REV.DWG

previously detected in samples collected in the study area. A summary of the proposed laboratory analyses, including the number of environmental samples and quality assurance/quality control (QA/QC) samples, is provided in Table 2-1. QA/QC sampling requirements will be performed as described in the project-specific QAPP and the August 2009 WP.

Table 2-1
Sample Analysis Summary

Method	Matrix	# Samples	# Equipment Blanks	# Ambient Blanks	# Trip Blanks	# Field Duplicates	# MS/MSD Samples	Total # Samples
On-site Vapor Intrusion Investigation								
TO-15	Indoor Air	270	0	0	0	27	14	311
TO-15	Sub-slab Vapor	270	0	0	0	27	14	311
TO-15	Deeper Soil Gas	66	0	0	0	7	3	76
TO-15	Outside Air	9	0	0	0	0	0	9
8260B/ TO-17	Passive Air Vapor	15	0	0	0	2	1	18
Fire Suppression Reservoir Investigation								
TO-15	Soil Gas	15	0	0	0	2	1	18
8260B	Soil	30	1	1	2	3	1	38
Off-site Residential Monitoring Investigation								
TO-15	Indoor Air	10	0	0	0	1	1	12
TO-15	Sub-slab Vapor	10	0	0	0	1	1	12
TO-15	Outside Air	10	0	0	0	0	0	10

Key: MS/MSD = Matrix Spike/Matrix Spike Duplicate

Notes: Soil samples will be collected at up to two depths at one location (4 feet and 8 feet below ground surface [bgs]).

Equipment blanks will be collected for soil sampling equipment (VOCs) and direct push groundwater probe (VOCs only).

An ambient blank will be collected once during groundwater sampling, once during soil sampling, and once during soil-gas sampling.

3.0 PROJECT TASKS

This section describes the required tasks to be completed during this event, including field and laboratory activities.

3.1 FIELD INVESTIGATION TASKS

The objectives of the definitive data collection activities and off-site residential monitoring investigation will be achieved through the field investigation, which will include the following activities: (1) mobilization to and from the site by AECOM personnel and subcontractors; (2) collection of co-located indoor air and sub-slab vapor samples from the AFP 59 manufacturing building; (3) collection of up to 15 passive air vapor samples to determine if off-gassing is occurring inside the building and affecting air quality; (4) collection of up to 15 additional soil gas samples, and 30 soil samples around the fire suppression reservoir; (5) collection of up to 10 co-located indoor air and sub-slab vapor samples from adjacent residential properties; (6) completion of a radius of influence (ROI) test; and (7) surveying of the direct push sample locations; and (9) off-site laboratory analysis of the collected samples. A brief description of each field activity is provided in the following sections.

3.1.1 Mobilization

Fieldwork for the definitive data collection activities and off-site residential monitoring investigation will be conducted in three field mobilizations. Activities associated with the initiation of the field investigation (e.g., securing identification badges and vehicle passes, and identifying and staging areas for equipment) will be coordinated with the facility point-of-contact.

