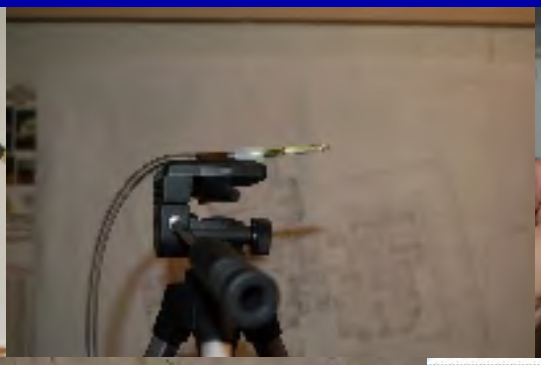
Supplement to
Vapor Intrusion Assessment
Existing Sheriff's Office and MSMJ
334 West Wheeling Street
Lancaster, Ohio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RELIABILITY OF REPORT - DISCLAIMER

Conclusions reached in this report are based upon the objective data available to the CONSULTANTS at the time of forming their opinions and as presented in the report. The accuracy of the report depends upon the accuracy of these data. Every effort is made to evaluate the information by the methods that generally are recognized to constitute the state of the art at the time of rendering the report and conclusions, and the conclusions reached herein represent our opinions. Subsurface conditions are known to vary both in space and time, and there is inherent risk in the extrapolation of data.

THE CONSULTANTS are not responsible for actual conditions proved to be materially at variance with the data that were available to them and upon which they relied, as presented in the report.

The opinions, conclusions and recommendations shown in the report are put forth for a specific and proposed purpose and for the specific site discussed. The CONSULTANTS are not responsible for any other application, whether of purpose or location, of our opinions, conclusions and recommendations other than as specifically indicated in the report.

EXECUTIVE SUMMARY

This report summarizes work performed and data collected during the vapor intrusion assessment conducted inside the existing Sheriff's Office and Minimum Security Misdemeanor Jail (MSMJ). The first of two sampling events was conducted on August 4 and 5, 2014 and the analytical results were reported in the October 2, 2014 report *"Vapor Intrusion Assessment, Proposed Fairfield County Jail/Public Safety Facility and Existing Sheriff's Office and MSMJ, 334 Wheeling Street, Lancaster, Ohio"*. This report presents the analytical results from the second of two sampling events conducted on November 4 and 5, 2014. This report also presents the results of the risk assessment performed using the analytical data gathered from sub-slab vapor monitoring points and ambient air inside the existing Sheriff's Office and the MSMJ.

These efforts were performed as a follow-up to the *"Limited Phase II Environmental Site Assessment for the Proposed Fairfield County Jail/Public Safety Facility"* report dated July 7, 2014. This work was performed to gather specific information on sub-slab and ambient air concentrations of naphthalene and mercury under and within the existing Sheriff's Office and MSMJ. The investigation was conducted at the Sheriff's Office and MSMJ because the fill materials found under the proposed building footprint of the proposed facility Fairfield County Jail/Public Safety Facility (adjacent to the existing Sheriff's Office and MSMJ) were assumed to be present under the existing building based on historical site usage. This subsequent investigation was conducted because an initial risk assessment performed using concentrations for mercury and naphthalene in soil (not air) indicated a potentially unacceptable health risk for workers and residents.

Sub-slab vapor samples were collected at five locations chosen to represent potential exposure in areas of different building usage. These samples were collected to determine whether mercury and/or naphthalene were found under the building slab in concentrations that could migrate to the indoor air. As a precaution, indoor air sampling locations were collocated with the sub-slab vapor samples. The purpose of these samples was to measure concentrations of mercury and naphthalene in indoor air in the event that the sub-slab vapor samples showed concentrations of naphthalene and/or mercury.

Neither naphthalene nor mercury was detected in either the sub-slab vapor or indoor air samples collected during the August 2014 and November 2014 sampling events. Therefore, no concentrations of naphthalene or mercury are attributed to a vapor intrusion pathway. Risk assessments using both the sub-slab vapor data and the ambient air data demonstrated that the vapor intrusion pathway was not complete and that there was no increased risk to workers or residents at the existing Sheriff's Office and MSMJ.

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SECTION 1
INTRODUCTION

1.1 Introduction

This report presents the results of the second of two air sampling event conducted for indoor air and sub-slab vapor at five locations inside the existing Sheriff's Office and Minimum Security Misdemeanor Jail (MSMJ) at 334 West Wheeling Street, Lancaster, Ohio on November 4 and 5, 2014. These efforts were conducted as a follow-up to the July 7, 2014 report, *"Limited Phase II Environmental Site Assessment for the Proposed Fairfield County Jail/Public Safety Facility"*. This report supplements the October 2, 2014 report, *"Vapor Intrusion Assessment, Proposed Fairfield County Jail/Public Safety Facility and Existing Sheriff's Office and MSMJ, 334 Wheeling Street, Lancaster, Ohio"* wherein the results of the first of the two air sampling events at the MSMJ were reported. Figure 1 shows the location of the Fairfield County Sheriff's Office and the attached MSMJ.

1.2 Site Conditions and Previous Investigations

As described in the July 7, 2014 report by Bennett & Williams, *"Limited Phase II Environmental Site Assessment for the Proposed Fairfield County Jail/Public Safety Facility,"* the proposed jail footprint is underlain by between 7.5 feet to 11 feet of fill materials that consist primarily of foundry sand with occasional brick fragments, glass pieces, coal, wood pieces, shale, limestone and sandstone fragments, slag metal (wire) and ceramic tile. Depths of similar fill materials in previous subsurface investigations have been reported to be between 6 and 18 feet. The proposed jail footprint is also located atop the former channel and floodplain of the Hocking River that was channelized and relocated in the late 1800s to its present position just west of the site.

Subsurface samples of the fill materials were collected by Bennett & Williams from ten borings between March 20 and 31, 2014 for "target analyte list" metals and "target concentration list" of semi-volatile organic compounds (SVOCs) (among other analytes) (Figure 2). Analytical results of soil constituents are presented in the July 7, 2014 report.

1.3 Scope of Work Development and Objectives

The *"Limited Phase II Environmental Site Assessment for the Proposed Fairfield County Jail/Public Safety Facility"* report by Bennett & Williams dated July 7, 2014 used concentrations of constituents measured in the fill to evaluate the potential for risk to construction and excavation workers, residents at the proposed jail and workers at the proposed jail. The potential exposure pathway to indoor air for workers and residents at the proposed jail was initially assessed using the measured soil concentrations. Specifically, concentrations of mercury and naphthalene in the soil indicated the potential for a complete pathway from the soil to the indoor

Figure 1.
Site location map of proposed Fairfield County Jail/Public Safety Facility.

N
W E
S

1 inch = 200 feet

0 50 100 200 300 Feet

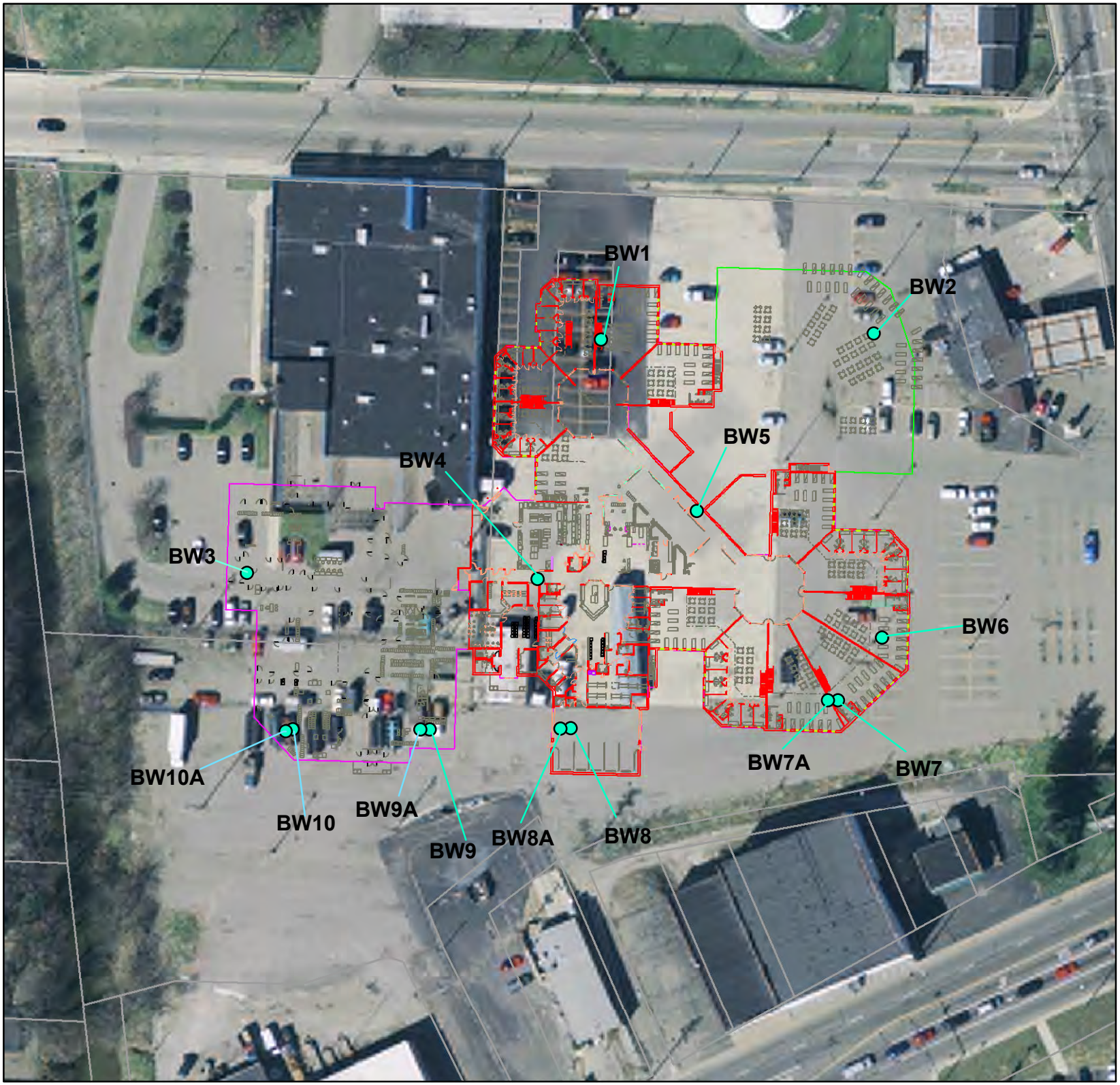


Figure 2.
Soil and groundwater sampling locations from the March 2014 subsurface investigation within the proposed building footprint (Bennett & Williams, July 7, 2014).

air. Based on these initial calculations, an additional investigation to collect soil gas in the area of the proposed Fairfield County Jail/Public Safety Facility was undertaken. The results of the soil gas investigation were presented in the October 2, 2014 report, *"Vapor Intrusion Assessment, Proposed Fairfield County Jail/Public Safety Facility and Existing Sheriff's Office and MSMJ, 334 Wheeling Street, Lancaster, Ohio"*.