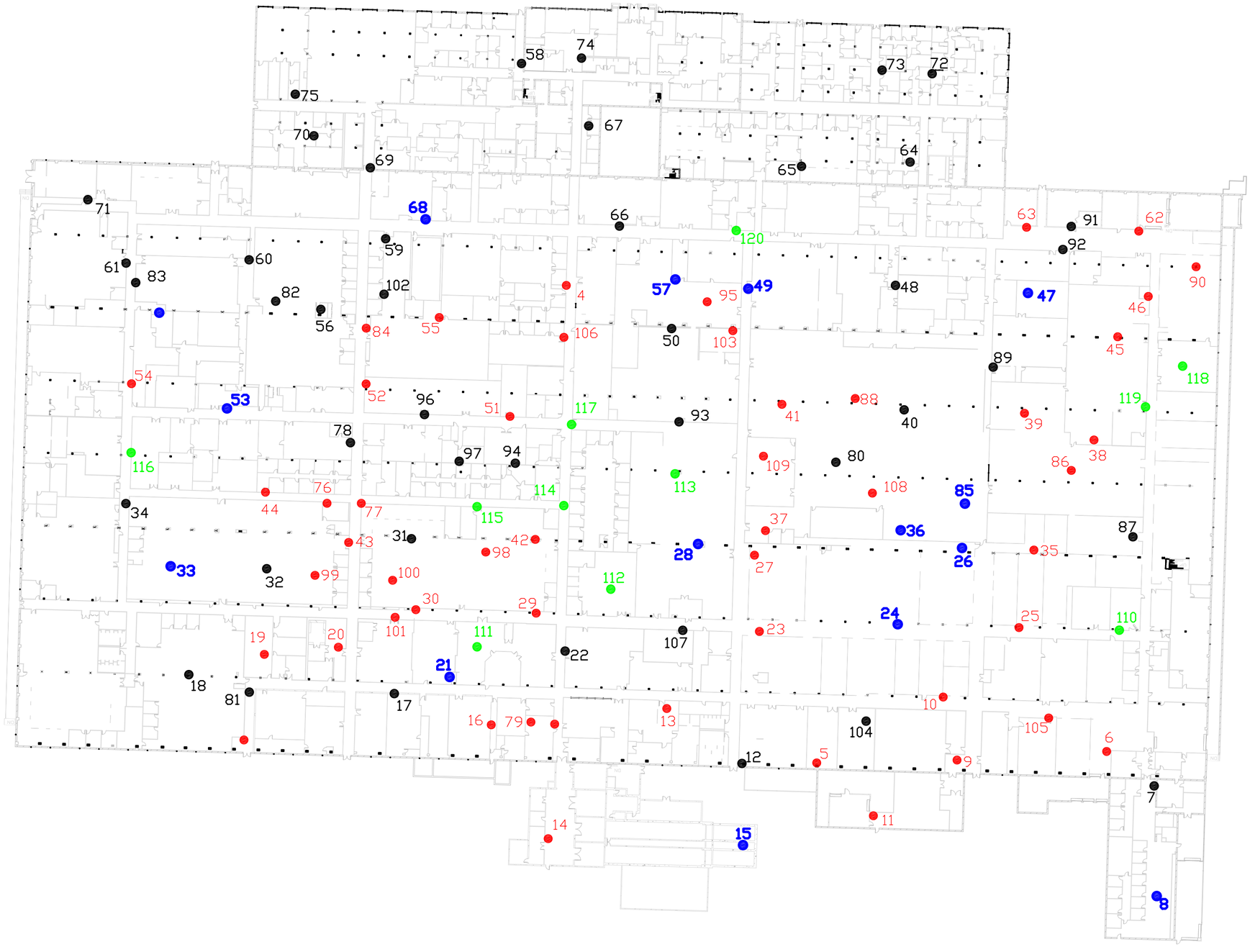
3.1.2 Indoor Vapor Intrusion Sampling

The first objective of the field investigation is to further evaluate the vapor intrusion potential inside the AFP 59 building.

Co-located Indoor Air and Sub-slab Vapor Sampling

Three additional rounds of co-located indoor air and sub-slab vapor samples will be collected from the existing 109 sample locations. Also, additional sample locations will be installed and sampled to fill data gaps from the screening level sub-slab and First Quarter Investigation for a total of 120 sub-slab locations. The additional sampling locations are shown in Figure 3-1. The additional sampling locations will be complete using the procedures found in Section 5.0 of the AFP 59 *FSP* (AECOM, 2009b).

Up to 75 co-located indoor air and sub-slab locations will be sampled during the November and May sampling round (see Figure 3-2). The February sampling round will consist of co-located indoor air and sub-slab vapor samples from the 120 sampling points (see Figure 3-3). Outside air samples will be collected to determine background concentrations of contaminants. Air intake samples will be collected to determine the contribution of outdoor air contaminants to the indoor air.



LEGEND

- No Action Necessary
- Monitoring Necessary
- Mitigation Necessary
- Proposed Sub-slab Location

0' 35' 70' 140'

AECOM

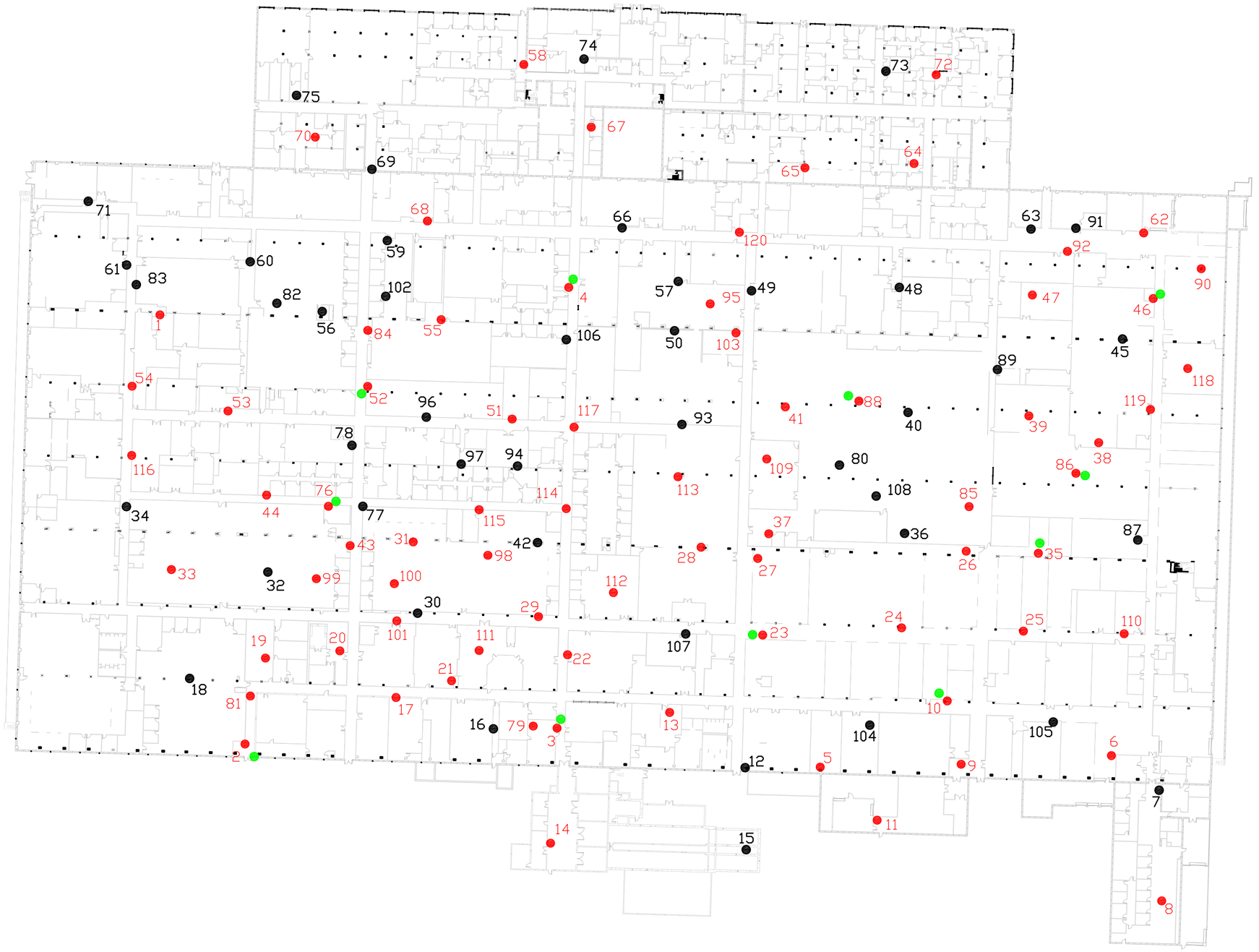
AIR FORCE PLANT 59 VAPOR INTRUSION INVESTIGATION

Additional Sub-slab Proposed Sampling Locations Johnson City, New York

Air Force Center for Engineering and the Environment
3300 Sidney Brooks, Brooks City-Base, TX 78235-5112

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
SL_Sample_Locs_results-prop.dwg	WFG	111886	10/09	3-1

Plotted By: geew
Plot File Date Created: Nov/04/2009 4:36 PM
Layout-Sheet Name: FULL
Filename: P:\PROJECTS\AFP59\111886 VAPOR INTRUSION STUDY\REPORTS\FIGURES\SL_SAMPLE_LOCS_RESULTS-PROP.DWG



LEGEND

- Location Not To Be Sampled
- November and May Sample Location
- Proposed Soil-gas, Soil, Geotechnical, and Groundwater Sample Location

0' 35' 70' 140'