Based on historical information, it was assumed that the same fill materials underlay the existing Sheriff's Office and the MSMJ. Therefore, to assess vapor intrusion to indoor air inside the existing Sheriff's Office and the MSMJ, sub-slab vapor samples were collected at five locations chosen to represent potential exposure in areas of different building usage. The five sub-slab vapor and collocated indoor air samples included two located in the Sheriff's Office and three in the MSMJ. The locations in the Sheriff's Office were chosen to represent office space and conference room spaces in two separated areas of use. The three samples in the MSMJ were chosen to represent: 1) a common area for prisoners where air flow was restricted, 2) an area immediately adjacent to the men's dormitory where stagnant air could accumulate, and 3) a closet area immediately adjacent to the women's dormitory. Based on sample equipment and the time necessary to collect samples, samples in the dormitories were not collected. The sample locations were chosen to similarly provide spatial coverage within the building, where possible. Figure 3 shows the location of the collocated indoor air and sub-slab samples.

The samples were collected to determine whether mercury and/or naphthalene were found under the building slab in concentrations that could migrate to the indoor air. As a precaution, indoor air sampling locations were collocated with the sub-slab vapor samples. The purpose of these samples was to measure concentrations of mercury and naphthalene in indoor air in the event that the sub-slab vapor samples showed concentrations of naphthalene and/or mercury. The first of two sampling events was August 4 and 5, 2014. The results were reported in the October 2, 2014 report, *"Vapor Intrusion Assessment, Proposed Fairfield County Jail/Public Safety Facility and Existing Sheriff's Office and MSMJ, 334 Wheeling Street, Lancaster, Ohio"* Neither naphthalene nor mercury was detected in either the sub-slab vapor or indoor air samples.

However, according to Ohio EPA (2010) the protocol for assessing the vapor intrusion pathway requires that more than one sampling event be conducted before reaching a supportable conclusion. Further, Ohio EPA (2010) recommends that indoor air samples be collected in separate quarters to allow for seasonal variation. Therefore, this report presents the results from the second sampling event conducted November 4 and 5, 2014.

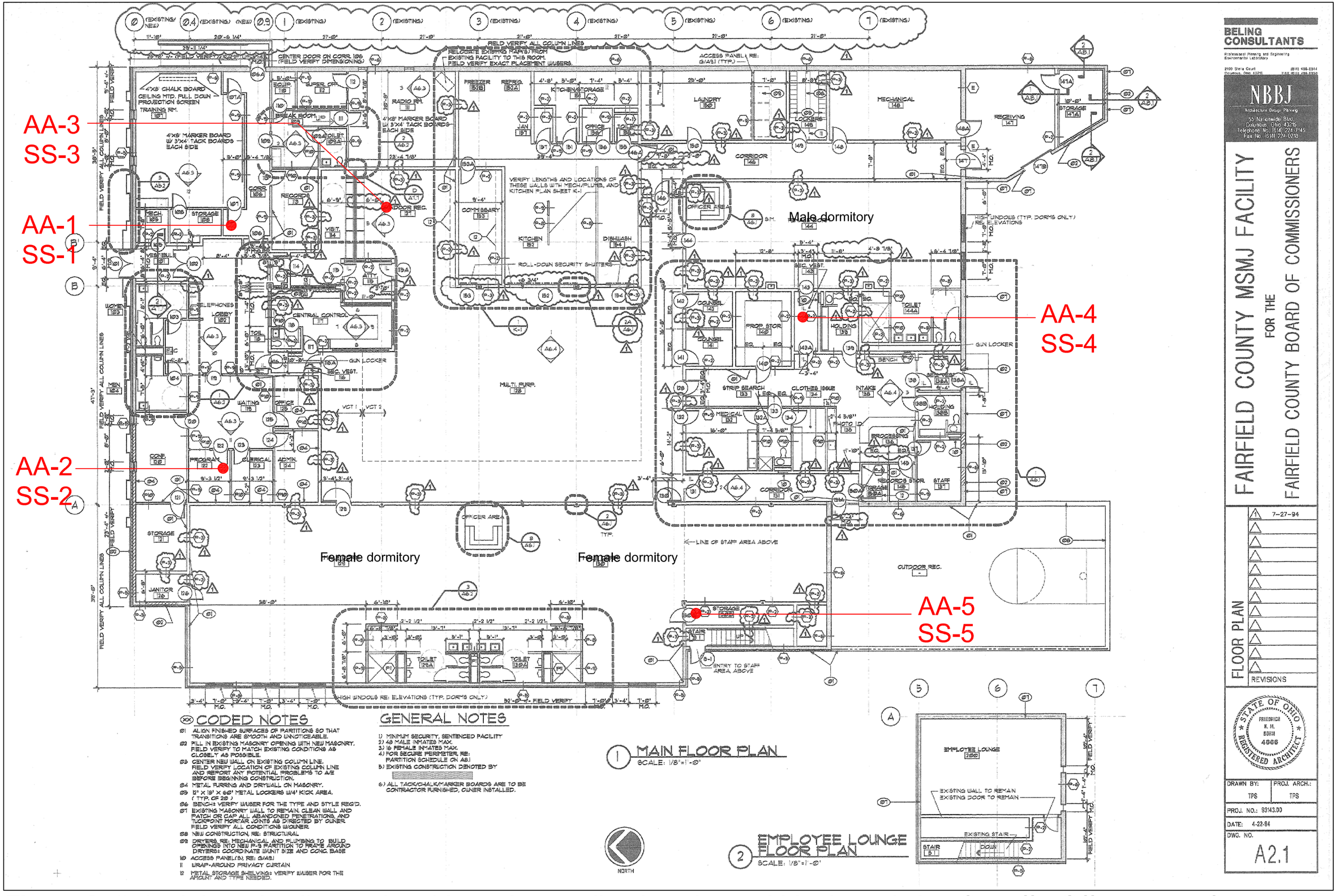


Figure 3. Sub-slab and collocated ambient air sampling locations within the existing Sheriff's Office and MSMJ.

SECTION 2
SAMPLING PROGRAM

2.1 Introduction

This section describes the sampling program conducted November 4 and 5, 2014 at the Fairfield County Sheriff's Office and MSMJ. The sampling program included:

1) collection of sub-slab vapor samples for mercury from five sub-slab vapor monitoring points;

2) collection of sub-slab vapor samples for naphthalene from two sub-slab vapor monitoring points (SS-1 and SS-5); and

3) collection of five indoor ambient air samples for mercury and naphthalene adjacent to each sub-slab monitoring point.

2.2 Sub-Slab Vapor Sampling

2.2.1 Integrity Testing

The sub-slab vapor sampling points were tested for leakage immediately before collecting the second of two sets of sub-slab vapor samples on November 4 and 5, 2014. Testing performed inside the Sheriff's Office and the MSMJ was conducted with a Deputy escort. The test was conducted in accordance with the manufacturer's instructions for the Vapor Pin™ assembly. The stainless steel cover was removed by using a #14 Spanner tool. The plastic cap on the Vapor Pin™ was left on and distilled water was poured into the annulus surrounding the Vapor Pin™. Care was taken not to add water higher than the elevation of the top of the Vapor Pin™. No observations of air bubbles were made when the distilled water was first added to the hole.

The distilled water was allowed to hydrate the concrete in the immediate vicinity of the Vapor Pin™ while the sampling pump was calibrated. The water level around the Vapor Pin™ was noted and sample collection was initiated. During the first five minutes of sample collection, the water level around the Vapor Pin™ was critically observed. No water level changes at any of the sub-slab vapor sampling locations were observed during this time. The Vapor Pins™ were then considered to have integrity and sample collection was continued. If there had been evidence of air bubbles or a noticeable water level drop, the sampling would have been discontinued and either another Vapor Pin™ installed or the defective one re-sealed and re-tested.

2.2.2 Naphthalene

The second of two sub-slab vapor monitoring events was conducted for naphthalene on November 4, 2014. Prior to sample collection, the Gilian Dual Mode Low Flow Sampler LFS-113DC was calibrated using a DryCal DC-Lite Primary Flow Meter Model DCL-L. Calibration was performed by placing a naphthalene "calibration tube" (a tube that would not subsequently be used to collect a sample) inside a Gilian universal holder system and attaching the outlet end of the tube holder to ¼-inch ID vinyl tubing connected to the pump. The naphthalene tube (XAD-2®, Lot No. 8942; Exp. Jan/2019) was obtained from Test America. The inlet end of the tube was connected to the calibrator by 3/8-inch Tygon® tubing.

Naphthalene samples were collected from two sub-slab Vapor Pins™, one inside the Sheriff's Office (SS-1) and the other inside the MSMJ (SS-5) (Figure 3). The number of naphthalene samples was limited to two samples based on conversations with Test America personnel and Ohio EPA personnel wherein there was concern that there would not be enough sub-slab gas present to pump for 11 ½ hours at 200 mL/min. In the end, these concerns were unfounded and the samples were collected successfully.

Samples were collected by removing the stainless steel cover and cap from the Vapor Pin™ and placing a 3/8-inch silicon sleeve over the stainless steel barb and inserting ¼-inch Teflon® tubing into the silicon sleeve. The Teflon® tubing was inserted into 3/8-inch silicon sleeve that was also placed over the inlet end of a Gilian universal holder system. Both ends of the glass naphthalene tube (XAD-2®, Lot No. 8942; Exp. Jan/2019) from Test America were broken with a pair of needle nose pliers and placed inside the tube holder with the flow arrow pointing toward the pump. Vinyl tubing (1/4-inch ID) was attached to the outlet end of the tube holder and connected to the inlet end of a Gilian Dual Mode Low Flow Sampler LFS-113DC. Samples were collected by pumping at a rate of 200 mL/min for 690 minutes (11½ hours), resulting in a total pumped air volume of 138 liters. Due to the long pumping time, the pumps were monitored at approximately intervals of 15 minutes (access permitting) to ensure that sampling was not interrupted by equipment failure or other problems. No problems were encountered during collection of the samples. Appendix A contains pictures of the collection of the naphthalene sub-slab vapor samples.

After sample collection, tight-fitting caps were placed on both ends of the naphthalene tubes. One field blank was collected by breaking both ends of the naphthalene tube and placing caps on both ends. The capped tubes were placed in plastic bags that were labeled on the outside and sealed by pressing the plastic ridges together. The samples were placed on ice in a cooler with packing material to avoid damage and held overnight on ice. The samples were re-packed with fresh ice the next morning and taken back to the site. A chain-of-custody was prepared and the samples were delivered to the Test America Service Center in Columbus, Ohio on August 5, 2014. Test America repacked the samples and shipped them to Test America in West Sacramento, California for analysis.

2.2.3 Mercury

The second of two sub-slab vapor monitoring events was conducted for mercury on November 5, 2014 at the five sub-slab vapor monitoring points (SS-1, SS-2, SS-3, SS-4, and SS-5) (Figure 3). Prior to sample collection, the Gilian Dual Mode Low Flow Sampler LFS-113DC was calibrated using a DryCal DC-Lite Primary Flow Meter Model DCL-L. Calibration was performed by connecting a mercury "calibration tube" (a mercury tube that would not subsequently be used to collect a sample) to ¼-inch ID vinyl tubing using 3/8-inch silicon tubing. The vinyl tubing was then connected to the pump. The mercury tube (Carulite, HYDRAR, Lot 8679, Exp. Aug/2018) was obtained from Test America. The inlet end of the tube holder was connected to the calibrator by 3/8-inch silicon tubing.