AECOM

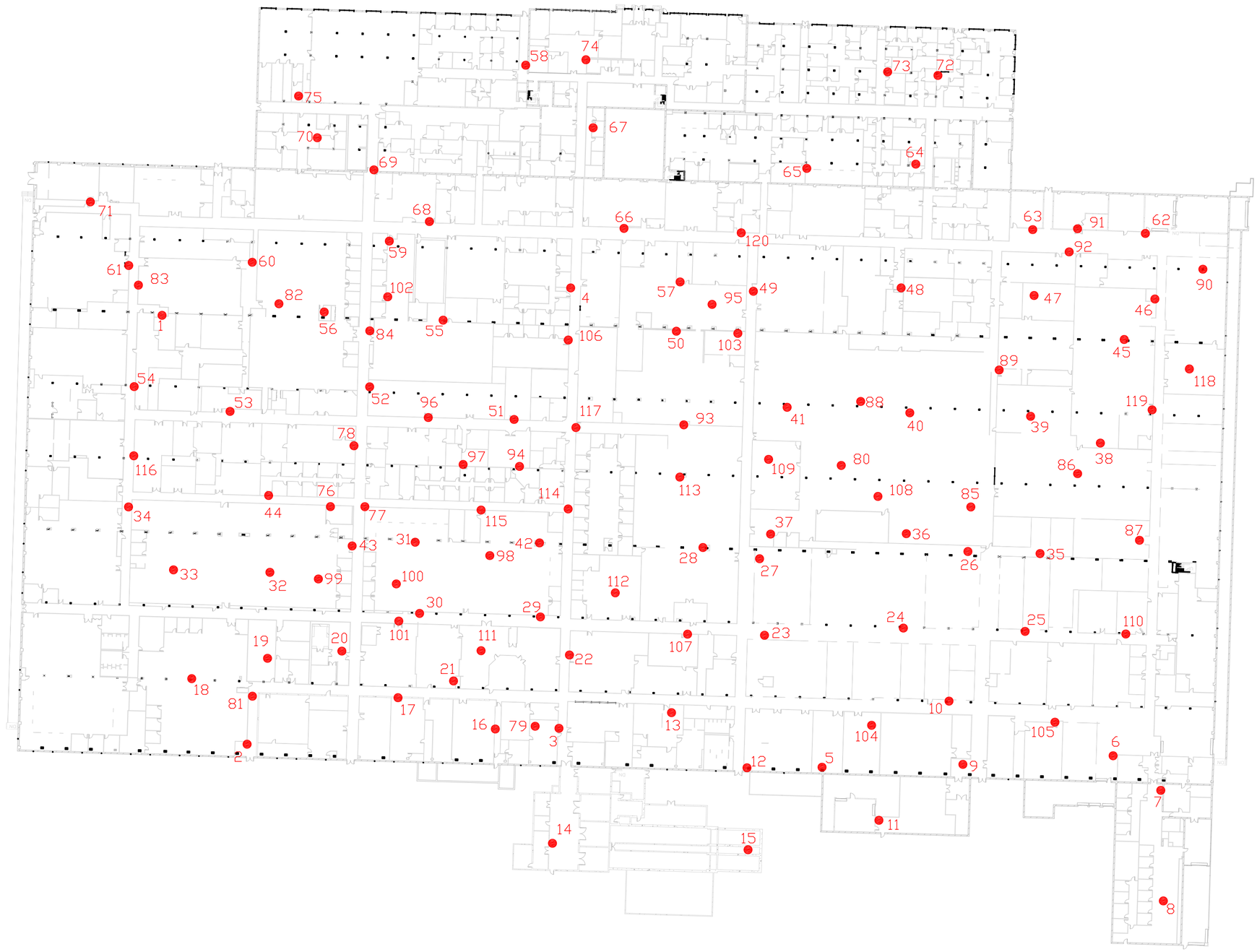
AIR FORCE PLANT 59 VAPOR INTRUSION INVESTIGATION

November and May Co-located Indoor Air and Sub-slab Vapor Sampling Locations Johnson City, New York

Air Force Center for Engineering and the Environment
3300 Sidney Brooks, Brooks City-Base, TX 78235-5112

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
SL_Sample_Locs_Nov_May.dwg	WFG	111886	07/09	3-2

Plotted By: geew
Plot File Date Created: Nov/04/2009 4:42 PM
Layout-Sheet Name: FULL
Filename: P:\PROJECTS\AFP59\111886 VAPOR INTRUSION STUDY\REPORTS\FIGURES\SL_SAMPLE_LOCS_NOV_MAY.DWG