Mercury samples were collected from all five sub-slab vapor monitoring points by placing a 3/8-inch silicon sleeve over the petcock barb and inserting a ¼-inch Teflon® tube into the silicon sleeve. The Teflon® tubing was inserted into a 3/8-inch silicon sleeve on the other end that was also placed over the inlet end of a glass mercury tube (Carulite, HYDRAR, Lot 8679, Exp. Aug/2018) from Test America after both ends were broken with a pair of needle nose pliers. Care was taken to make sure the flow arrow pointed toward the pump. Vinyl tubing (1/4-inch ID) was attached to the outlet end of the mercury tube using a 3/8-inch silicon sleeve. Samples were collected by pumping at a rate of 200 mL/min for 45 minutes, resulting in a total pumped air volume of 9 liters. Samples were monitored continuously during collection. Appendix B contains pictures of the collection of the mercury sub-slab vapor samples.

After sample collection, the mercury tubes were removed from the silicon sleeves and caps were placed on each end of the tube. One field blank was collected by breaking both ends of the mercury tube and placing caps on both ends. The capped tubes were placed in small plastic bags that were labeled on the outside and sealed by pressing the plastic ridges together. According to Test America, the mercury samples did not need to be cooled, so the samples were placed in a box with packing material and a chain-of-custody was prepared. The samples were delivered to the Test America Service Center in Columbus, Ohio on November 6, 2014 for packing and shipment to Test America, Phoenix, AZ for analysis.

2.3 Indoor Ambient Air Sampling

2.3.1 Naphthalene

The second of two indoor ambient air sampling events was conducted for naphthalene on November 4, 2014. Indoor ambient air sampling locations were collocated with the five sub-slab vapor sampling points (even though naphthalene was only collected at two sub-slab vapor sampling points due to concerns about available gas volume). Samples for naphthalene were collected at five locations (AA-1, AA-2, AA-3, AA-4, and AA-5) (Figure 3). The indoor air samples were collected during the same timeframe as the two collocated sub-slab vapor samples at SS-1 and SS-5.

Prior to sample collection, the Gilian Dual Mode Low Flow Sampler LFS-113DC was calibrated using a DryCal DC-Lite Primary Flow Meter Model DCL-L. Calibration was performed by placing a naphthalene "calibration tube" (a tube that would not subsequently be used to collect a sample) inside a Gilian universal holder system and attaching the outlet end of the tube holder to ¼-inch ID vinyl tubing connected to the pump. The naphthalene tube (XAD-2®, Lot No. 8942; Exp. Jan/2019) was obtained from Test America. The inlet end of the tube was connected to the calibrator by 3/8-inch Tygon® tubing.

Samples were collected by connecting ¼-inch ID vinyl tubing to the inlet end of a Gilian Dual Mode Low Flow Sampler LFS-113DC to the outlet end of a Gilian universal holder system. Both ends of the glass naphthalene tube (XAD-2®, Lot No. 8942; Exp. Jan/2019) from Test America were broken with a pair of needle nose pliers and placed inside the tube holder with the flow arrow pointing toward the pump. The tubes were elevated to a representative breathing zone exposure height (Table 1) by attaching the tube holder to the top of an expandable tripod. Samples were collected by pumping at a rate of 460 mL/min for 600 minutes (10 hours), resulting in a total pumped air volume of 276 liters. Due to the long pumping time, the pumps were monitored at approximately intervals of 15 minutes (access permitting) to ensure that sampling was not interrupted by equipment failure or other problems. No problems were encountered during collection of the samples. Appendix A contains pictures of the collection of the naphthalene indoor ambient air samples.

It should be noted that during the routine checks of the pumps, at approximately 9:10 am, an individual was found with a spray paint can in hand, intending to spray a discolored spot on the ceiling in the vicinity of AA-1/SS-1. We requested that this activity be postponed until sampling for naphthalene was completed. The individual indicated that the spot could be sprayed at a different time and that it would not interfere with their work.

Similarly, at approximately 3:50 pm, an outside contractor arrived to clean the carpet in the Duty Office where sampling location AA-2 was located. Again, the contractor was approached and persuaded to leave without cleaning the carpet until the ambient air sampling was completed.

Table 1. Sampling height for naphthalene in indoor air.

Sampling Location	Height of intake above floor (feet)
AA-1	4.90
AA-2	5.00
AA-3	4.74
AA-4	5.0
AA-5	4.90

After sample collection, tight-fitting caps were placed on both ends of the naphthalene tubes. An additional field blank was not collected for the collocated indoor air samples because ten or less total samples were collected this day and a field blank was collected for the sub-slab vapor samples. The capped tubes were placed in small plastic bags that were labeled on the outside and sealed by pressing the plastic ridges together. The samples were placed on ice in a

cooler with packing material to avoid damage and held overnight on ice. The samples were re-packed with fresh ice the next morning and taken back to the site. A chain-of-custody was prepared and the samples were delivered to the Test America Service Center in Columbus, Ohio on November 5, 2014. The samples were repacked by the Test America Service Center and shipped to Test America in West Sacramento, California for analysis.

2.3.2 Mercury

The second of two indoor ambient air sampling events was conducted for mercury on November 5, 2014. Indoor ambient air sampling locations were collocated with the five sub-slab vapor sampling points. Samples for mercury were collected at five locations (AA-1, AA-2, AA-3, AA-4, and AA-5) (Figure 3). The indoor air samples were collected during the same timeframe as the collocated sub-slab vapor samples.

Prior to sample collection, the Gilian Dual Mode Low Flow Sampler LFS-113DC was calibrated using a DryCal DC-Lite Primary Flow Meter Model DCL-L. Calibration was performed by connecting a mercury "calibration tube" (a mercury tube that would not subsequently be used to collect a sample) to ¼-inch ID vinyl tubing using 3/8-inch silicon tubing. The vinyl tubing was then connected to the pump. The mercury tube (Carulite, HYDRAR, Lot 8679, Exp. Aug/2018) was obtained from Test America. The inlet end of the tube holder was connected to the calibrator by 3/8-inch silicon tubing.

Samples were collected by connecting the outlet end of a glass mercury tube to ¼-inch ID vinyl tubing with a 3/8-inch silicon sleeve. The vinyl tubing was then connected to the inlet of a Gilian Dual Mode Low Flow Sampler LFS-113DC. Both ends of the glass mercury tube (Carulite, HYDRAR, Lot 8679, Exp. Aug/2018) from Test America were broken with a pair of needle nose pliers before placing the mercury tube in the silicon sleeve with the flow arrow pointing toward the pump. The tubes were elevated to a representative breathing zone exposure height (Table 2) by attaching the tube to the top of an expandable tripod. Samples were collected by pumping at a rate of 200 mL/min for 480 minutes (8 hours), resulting in a total pumped air volume of 96 liters. Due to the long pumping time, the pumps were monitored at approximately intervals of 15 minutes (access permitting) to ensure that sampling was not interrupted by equipment failure or other problems. No problems were encountered during collection of the samples. Appendix B contains pictures of the collection of the mercury indoor ambient air samples.

Table 2. Sampling height for mercury in indoor air.

Sampling Location	Height of intake above floor (feet)
AA-1	4.8
AA-2	5.09
AA-3	5.0
AA-4	5.0
AA-5	5.0

After sample collection, the mercury tubes were removed from the silicon sleeve and caps were placed on each end of the tube. An additional field blank was not collected for the collocated indoor air samples because ten or less total samples were collected this day and a field blank was collected as part of the sub-slab sampling. The capped tubes were placed in small plastic bags that were labeled on the outside and sealed by pressing the plastic ridges together. According to Test America, the mercury samples did not need to be cooled, so the samples were placed in a box with packing material and a chain-of-custody was prepared. The samples were delivered to the Test America Service Center in Columbus, Ohio on November 6, 2014 for packing and shipment to Test America, Phoenix, AZ for analysis.

2.4 Post-Sampling Activities

2.4.1 Abandonment of Sub-Slab Vapor Pins™

The five sub-slab Vapor Pin ^{TM} assemblies were abandoned on December 11, 2014. The Vapor Pin ^{TM} assemblies were abandoned by removing the protective metal cover and using a specialized tool to remove the barb and silicon sleeve. After the Vapor Pin ^{TM} assembly was removed, Akona Instant Patching Cement was used to fill the hole left by the Vapor Pin ^{TM} assembly. The patching cement was leveled to be flush with the existing floor and allowed to dry. Appendix C contains pictures of the abandonment procedures.

SECTION 3
ANALYTICAL RESULTS

3.1 Introduction

The scope of work of this project was to collect sub-slab vapor samples and indoor air samples for mercury and naphthalene from the existing Fairfield County Sheriff's Office and the MSMJ. This work was proposed to supplement soil data collected during March 2014 and reported in the July 7, 2014 report, *"Limited Phase II Environmental Site Assessment for the Proposed Fairfield County Jail/Public Safety Facility"* (Bennett & Williams, 2014). The results of the first of two sub-slab and indoor air sampling events conducted August 4 and 5, 2014 were presented in the October 2, report, *"Vapor Intrusion Assessment, Proposed Fairfield County Jail/Public Safety Facility and Existing Sheriff's Office and MSMJ, 334 Wheeling Street, Lancaster, Ohio"*. The results of the second of two sub-slab and indoor air sampling events (November 4 and 5, 2014) are presented in the following sections.

3.2 Sub-Slab Vapor Results

3.2.1 Mercury

One sample was collected from each of the five sub-slab vapor sampling points for mercury on November 5, 2014. Samples were analyzed by NIOSH Method 6009 by Test America in Phoenix, Arizona. Table 3 shows the sample location and analytical results. Appendix D contains the laboratory results for mercury. The results show that mercury was not detected above the laboratory reporting limit.

Table 3. Measured concentrations of mercury in sub-slab vapor (November 5, 2014).

Sampling Location	Concentration (mg/m^3)
SS-1	<0.000289
SS-2	<0.000289
SS-3	<0.000289
SS-4	<0.000289
SS-5	<0.000289

3.2.2 Naphthalene

One sample was collected from each of two sub-slab vapor sampling points for naphthalene on November 4, 2014. Samples were collected using the sampling methodology in Method TO-13A using XAD-2® media and analyzed by Method 8270C SIM by Test America in Sacramento, California. Table 4 shows the sample location and analytical results. Appendix E contains the laboratory results for naphthalene. The results show that naphthalene was not detected above the laboratory reporting limit.

Table 4. Measured concentrations of naphthalene in sub-slab vapor (November 4, 2014).

Sampling Location	Concentration (ug/L)
SS-1	<0.0072
SS-5	<0.0072

3.3 Indoor Air Results

3.3.1 Mercury

One sample for mercury was collected from each of the five sampling locations that were collocated with the sub-slab vapor sampling points on November 5, 2014. Samples were analyzed by NIOSH Method 6009 by Test America in Phoenix, Arizona. Table 5 shows the sample location and analytical results. Appendix D contains the laboratory results for mercury. The results show that mercury was not detected above the laboratory reporting limit.

Table 5. Measured concentrations of mercury in indoor air (November 5, 2014).

Sampling Location	Concentration (mg/m^3)
AA-1	<0.000271
AA-2	<0.000271
AA-3	<0.000271
AA-4	<0.000271
AA-5	<0.000271

3.3.2. Naphthalene

One sample for naphthalene was collected from each of the five indoor air sampling locations that were collocated with the sub-slab vapor sampling points on November 4, 2014. Samples were collected using the sampling methodology in Method TO-13A using XAD-2® media and analyzed by Method 8270C SIM by Test America in Sacramento, California. Table 6 shows the sample location and analytical results. Appendix E contains the laboratory results for naphthalene. The results show that naphthalene was not detected above the laboratory reporting limit.

Table 6. Measured concentrations of naphthalene in indoor air (November 4, 2014).

Sampling Location	Concentration (ug/L)
AA-1	<0.0036
AA-2	<0.0036
AA-3	<0.0036
AA-4	<0.0036
AA-5	<0.0036

SECTION 4
EXPOSED POPULATIONS AND EXPOSURE ROUTES

The Fairfield County Sheriff's Office and MSMJ is located in an urban area, in downtown Lancaster, Ohio. Previously, the site had been filled using primarily foundry sand. The Sheriff's Office and MSMJ will continue to be used in the near future, until the proposed Fairfield County Jail/Public Safety Facility is constructed adjacent to the current Sheriff's Office and MSMJ. Therefore, "future" use of the facility as referenced in the following risk assessments is the continuing use of this facility until the new Fairfield County Jail/Public Safety Facility is completed.

The site is supplied by both sanitary sewers and municipal water. The site is entirely paved and there is no direct access to the foundry sand beneath the building. Therefore, ingestion and dermal contact with contaminants of concern (COC's) in the foundry sand are not complete exposure pathways.

Given the current and future land use at the site, the populations with the potential to be impacted are current and future adult residents of the MSMJ and current and future adults working at the Sheriff's Office and MSMJ (Table 7). The current facilities do not have capacity for juvenile offenders and any child visitors can be expected to be onsite only for short periods of time while visiting adult offenders.

Table 7. Exposure pathways for risk assessment.

Land Use	Potentially Exposed Population	Exposure Route, Media and Exposure Point
Current and Future		
Industrial	On-site Workers	Inhalation of chemicals of concern in indoor air
Residential	On-site Adult Residents	Inhalation of chemicals of concern in indoor air

As discussed in the July 7, 2014 report, *"Limited Phase II Environmental Site Assessment for the Proposed Fairfield County Jail/Public Safety Facility"*, based on the concentrations of COCs in the foundry sand beneath the proposed footprint of the new Fairfield County Jail/Public Safety Facility, mercury and naphthalene were present in concentrations that warranted additional investigation. Based on the original soil analysis, the results from the risk assessment indicated that naphthalene had a hazard quotient of 0.118 for workers in the proposed Sheriff's office via the inhalation of indoor air. However, the hazard quotient for the inhalation of mercury in indoor air was an order of magnitude higher. In the scenarios investigated (for the exposure of adult workers and residents of the proposed Sheriff's Office and Public Safety Facility), the hazard quotient for mercury exceeded one (1). In general, a hazard quotient in

excess of 0.1 is considered to require additional investigation when a risk assessment is performed using concentrations of COC's in bulk soil because the analysis of bulk soil introduces increased uncertainty in the risk analysis. Therefore, Ohio EPA (2010) recommends further data collection (including soil gas sampling and analysis) prior to a definitive determination of risk.

As discussed in the October 2, 2014 report, *"Vapor Intrusion Assessment; Proposed Fairfield County Jail/Public Safety Facility and Existing Sheriff's Office and MSMJ"*, soil gas data for this analysis were collected on July 24 and 25, 2014 and September 4 and 5, 2014. No mercury or naphthalene was recorded in any soil gas probes above the laboratory detection limits. When calculating hazard quotients from soil gas data, a hazard quotient greater than one (1) is considered to pose a potential risk to exposed populations. A risk assessment for future workers and residents at the proposed Fairfield County Jail/Public Safety Facility demonstrated no increased non-carcinogenic risks to either workers or residents at the proposed facility, indicated by hazard quotients between 9.8×10^{-6} and 1.1×10^{-4}.

In order to assess the potential risks to current and future workers and residents at the MSMJ, sub-slab gas samples and collocated ambient air samples were collected on August 4 and 5, 2014 and November 4 and 5, 2014. The potential risks to current and future workers and residents at the MSMJ are assessed in Sections 5 (sub-slab gas analysis) and 6 (ambient air analysis).

SECTION 5
RISK ASSESSMENT – CURRENT WORKERS AND RESIDENTS
SUB-SLAB GAS MONITORING

5.1 Calculating Exposure Concentrations

Concentrations of mercury and naphthalene in indoor air in the current Sheriff's Office and MSMJ were estimated from sub-slab gas monitoring data (August 4 and 5, 2015 and November 4 and 5, 2014) using the Johnson and Ettinger (1991) model. Version 3.1 of the model was used (Environmental Quality Management, 2004).

Inputs to the Johnson and Ettinger model can be grouped as chemical-specific, soil-related, building-related, and exposure scenarios. Default chemical input parameters were used as provided in the look-up tables within the Johnson and Ettinger model and concentrations of mercury and naphthalene in sub-slab gas were used from Tables 8 and 9. Because all samples were reported as non-detect values, half the reporting limit was used as the default "concentration" in the sub-slab vapor for the purposes of the risk assessment as recommended by USEPA (1991).

Table 8. Measured concentrations of mercury in sub-slab gas samples.

Sampling Location	August 5, 2014 Concentration (mg/m^3)	November 5, 2014 Concentration (mg/m^3)
SS-1	<0.00289	<0.00289
SS-2	<0.00289	<0.00289
SS-3	<0.00289	<0.00289
SS-4	<0.00289	<0.00289
SS-5	<0.00289	<0.00289

Table 9. Measured concentrations of naphthalene in sub-slab gas samples.

Sampling Location	August 4, 2014 Concentration (ug/L)	November 4, 2014 Concentration (ug/L)
SS-1	<0.0072	<0.0072
SS-5	<0.0072	<0.0072

Input values used for all model runs pertaining to soil conditions at the site are listed in Table 10. Parameters describing the existing Sheriff's Office and MSMJ building are provided in Table 11.

Table 10. Input parameters for the Johnson and Ettinger model - soil parameters.

Parameter	Input Value	Units	Rationale
Average soil temperature	10	^{o}C	Default
Soil gas sampling depth, below grade	152	cm	Must be greater than depth below grade to bottom of enclosed floor space
Thickness of soil stratum A	152	cm	Soil stratum total depth must equal soil sampling depth
Soil stratum A SCS soil type	LS		Based on data from borings
Stratum A soil dry bulk density	1.62	g/cm^3	Model default for LS soil type
Stratum A soil total porosity	0.39		Model default for LS soil type
Stratum A soil water filled porosity	0.076	cm^3/cm^3	Model default for LS soil type

Table 11. Input parameters for the Johnson and Ettinger model - building parameters.

Parameter	Scenario	Input Value	Units	Rationale
Enclosed space floor thickness		10	cm	Model default
Soil-building pressure differential		40	$g/cm\text{-}s^2$	Model default
Enclosed floor space length		4650	cm	Based on area from Fairfield County Auditor
Enclosed floor space width		4650	cm	Based on area from Fairfield County Auditor
Enclosed space height		274	cm	Based on plans from Fairfield County by Beling Consultants
Floor-wall seam crack width		0.1	cm	Model default
Indoor air exchange rate		1	1/hr	Used model default for commercial/industrial buildings

Exposure scenarios were investigated for MSMJ inmates and adults working at the facility (Table 12). For the purposes of this assessment, residents were assumed to be exposed to the air inside the building for one year with continuous exposure 365 days a year. (According to Fairfield County personnel, the average stay in the Fairfield County jail is 14 days. However, for misdemeanors under ORC 2929.24, there are times when sentences can add to 360 days. Further, if there is a felony 5 charge, which is rare in Fairfield County, the time could exceed a year depending on multiple factors. Reportedly, the longest duration recently has been 18 months.) For adult workers in the existing Sheriff's Office and MSMJ, the exposure time was 25 years (USEPA recommended value for commercial/industrial exposure scenarios) with exposure 250 days a year (50 weeks a year, 5 days a week).

Table 12. Input parameters for the Johnson and Ettinger model - exposure scenarios.

Parameter	Scenario	Input Value	Units	Rationale
Averaging time for carcinogens		70	years	USEPA default
Averaging time for non-carcinogens	Adult resident	1	years	Averaging time equals exposure duration for non-carcinogens
	Adult worker	25	years	
Exposure duration	Adult resident	1	years	See text
	Adult worker	25	years	
Exposure frequency	Adult resident	365	days/year	See text
	Adult worker	250	days/year	

5.2 Non-Carcinogenic Risks

Results from the Johnson and Ettinger model are summarized in Table 13. No hazard indices greater than one (1) were reported for the scenarios investigated during this risk assessment. Mercury and naphthalene do not pose a threat to worker or resident health via the vapor intrusion pathway to indoor air in the current Sheriff's Office and the MSMJ, indicated by hazard quotients between 3.4×10^{-5} and 1.3×10^{-4}. Therefore, there is no increased risk due to either mercury or naphthalene for residents or workers due to vapor intrusion through the sub-slab into the existing building.

Table 13. Results from the Johnson and Ettinger Model based on sub-slab gas measurements.

Parameter	Scenario	Hazard quotient from vapor intrusion to indoor air (non-carcinogenic)
Mercury	Residential current MSMJ	1.9E-4
	Worker current MSMJ	1.3E-04
Naphthalene	Residential current MSMJ	5.0E-05
	Worker current MSMJ	3.4E-05

5.3 Uncertainty Associated with Indoor Air Risk Analysis

The Johnson and Ettinger model is a screening model that takes into account both convective and diffusive mechanisms and estimates the transport of contaminant vapors from soils into buildings located immediately above the contaminated soil. The Johnson and Ettinger model is a one-dimensional analytical model that takes into account contaminant attenuation as contaminants move from soil into soil gas into buildings. There is limited experimental data to assist in the definition of input parameters. Therefore, unless site-specific data were available, recommended model defaults were used to create a conservative estimate of vapor concentration.