LEGEND

- February Sample Location

0' 35' 70' 140'

AECOM

AIR FORCE PLANT 59 VAPOR INTRUSION INVESTIGATION

February Co-located Indoor Air and Sub-slab Vapor Sampling Locations Johnson City, New York

Air Force Center for Engineering and the Environment
3300 Sidney Brooks, Brooks City-Base, TX 78235-5112

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
SL_Sample_Locs_Feb.dwg	WFG	111886	10/09	3-3

Plotted By: geew
Plot File Date Created: Nov/04/2009 4:41 PM
Layout-Sheet Name: FULL
Filename: P:\PROJECTS\AFP59\111886 VAPOR INTRUSION STUDY\REPORTS\FIGURES\SL_SAMPLE_LOCS_FEB.DWG

Soil, Groundwater, and Deeper Soil Gas Sampling

Soil and groundwater samples will be collected using the procedures found in Section 5.0 of the AFP 59 *Field Sampling Plan (FSP)* (AECOM, 2009b). Eleven groundwater samples and 22 soil samples will be collected and analyzed at a fixed, off-site laboratory for VOCs using USEPA Method SW8260B. See Figure 3-2 for the soil and groundwater locations. Sample locations will be located adjacent to previously installed locations.

Deeper soil gas locations will be completed to 4 and 8 feet bgs to evaluate deeper sources that may contribute to vapor intrusion. The deeper soil gas points will be installed through direct push rods. Samples will be collected from each deeper soil gas location during the November, February, and May sampling events (a total of 22 samples for each event). The deeper soil gas locations are shown in Figure 3-2.

The soil, soil gas, geotechnical, and groundwater sample locations were determined based on the results of the Screening Level Sub-slab Investigation and the First Quarter Investigation.

Passive Air Vapor Sampling

Passive air vapor samples will be collected from up to 10 locations within the AFP 59 building. The passive air vapor samples will be place on porous materials within the building to determine if off-gassing of contaminants into indoor air is occurring. Passive air vapor samples will be deployed in locations of elevated indoor air concentrations from previous sampling events. Sorbent samplers will be affixed and covered to porous structures throughout the building. Passive air vapor samples will be deployed for a minimum of two weeks prior to collection. The sampling interval will be determined based on manufacturer's recommendations. Samples will be analyzed using either USEPA Method SW8260B or USEPA Method TO-17.

Radius of Influence Testing

A pilot ROI test will be performed in November 2009 to determine the number of suction points required for a soil vapor extraction (SVE) or sub-slab depressurization (SSD) system to ensure that sufficient vacuum pressure is applied to extract vapors from beneath the affected area of the building footprint. The ROI will be documented utilizing a sub-slab sample port and a digital manometer. The ROI testing will involve installing a small, sub-slab suction point and installing several other test points throughout the building. An exhaust fan will be placed over the suction point and the pressure differential will be measured at the surrounding test points during fan operation to determine the ROI of the suction point.

Three suction points will be installed for the ROI testing. The three locations will assess differences within the sub-slab. The exhaust will be discharged through carbon vessels and vented to the building exterior. Pressure meters will be utilized to measure the pressure differential beneath the sub-slab. The meters will measure pressure to 0.001 inches of water. The results of the ROI testing, combined with the geotechnical sampling, will determine the potential remedial strategy at AFP 59.

3.1.3 Off-site Residential Monitoring Investigation

The second objective of the definitive data collection activities and off-site residential monitoring investigation is to collect indoor air and sub-slab vapor samples from up to 10 residential properties adjacent to AFP 59. Property owners will be notified in advance of the proposed activities and will receive information regarding the investigation and sampling activities. Once written permission has been received, AECOM, NYSDEC, NYSDOH, and/or BAE personnel will meet with each resident to answer additional questions if deemed necessary. Appointments to enter each residence will be scheduled for February 2010.

Prior to sampling activities, a comprehensive product inventory will be completed to determine chemicals that may be in the residence. A temporary sub-slab vapor sampling point will be installed in each residence to collect soil gas from beneath the basement slab. The indoor air and sub-slab vapor sampling protocol will be in accordance with the NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (NYSDOH, 2006) and is outlined in Sections 6.1.1, 6.1.2, and 6.1.3 of the *Final Vapor Intrusion Investigation Field Sampling Plan* (AECOM, 2009). Sampling canisters will be individually certified and samples will be analyzed by USEPA Method TO-15.