In addition to the uncertainty associated with soil analytical information, the Johnson and Ettinger model has the following assumptions/limitations (according to Environmental Quality Management, 2004):

1. *"Contaminant vapors enter the structure primarily through cracks and openings in the walls and foundation.*

2. *Convective transport occurs primarily within the building zone of influence and vapor velocities decrease rapidly with increasing distance from the structure.*

3. *Diffusion dominates vapor transport between the source of contamination and the building zone of influence.*

4. *All vapors originating from below the building will enter the building unless the floor and walls are perfect vapor barriers.*

5. *All soil properties in any horizontal plane are homogenous.*

6. *The contaminant is homogenously distributed within the zone of contamination.*

7. *The areal extent of contamination is greater than that of the building floor in contact with the soil.*

8. *Vapor transport occurs in the absence of convective water movement within the soil column (i.e., evaporation of infiltration), and in the absence of mechanical dispersion.*

9. *The model does not account for transformation processes (e.g., biodegradation, hydrolysis, etc.).*

10. *The soil layer in contact with the structure floor and walls is isotropic with respect to permeability.*

11. *Both the building ventilation rate and the difference in dynamic pressure between the interior of the structure and the soil surface are constant values."*

Despite these assumptions and inherent limitations of the Johnson and Ettinger model, the model results have compared favorably to experimental case histories and three-dimensional numerical modeling of radon transport into homes (Ohio EPA, 2010). The recommended use of the Johnson and Ettinger model is to identify sites that may require further assessment with respect to the indoor air pathway. The model should be used only to assess whether a risk-exposure level may be exceeded at the site. It should not be used to predict the exact concentrations of contaminants in indoor air at a facility.

SECTION 6
RISK ASSESSMENT – CURRENT WORKERS AND RESIDENTS
AMBIENT AIR MONITORING

6.1 Calculating Exposure Concentrations

The purpose of collecting indoor air samples was to measure concentrations of mercury and naphthalene in indoor air in the event that the sub-slab vapor samples showed concentrations of naphthalene and/or mercury. No detections of mercury or naphthalene were reported in the sub-slab air samples and there is no increased risk due to either mercury or naphthalene for residents or workers due to vapor intrusion through the sub-slab into the existing building. However, in order to be thorough, a risk assessment was conducted using the data collected during the sampling of ambient air.

According to USEPA (2009), the steps in estimating exposure concentration include assessing exposure duration, exposure pattern, and exposure concentration. For purposes of this assessment, exposure duration for residents and workers will be considered "sub-chronic" and "chronic", respectively. In the guidance, chronic exposures are repeated exposures for more than 10 percent of the human lifespan.

The decision flow chart (Figure 2 in USEPA, 2009), requires that sub-chronic exposure concentrations are calculated if the repeated periods of exposure are at least as frequent as a sub-chronic toxicity test (6 to 8 hours a day, 5 days/week). If the exposure frequency is at least as frequent as a chronic toxicity test or an occupational study (6 to 8 hours a day, 5 days a week, 50 weeks a year), then a chronic exposure concentration should be calculated. In practicality, the equation used to calculate the exposure concentration for both sub-chronic and chronic exposures is the same (Equation 1).

$$EC = \frac{CA \times ET \times EF \times ED}{AT} \qquad \text{Equation 1}$$

Where:
- EC = Exposure concentration (mg/m^3)
- CA = Contaminant concentration in air (mg/m^3)
- ET = Exposure time (hours/day)
- EF = Exposure frequency (days/year)
- ED = Exposure duration (years)
- AT = Averaging time (days)

Concentrations of mercury (Table 14) and naphthalene (Table 15) in indoor air were measured at five locations inside the current Sheriff's Office and MSMJ. After the first ambient air sampling in August 2014, when all samples returned non-detect values, it was decided to increase the volume of sample collected to further reduce the reporting limit. For mercury, the maximum volume of air recommended by the laboratory to be introduced through the tube was 100 liters. Therefore, the total volume of air sampled (96 liters) was just below the maximum

recommended amount. Similarly, the laboratory recommended that volume of air sampled for naphthalene not exceed 480 liters. Therefore, the total volume of air sampled (460 liters) was just below the recommended maximum amount. There were no detections of mercury or naphthalene in the ambient air, even at the reduced reporting limits used in November 2014. Because all samples were reported to be non-detect values, half the November 2014 reporting limits were used as the default "concentration" in the ambient air for the purposes of the risk assessment as recommended by USEPA (1991).

Table 14. Measured concentrations of mercury in ambient air samples.

Sampling Location	August 5, 2014 Concentration (mg/m^3)	November 5, 2014 Concentration (mg/m^3)
AA-1	<0.000543	<0.000271
AA-2	<0.000543	<0.000271
AA-3	<0.000543	<0.000271
AA-4	<0.000543	<0.000271
AA-5	<0.000543	<0.000271

Table 15. Measured concentrations of naphthalene in ambient air samples.

Sampling Location	August 4, 2014 Concentration (ug/L)	November 4, 2014 Concentration (ug/L)
AA-1	<0.0072	<0.0036
AA-2	<0.0072	<0.0036
AA-3	<0.0072	<0.0036
AA-4	<0.0072	<0.0036
AA-5	<0.0072	<0.0036

The exposure scenario for workers used in the calculations was 250 days per year for 25 years for eight hours a day at the Sheriff's Office and MSMJ. This exposure scenario, which assumes that a worker is exposed 50 weeks/year and 5 days per week, is the recommended scenario for workers at an industrial or commercial facility. This scenario is conservative because most employees at the Sheriff's Office do not spend their entire shift inside the facility. An averaging time of 25 years was used for this scenario.

For the purposes of this assessment, residents were assumed to be exposed to the air inside the building for one year with continuous exposure 365 days a year. (According to Fairfield County personnel, the average stay in the Fairfield County jail is 14 days. However, for misdemeanors under ORC 2929.24, there are times when sentences can add to 360 days. Further, if there is a felony 5 charge, which is rare in Fairfield County, the time could exceed a year depending on multiple factors. Reportedly, the longest duration recently has been 18 months.)

6.2 Non-Carcinogenic Risks

The exposure concentrations (EC) calculated for mercury and naphthalene were compared to RfC values for mercury and naphthalene. This resulted in a hazard quotient that was used to quantify non-carcinogenic risk for workers and residents at the Sheriff's Office and MSMJ.

The hazard quotient for each volatile COC was calculated as:

$$HQ = EC / RfC \qquad \text{Equation 2}$$

Where HQ = Hazard quotient
EC = Exposure concentration (mg/m^3)
RfC = Reference concentration (mg/m^3)

The non-cancer risks from inhalation exposure to mercury and naphthalene at the site are summarized in Table 16. In general, a hazard index greater than one (1) is considered to pose an unacceptable risk. No excess health risk is posed to workers in the existing Sheriff's Office and MSMJ by mercury or naphthalene in the ambient air (hazard quotients of 0.10 and 0.14, respectively). This confirms the analysis of sub-slab mercury and naphthalene concentrations that also demonstrated no health risk to workers in the Sheriff's Office and MSMJ (Section 5). Similarly, mercury and naphthalene do not pose a substantial risk to residents in the MSMJ (hazard quotients of 0.45 and 0.60, respectively) (Table 16).

Table 16. Risk posed by inhalation of mercury and naphthalene to workers and residents at the existing Fairfield County Sheriff's Office and MSMJ.

Chemicals of Concern	CA (mg/m^3)	Exposure Concentration (mg/m^3)		RfC (mg/m^3)	Hazard Quotient	
		Worker	Residential		Worker	Residential
Mercury	1.36E-04	3.09E-05	1.36E-04	3.00E-04	0.10	0.45
Naphthalene	1.80E-03	4.11E-04	1.80E-03	3.00E-03	0.14	0.60

6.3 Uncertainty Associated with Inhalation Risk Analysis

6.3.1 Calculation of Exposure Concentrations

The exposure concentrations calculated for chronic and sub-chronic exposure do not account for short time periods during which workers and residents may be exposed to elevated concentrations of mercury and/or naphthalene. Exposure concentrations are also dependent on the exposure time. Exposure time was estimated to provide a conservative (i.e., elevated) risk. Therefore, an exposure time of one year was used for residents, even though the average stay in the MSMJ is fourteen days. For workers, an exposure time of eight hours was used, even though workers do not spend the entirety of every shift inside the Sheriff's Office and MSMJ.

6.3.2 Risk from Multiple Chemicals

Assessing risk from mixtures of chemicals is the subject of several USEPA guidance documents (USEPA, 1986 and USEPA, 2000). In general, there are three quantitative methods for assessing risk from chemical mixtures:

- If there is data on a "sufficiently similar" mixture, use toxicologic data on the characterized mixture;

- If chemicals have similar methods of toxicity and target organs, dose addition may be used; and

- If chemicals have dissimilar methods of toxicity and target different organs, response addition may be used.

There is no readily available information on toxicological responses of a "sufficiently similar mixture". In this situation, dose addition or response addition may be used. USEPA (2000) also allows for the performance of a qualitative risk assessment on the impact from multiple chemicals if there is insufficient data to complete a quantitative risk assessment.

In this case, two distinct groups of chemicals contribute hazard quotients to the total risk posed by the inhalation of volatile compounds: mercury and naphthalene. The critical effects caused by naphthalene (according to IRIS) are nasal effects, including "*hyperplasia and metaphasia in respiratory and olfactory epithelium, respectively*". However, the critical effects of the inhalation of mercury are "*hand tremor, increases in memory disturbance, slight subjective and objective evidence of autonomic dysfunction*". Therefore, naphthalene impacts the lungs and nose, while mercury impacts the nervous system. Given these two distinct modes of action, it is not appropriate to sum the hazard indices across the target organs.

SECTION 7
SUMMARY AND CONCLUSIONS

Two sub-slab vapor monitoring and indoor ambient air monitoring events for mercury and naphthalene were performed in August and November 2014 in the existing Sheriff's Office and the MSMJ. No mercury or naphthalene was recorded in any sub-slab air samples or in the indoor air above the laboratory detection limits. A risk assessment for current workers and residents at the existing Sheriff's Office and MSMJ demonstrated no increased non-carcinogenic risks to either workers or residents at the current facility.

SECTION 8
REFERENCES

Bennett & Williams, July 7, 2014. Limited Phase II Environmental Site Assessment for the Proposed Fairfield County Jail/Public Safety Facility, 334 West Wheeling Street, Lancaster, Ohio. 601 pp.

Bennett & Williams, October 2, 2014. Vapor Intrusion Assessment for the Proposed Fairfield County Jail/Public Safety Facility and Existing Sheriff's Office and MSMJ, 334 West Wheeling Street, Lancaster, Ohio. 187 pp.

Environmental Quality Management, 2004. User's guide for evaluating subsurface vapor intrusion into buildings. Report prepared for Industrial Economic Incorporated. EPA contract number 68-W-02-33, work assignment 004, PN 030224.0002, 133 pp.

Ohio EPA, May 2010. Sample Collection and Evaluation of Vapor Intrusion to Indoor Air, For Remedial Response and Voluntary Action Programs, Guidance Document, Division of Environmental Response and Revitalization, 114 pp.

USEPA, 1986. Guidance for the health risk assessment of chemical mixtures (Federal Register 51(185): 34014-34025). Risk Assessment Forum, USEPA, Washington, DC. 38 pp.

USEPA, 1991. Technical Guidance Manual – EPA Region 3 Guidance on Handling Chemical Concentration Data Near the Detection Limit in Risk Assessments. http://www.epa.gov/reg3hscd/risk/human/info/guide3.htm. Date accessed September 24, 2014.

USEPA, 2000. Supplementary guidance for conducting health risk assessment of chemical mixtures. Risk Assessment Forum Technical Panel, USEPA, Washington, DC. 209 pp.

USEPA, 2009. Risk assessment guidance for Superfund Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for inhalation risk assessment). Office of Superfund Remediation and Technology Innovation, EPA/540/R/070/002, 68 pp.

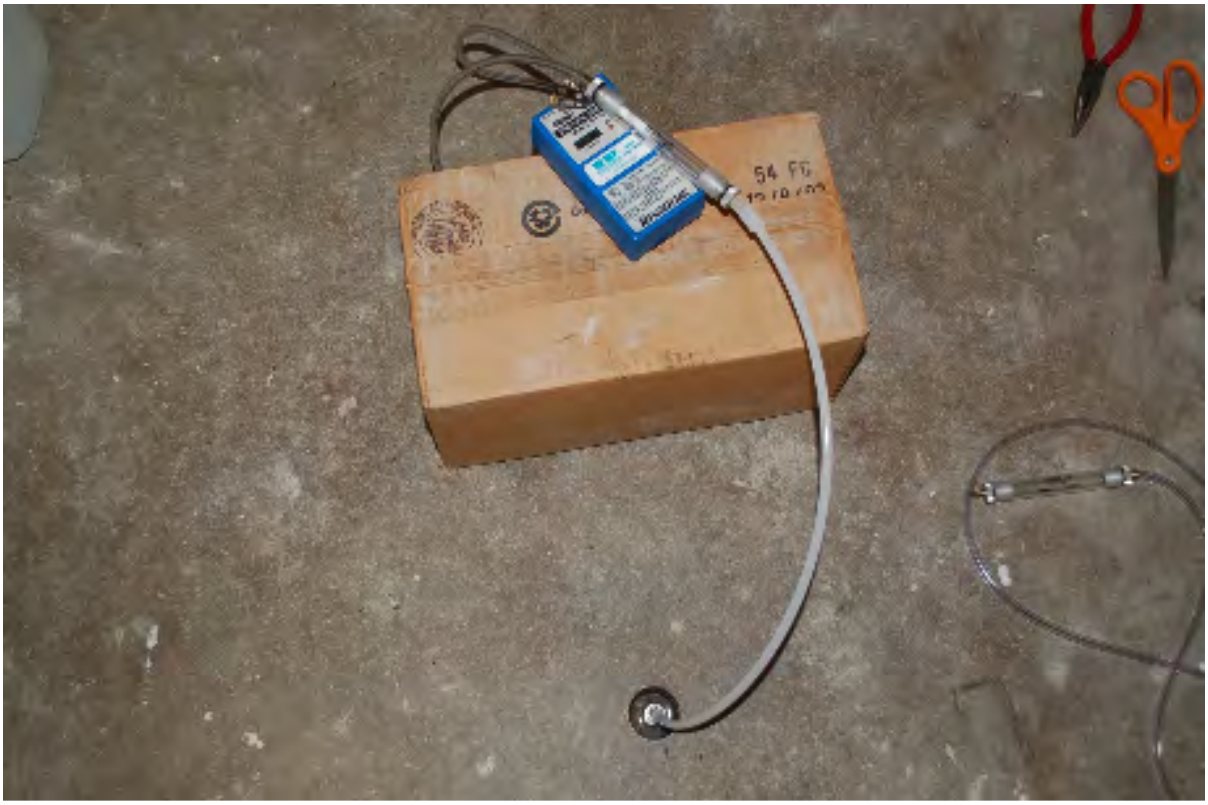
Appendix A

Photographs of Collection of Indoor Air Samples for Naphthalene

A-1. Integrity testing of sub-slab vapor sampling point SS-4 prior to sampling (November 4, 2014).

A-2. Calibration of Gilian low flow sampling pump at AA-2 using DryCal flow meter and naphthalene "calibration tube" (November 4, 2014).

A-3. Breaking ends of naphthalene tube prior to sample collection (November 4, 2014).



A-4. Collection of sub-slab vapor sample for naphthalene at SS-5 (November 4, 2014).

A-5. Collection of naphthalene sample at AA-4 (November 4, 2014).

A-6. Close up of naphthalene tube in Gilian universal holder system (November 4, 2014).

A-7. Co-located sub-slab and ambient air samples for naphthalene at SS-5 and AA-5 (November 4, 2014).

A-8. Naphthalene tube after sample collected with tight end caps prior to placing in plastic bag for labelling and shipping to laboratory (November 4, 2014).

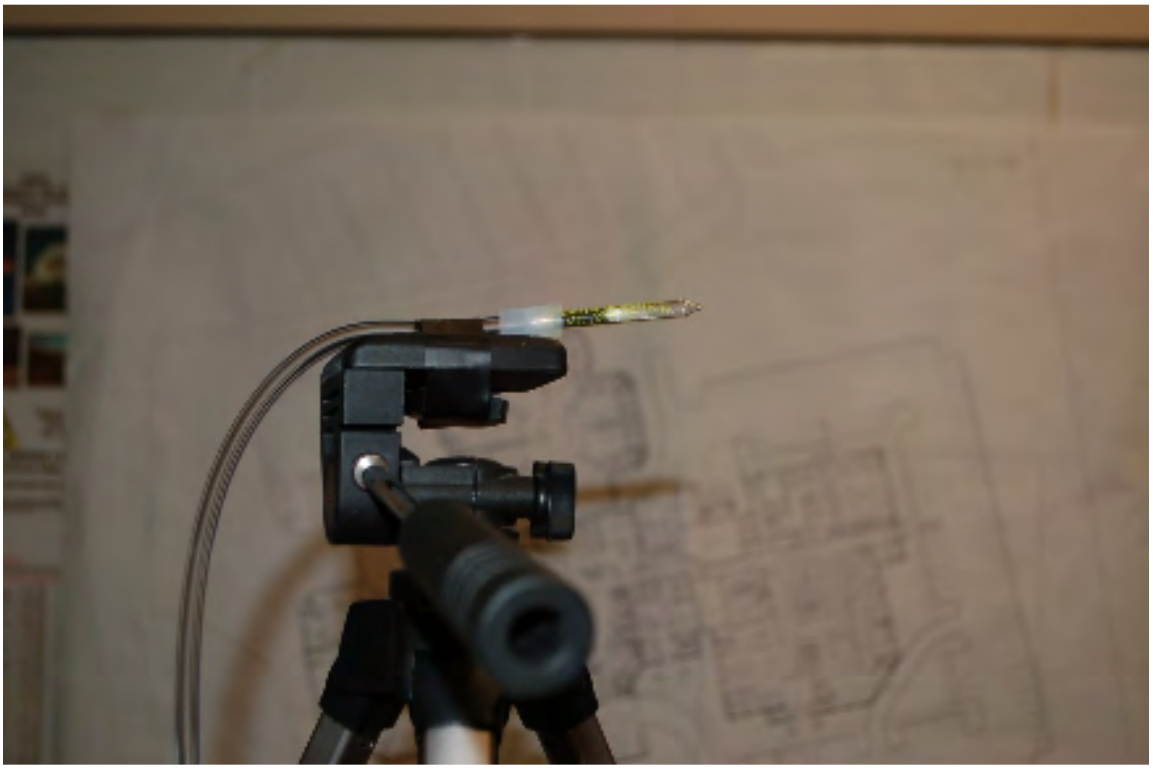
Appendix B

Photographs of Collection of Indoor Air Samples for Mercury

B-1. Close-up of mercury tube connected to sub-slab vapor pin (Teflon tubing) and Gilian Dual Mode Low Flow Sampler (Tygon tubing) with silicon sleeves (November 5, 2014).

B-2. Sub-slab vapor pin sampling at SS-2 (November 5, 2014).

B-3. Breaking ends of mercury tube with needle nose pliers prior to sample collection (November 5, 2014).



B-4. Close up of mercury tube on top of tripod during ambient air sampling at AA-2 (November 5, 2014).

B-5. Co-located sub-slab and ambient air samples at AA-3/SS-3 (November 5, 2014).

B-6. Mercury tube after sample collection with tight-fitting caps, placed in plastic bag and labelled for shipment to laboratory for analysis (November 5, 2014).

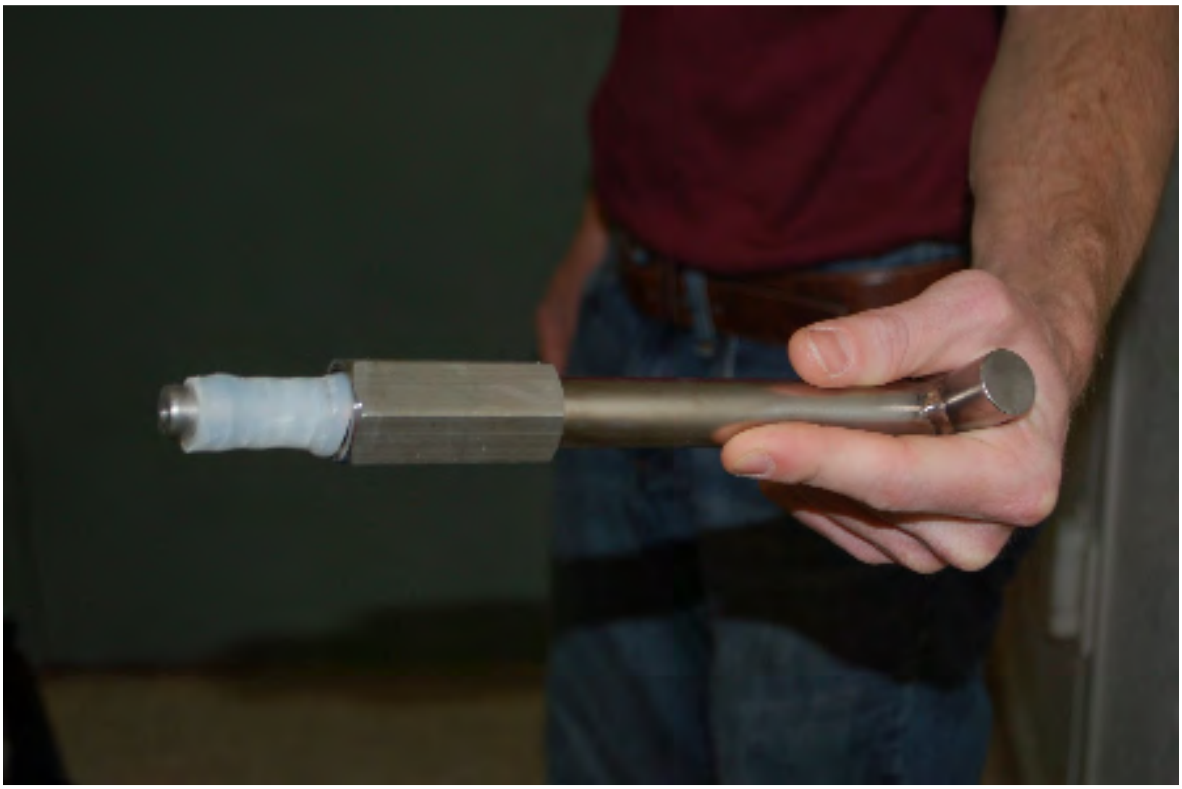
Appendix C

Photographs of Abandonment of Sub-Slab Vapor Pins

C-1. Removal of the cover plate for the sub-slab Vapor Pin™ assembly with the spanner tool.