Once the samples have been collected, the temporary vapor point will be removed and the floor will be sealed to prevent the migration of vapors into the residence. Once preliminary and validated results are received, residents/property owners will be notified of the results as soon as possible.

3.1.4 Direct Push Soil and Soil-Gas Sampling

The fourth objective of the field investigation will be to collect additional soil and soil gas samples at up to 15 locations from areas adjacent to the fire suppression reservoir. Refer to Figure 2-2 for the additional sample locations. Soil gas samples will be collected using direct push technology from either approximately 4 or 8 feet bgs. Soil gas samples will be collected using procedures found in Section 5.0 of the AFP 59 *FSP* (AECOM, 2009b). During drilling activities, up to two soil samples will be collected. The soil samples will be collected based on visual staining, PID readings, and professional judgment. The soil samples will be collected using the procedures found in Section 5.0 of the AFP 59 *FSP* (AECOM, 2009b). Once the soil samples are collected from the borehole, the drill rods will be removed and the borehole abandoned using the procedures found in Section 5.0 of the AFP 59 *FSP* (AECOM, 2009b).

3.1.5 Waste Containment

Investigation derived waste will be handled in accordance with the *Final Work Plan for the Vapor Intrusion Investigation, Monitoring Well Abandonment, Groundwater Monitoring, and Fire Suppression Reservoir Investigation, AFP 59, Johnson City, New York* (AECOM, 2009a).

3.2 SITE PERSONNEL

Table 3-1 lists anticipated project personnel.

Table 3-1
Personnel Responsibilities

Title	Name
BAE Systems Coordinator	Stacey Whallon/Tom Tokos
ASC Project Manager	George Walters, ASC
AFCEE Project Manager	Eric Bowden, AFCEE
AECOM Project Manager	Dave Parse, AECOM
AECOM Site Manager	Walt Gee, AECOM
Analytical Laboratory-Soil Gas	Centek Laboratories, LLC
Analytical Laboratory-Groundwater	TriMatrix Laboratories, Inc
Analytical Laboratory-Geotechnical	Test America
Health and Safety Professional	Sean Liddy, AECOM
Site Health and Safety Professional	Walt Gee, AECOM

3.3 SUBCONTRACTORS

Subcontractors will be needed to complete the definitive data collection activities and off-site residential monitoring investigation project. The following is a complete listing of subcontractors that will be used on this project:

- Off-site Laboratory Analysis (Soil Gas): Centek Laboratories
- Off-site Laboratory Analysis (Groundwater/Soil): TriMatrix Laboratories, Inc
- Off-site Laboratory Analysis (Geotechnical): Test America
- Off-site Waste Disposal: American Waste Management Services, Inc.
- Surveying: Hulbert Engineering and Land Surveying
- Direct Push Services: Zebra Environmental Corp.

4.0 DATA ASSESSMENT, RECORDS, AND REPORTING REQUIREMENTS

Data assessment, records, and reporting requirements are described in the *Final Work Plan for the Vapor Intrusion Investigation, Monitoring Well Abandonment, Groundwater Monitoring, and Fire Suppression Reservoir Investigation, AFP 59, Johnson City, New York* (AECOM, 2009a).

5.0 REFERENCES

AECOM. 2009a. *Final Work Plan for the Vapor Intrusion Investigation, Monitoring Well Abandonment, Groundwater Monitoring, and Fire Suppression Reservoir Investigation, AFP 59, Johnson City, New York.* August.

———. 2009b. *Final Field Sampling Plan for the Vapor Intrusion Investigation, Monitoring Well Abandonment, Groundwater Monitoring, and Fire Suppression Reservoir Investigation, AFP 59, Johnson City, New York.* August.

New York State Department of Environmental Conservation (NYSDEC). 2002. *Draft Technical Guidance for Site Investigation and Remediation.*

New York State Department of Health (NYSDOH). 2006. *Guidance for Evaluating Soil Vapor Intrusion in the State of New York.*

United States Environmental Protection Agency (USEPA). 1994a. *Guidance for the Data Quality Objectives Process EPA QA/G4.* Quality Assurance Management Staff, EPA/600/R-96/055. September.

———. 1994b. *USEPA National Functional Guidelines for Organic Data Review.*