C-2. Removal of the cap from the sub-slab Vapor Pin™ assembly.

C-3. Using specialized tool to remove sub-slab Vapor Pin™ assembly.



C-4. Sub-slab Vapor Pin™ assembly removed from the floor slab.

C-5. Hole in floor slab after removal of sub-slab Vapor Pin™ assembly.

C-6. Filling hole in floor slab with patching cement.

Appendix D

Analytical Results of Sub-Slab Vapor Samples And Indoor Air for Mercury (November 5, 2014)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Phoenix
4625 East Cotton Ctr Blvd
Suite 189
Phoenix, AZ 85040
Tel: (602)437-3340

TestAmerica Job ID: 550-34697-1
TestAmerica Sample Delivery Group: 14-04
Client Project/Site: Fairfield Phase II

For:
Bennett & Williams Env. Consultants Inc.
98 County Line Road West
Suite C
Westerville, Ohio 43082

Attn: Ms. Linda Aller

Authorized for release by:
11/10/2014 3:58:54 PM

Carlene McCutcheon, Project Manager II
(602)659-7612
carlene.mccutcheon@testamericainc.com

Analyses included in this report were performed by TestAmerica Phoenix, 4625 E. Cotton Center Boulevard, Building 3, Suite 189, Phoenix, AZ 85040.

TestAmerica Phoenix (Lab ID 154268) is accredited by the American Industrial Hygiene Association (AIHA) in the industrial hygiene program for the analytical techniques noted on the scope of accreditation for the following methods:

NIOSH 0500, NIOSH 0600, NIOSH 1003, NIOSH 1005, NIOSH 1007, NIOSH 1010, NIOSH 1015, NIOSH 1022, NIOSH 1300, NIOSH 1400, NIOSH 1401, NIOSH 1403, NIOSH 1405, NIOSH 1450, NIOSH 1457, NIOSH 1500, NIOSH 1501, NIOSH 1550, NIOSH 1602, NIOSH 1604, NIOSH 1606, NIOSH 1609, NIOSH 1610, NIOSH 1611, NIOSH 1613, NIOSH 1615, NIOSH 2000, NIOSH 2016, NIOSH 2532, NIOSH 2546, NIOSH 2551, NIOSH 5000, NIOSH 5039, NIOSH 5503, NIOSH 5506, NIOSH 5523, NIOSH 5600, NIOSH 6006, NIOSH 6009, NIOSH 6010, NIOSH 6013, NIOSH 7300, NIOSH 7303, NIOSH 7600, NIOSH 7903, NIOSH 9100, NIOSH 9102, EPA IP-6A, EPA IP-6C, OSHA 7, OSHA 42, OSHA 47, OSHA 48, OSHA 64, OSHA 69, OSHA 111, OSHA ID-121, OSHA ID-125G, OSHA ID-140, OSHA ID-188, OSHA ID-215, OSHA 1001, OSHA 1002, OSHA 1003, OSHA 1004, OSHA 1005, OSHA 1007, OSHA 1009, OSHA 1014 and OSHA Chemical and Sampling Information for Silane. Volatile organic compounds on 3M Organic Vapor Monitors, Assay Technology Passive Monitors and SKC Passive Monitors. Formaldehyde and other aldehydes and ketones on Assay Technology passive monitor and SKC Umex 100 passive sampler by EPA TO-11A and OSHA 1007. Radiello diffusive sampler for hydrogen sulfide.

TestAmerica Phoenix also holds NELAC accreditation through the State of Oregon (AZ100001) for the analytical techniques noted on the scope of accreditation and the State of New York (11898) for NIOSH 6009, NIOSH 7300, EPA TO-10A, EPA TO-11A and EPA TO-17.

Analytical Comments:

Unless otherwise noted, all method blanks and laboratory control spikes met method and/or laboratory quality control objectives for the analyses included in this report.

Unless otherwise noted, sample results have been corrected for method blank values.

NIOSH Method 7300 analyses are performed using a modified digestion procedure to eliminate the use of perchloric acid.

Carlene McCutcheon
Project Manager II
11/10/2014 3:58:54 PM

Table of Contents

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 550-34697-1

Laboratory: TestAmerica Phoenix

Narrative

Job Narrative
550-34697-1

Comments
No additional comments.

Receipt
The samples were received on 11/7/2014 9:30 AM; the samples arrived in good condition. The temperature of the cooler at receipt was 20.0º C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

IH - Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Phase II

TestAmerica Job ID: 550-34697-1
SDG: 14-04

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
550-34697-1	AA-1	Air	11/05/14 00:00	11/07/14 09:30
550-34697-2	AA-2	Air	11/05/14 00:00	11/07/14 09:30
550-34697-3	AA-3	Air	11/05/14 00:00	11/07/14 09:30
550-34697-4	AA-4	Air	11/05/14 00:00	11/07/14 09:30
550-34697-5	AA-5	Air	11/05/14 00:00	11/07/14 09:30
550-34697-6	SS-5	Air	11/05/14 00:00	11/07/14 09:30
550-34697-7	SS-4	Air	11/05/14 00:00	11/07/14 09:30
550-34697-8	SS-3	Air	11/05/14 00:00	11/07/14 09:30
550-34697-9	SS-1	Air	11/05/14 00:00	11/07/14 09:30
550-34697-10	SS-2	Air	11/05/14 00:00	11/07/14 09:30
550-34697-11	Field Blank	Air	11/05/14 00:00	11/07/14 09:30

Detection Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Phase II

TestAmerica Job ID: 550-34697-1
SDG: 14-04

Client Sample ID: AA-1 — **Lab Sample ID: 550-34697-1**

No Detections.

Client Sample ID: AA-2 — **Lab Sample ID: 550-34697-2**

No Detections.

Client Sample ID: AA-3 — **Lab Sample ID: 550-34697-3**

No Detections.

Client Sample ID: AA-4 — **Lab Sample ID: 550-34697-4**

No Detections.

Client Sample ID: AA-5 — **Lab Sample ID: 550-34697-5**

No Detections.

Client Sample ID: SS-5 — **Lab Sample ID: 550-34697-6**

No Detections.

Client Sample ID: SS-4 — **Lab Sample ID: 550-34697-7**

No Detections.

Client Sample ID: SS-3 — **Lab Sample ID: 550-34697-8**

No Detections.

Client Sample ID: SS-1 — **Lab Sample ID: 550-34697-9**

No Detections.

Client Sample ID: SS-2 — **Lab Sample ID: 550-34697-10**

No Detections.

Client Sample ID: Field Blank — **Lab Sample ID: 550-34697-11**

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Phase II

TestAmerica Job ID: 550-34697-1
SDG: 14-04

Client Sample ID: AA-1

Lab Sample ID: 550-34697-1
Matrix: Air
Date Collected: 11/05/14 00:00
Date Received: 11/07/14 09:30
Sample Air Volume: 96 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.000271			0.0260	11/10/14 07:16	11/10/14 09:24	1

Client Sample ID: AA-2

Lab Sample ID: 550-34697-2
Matrix: Air
Date Collected: 11/05/14 00:00
Date Received: 11/07/14 09:30
Sample Air Volume: 96 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.000271			0.0260	11/10/14 07:16	11/10/14 09:25	1

Client Sample ID: AA-3

Lab Sample ID: 550-34697-3
Matrix: Air
Date Collected: 11/05/14 00:00
Date Received: 11/07/14 09:30
Sample Air Volume: 96 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.000271			0.0260	11/10/14 07:16	11/10/14 09:27	1

Client Sample ID: AA-4

Lab Sample ID: 550-34697-4
Matrix: Air
Date Collected: 11/05/14 00:00
Date Received: 11/07/14 09:30
Sample Air Volume: 96 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.000271			0.0260	11/10/14 07:16	11/10/14 09:28	1

Client Sample ID: AA-5

Lab Sample ID: 550-34697-5
Matrix: Air
Date Collected: 11/05/14 00:00
Date Received: 11/07/14 09:30
Sample Air Volume: 96 L
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.000271			0.0260	11/10/14 07:16	11/10/14 09:33	1

Client Sample ID: SS-5 — Lab Sample ID: 550-34697-6

Date Collected: 11/05/14 00:00
Date Received: 11/07/14 09:30
Sample Air Volume: 9 L
Matrix: Air
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	11/10/14 07:16	11/10/14 09:35	1

Client Sample ID: SS-4 — Lab Sample ID: 550-34697-7

Date Collected: 11/05/14 00:00
Date Received: 11/07/14 09:30
Sample Air Volume: 9 L
Matrix: Air
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	11/10/14 07:16	11/10/14 09:36	1

Client Sample ID: SS-3 — Lab Sample ID: 550-34697-8

Date Collected: 11/05/14 00:00
Date Received: 11/07/14 09:30
Sample Air Volume: 9 L
Matrix: Air
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	11/10/14 07:16	11/10/14 09:38	1

Client Sample ID: SS-1 — Lab Sample ID: 550-34697-9

Date Collected: 11/05/14 00:00
Date Received: 11/07/14 09:30
Sample Air Volume: 9 L
Matrix: Air
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	11/10/14 07:16	11/10/14 09:39	1

Client Sample ID: SS-2 — Lab Sample ID: 550-34697-10

Date Collected: 11/05/14 00:00
Date Received: 11/07/14 09:30
Sample Air Volume: 9 L
Matrix: Air
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result mg/m3	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260	<0.00289			0.0260	11/10/14 07:16	11/10/14 09:41	1

Client Sample Results

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Phase II

TestAmerica Job ID: 550-34697-1
SDG: 14-04

Client Sample ID: Field Blank
Date Collected: 11/05/14 00:00
Date Received: 11/07/14 09:30
Sample Air Volume: 0 L

Lab Sample ID: 550-34697-11
Matrix: Air
Sample Container: IH - Anasorb C300, 200 mg

Method: 6009 - Mercury (CVAA)

Analyte	Result ug/Sample	Result	Result	Qualifier	RL ug/Sample	Prepared	Analyzed	Dil Fac
Mercury	<0.0260				0.0260	11/10/14 07:16	11/10/14 09:42	1

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Phase II

TestAmerica Job ID: 550-34697-1
SDG: 14-04

Method: 6009 - Mercury (CVAA)

Lab Sample ID: MB 550-49021/12-A
Matrix: Air
Analysis Batch: 49048

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49021

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.0260		0.0260		ug/Sample		11/10/14 07:16	11/10/14 09:07	1

Lab Sample ID: LCS 550-49021/13-A
Matrix: Air
Analysis Batch: 49048

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49021

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.500	0.5412		ug/Sample		108	74 - 127		

Lab Sample ID: LCSD 550-49021/14-A
Matrix: Air
Analysis Batch: 49048

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49021

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			0.500	0.5442		ug/Sample		109	74 - 127	1	20

IH - Metals

Prep Batch: 49021

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-34697-1	AA-1	Total/NA	Air	Tube Prep	
550-34697-2	AA-2	Total/NA	Air	Tube Prep	
550-34697-3	AA-3	Total/NA	Air	Tube Prep	
550-34697-4	AA-4	Total/NA	Air	Tube Prep	
550-34697-5	AA-5	Total/NA	Air	Tube Prep	
550-34697-6	SS-5	Total/NA	Air	Tube Prep	
550-34697-7	SS-4	Total/NA	Air	Tube Prep	
550-34697-8	SS-3	Total/NA	Air	Tube Prep	
550-34697-9	SS-1	Total/NA	Air	Tube Prep	
550-34697-10	SS-2	Total/NA	Air	Tube Prep	
550-34697-11	Field Blank	Total/NA	Air	Tube Prep	
LCS 550-49021/13-A	Lab Control Sample	Total/NA	Air	Tube Prep	
LCSD 550-49021/14-A	Lab Control Sample Dup	Total/NA	Air	Tube Prep	
MB 550-49021/12-A	Method Blank	Total/NA	Air	Tube Prep	

Analysis Batch: 49048

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-34697-1	AA-1	Total/NA	Air	6009	49021
550-34697-2	AA-2	Total/NA	Air	6009	49021
550-34697-3	AA-3	Total/NA	Air	6009	49021
550-34697-4	AA-4	Total/NA	Air	6009	49021
550-34697-5	AA-5	Total/NA	Air	6009	49021
550-34697-6	SS-5	Total/NA	Air	6009	49021
550-34697-7	SS-4	Total/NA	Air	6009	49021
550-34697-8	SS-3	Total/NA	Air	6009	49021
550-34697-9	SS-1	Total/NA	Air	6009	49021
550-34697-10	SS-2	Total/NA	Air	6009	49021
550-34697-11	Field Blank	Total/NA	Air	6009	49021
LCS 550-49021/13-A	Lab Control Sample	Total/NA	Air	6009	49021
LCSD 550-49021/14-A	Lab Control Sample Dup	Total/NA	Air	6009	49021
MB 550-49021/12-A	Method Blank	Total/NA	Air	6009	49021

Lab Chronicle

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Phase II

TestAmerica Job ID: 550-34697-1
SDG: 14-04

Client Sample ID: AA-1
Lab Sample ID: 550-34697-1
Date Collected: 11/05/14 00:00
Matrix: Air
Date Received: 11/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			49021	11/10/14 07:16	JRC	TAL PHX
Total/NA	Analysis	6009		1	49048	11/10/14 09:24	JRC	TAL PHX

Client Sample ID: AA-2
Lab Sample ID: 550-34697-2
Date Collected: 11/05/14 00:00
Matrix: Air
Date Received: 11/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			49021	11/10/14 07:16	JRC	TAL PHX
Total/NA	Analysis	6009		1	49048	11/10/14 09:25	JRC	TAL PHX

Client Sample ID: AA-3
Lab Sample ID: 550-34697-3
Date Collected: 11/05/14 00:00
Matrix: Air
Date Received: 11/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			49021	11/10/14 07:16	JRC	TAL PHX
Total/NA	Analysis	6009		1	49048	11/10/14 09:27	JRC	TAL PHX

Client Sample ID: AA-4
Lab Sample ID: 550-34697-4
Date Collected: 11/05/14 00:00
Matrix: Air
Date Received: 11/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			49021	11/10/14 07:16	JRC	TAL PHX
Total/NA	Analysis	6009		1	49048	11/10/14 09:28	JRC	TAL PHX

Client Sample ID: AA-5
Lab Sample ID: 550-34697-5
Date Collected: 11/05/14 00:00
Matrix: Air
Date Received: 11/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			49021	11/10/14 07:16	JRC	TAL PHX
Total/NA	Analysis	6009		1	49048	11/10/14 09:33	JRC	TAL PHX

Client Sample ID: SS-5
Lab Sample ID: 550-34697-6
Date Collected: 11/05/14 00:00
Matrix: Air
Date Received: 11/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			49021	11/10/14 07:16	JRC	TAL PHX
Total/NA	Analysis	6009		1	49048	11/10/14 09:35	JRC	TAL PHX

Lab Chronicle

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Phase II

TestAmerica Job ID: 550-34697-1
SDG: 14-04

Client Sample ID: SS-4
Lab Sample ID: 550-34697-7
Date Collected: 11/05/14 00:00
Matrix: Air
Date Received: 11/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			49021	11/10/14 07:16	JRC	TAL PHX
Total/NA	Analysis	6009		1	49048	11/10/14 09:36	JRC	TAL PHX

Client Sample ID: SS-3
Lab Sample ID: 550-34697-8
Date Collected: 11/05/14 00:00
Matrix: Air
Date Received: 11/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			49021	11/10/14 07:16	JRC	TAL PHX
Total/NA	Analysis	6009		1	49048	11/10/14 09:38	JRC	TAL PHX

Client Sample ID: SS-1
Lab Sample ID: 550-34697-9
Date Collected: 11/05/14 00:00
Matrix: Air
Date Received: 11/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			49021	11/10/14 07:16	JRC	TAL PHX
Total/NA	Analysis	6009		1	49048	11/10/14 09:39	JRC	TAL PHX

Client Sample ID: SS-2
Lab Sample ID: 550-34697-10
Date Collected: 11/05/14 00:00
Matrix: Air
Date Received: 11/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			49021	11/10/14 07:16	JRC	TAL PHX
Total/NA	Analysis	6009		1	49048	11/10/14 09:41	JRC	TAL PHX

Client Sample ID: Field Blank
Lab Sample ID: 550-34697-11
Date Collected: 11/05/14 00:00
Matrix: Air
Date Received: 11/07/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Tube Prep			49021	11/10/14 07:16	JRC	TAL PHX
Total/NA	Analysis	6009		1	49048	11/10/14 09:42	JRC	TAL PHX

Laboratory References:

TAL PHX = TestAmerica Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

Certification Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Phase II

TestAmerica Job ID: 550-34697-1
SDG: 14-04

Laboratory: TestAmerica Phoenix

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
AIHA-LAP, LLC	IHLAP		154268	07-01-15

Method Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Phase II

TestAmerica Job ID: 550-34697-1
SDG: 14-04

Method	Method Description	Protocol	Laboratory
6009	Mercury (CVAA)	NIOSH	TAL PHX

Protocol References:

NIOSH = NIOSH Manual Of Analytical Methods, National Institute For Occupational Safety And Health, 4th Edition, August 1994.

Laboratory References:

TAL PHX = TestAmerica Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

estAmerica Laboratories, Inc.; Phoenix Laboratory - 4625 E. Cotton Center Blvd., Suite 189, Phoenix, AZ 85040 602.437.3340 Fax 602.454.9303
ww.testamericainc.com or Call 1.866.772.5227

11/10/2014

Lab Number: 550-34697

ompany: BENNETT & WILLIAMS		Page 1 of 1	
ontact Name: LINDA ALLER		Sampler Name and Phone Number: Matthew Swartz, Nancy Gogle, Linda Aller (614)361-0153	
Mail Address: lallee@bennettandwilliams.com	Phone: (614)361-0153	Project Name: Fairfield Phase II	
ddress: 98 County Line Rd. West, Suite C		Project Number: 14-04	
ty, State, Zip: Westerville, Ohio 43082		P.O. Number: —	Data Package:
end Report To: LINDA ALLER	Phone: (614)361-0153	Hardcopy Results: Y (N)	Standard Level II:
Mail Address: lallee@bennettandwilliams.com		E-Mail Results: (Y) N	Level III:
end Invoice To: LINDA ALLER	Phone: (614)361-0153	EDD: Y N	Level IV:
Mail Address: lallee@bennettandwilliams.com			

Sample Receipt

mperature 20.J °C AM

mple Seals Intact: Yes_____ No_____

mple Seals Intact: Yes_____ No_____

tal # of Samples:_____

Turn Around Request

_____ Same Day _____ 3 Business Days

_____ 1 Business Day _____ 4 Business Days

_____ 2 Business Days _____ 5 Business Days (Standard)

Rushes are subject to availability. (Surcharges apply)

550-34697 Chain of Custody

Analysis Method(s)/Analyte(s)

NIOSH 6009 / Hg

Sample Information

Lab # (Internal Use Only)	Media Type: Filter, Passive Badge, Tube or Wipe	Pump ID Number	Flow Rate (Liters/minute)	Sample Identification Name/Number	Collection Date	Start Time	Stop Time	Total Minutes Sampled (Badge Only)	Total Volume (Liters)	Area Wiped in cm2	Sampling Temperature (°C)	Sampling Pressure (mmHg)	
-1	Tube	B200646	0.2	AA-1	11/5/14	7:45A	3:45P	480	96				X
-2	Tube	B205848	0.2	AA-2	11/5/14	7:56A	3:56P	480	96				X
-3	Tube	B198778	0.2	AA-3	11/5/14	8:05A	4:05P	480	96				X
-4	Tube	B202578	0.2	AA-4	11/5/14	8:23A	4:23P	480	96				X
-5	Tube	B198638	0.2	AA-5	11/5/14	8:40A	4:40P	480	96				X
-6	Tube	B198788	0.2	SS-5	11/5/14	8:46A	9:31A	45	9				X
-7	Tube	B198788	0.2	SS-4	11/5/14	9:40A	10:25A	45	9				X
-8	Tube	B198788	0.2	SS-3	11/5/14	10:38A	11:23A	45	9				X
-9	Tube	B198788	0.2	SS-1	11/5/14	12:29	1:14P	45	9				X
-10	Tube	B198788	0.2	SS-2	11/5/14	1:22P	2:07P	45	9				X
-11	Tube	—	—	Field Blank	11/5/14	2:25P	2:25P	—	—				X

Columbus 240507

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tructions / Special Requirements:

Date:	Time:	Samples Relinquished By:	Received By:
11/6/14	8:45	Linda Aller	Gina Rivera 11-6-14 8:45
11-6-14	9:05	Gina Rivera	
11/7/14	0932		

ervices are performed subject to the Terms & Conditions on the reverse side.

Login Sample Receipt Checklist

Client: Bennett & Williams Env. Consultants Inc.

Job Number: 550-34697-1
SDG Number: 14-04

Login Number: 34697
List Number: 1
Creator: Shoemaker, Cory M

List Source: TestAmerica Phoenix

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	Thermal preservation not required.
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	False	Check done at department level as required.

Measurement Uncertainty Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Phase II

TestAmerica Job ID: 550-34697-1
SDG: 14-04

Analysis Method	Prep Method	Analyte	Percent Uncertainty (+/-)
6009	Tube Prep	Mercury	7.1

The uncertainty values represent an expanded uncertainty using a coverage factor of K = 2 to approximate a 95% confidence interval.

Appendix E

Analytical Results of Sub-Slab Vapor Samples And Indoor Air for Naphthalene (November 4, 2014)

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

TestAmerica Job ID: 320-10305-1
Client Project/Site: Fairfield Co

For:
Bennett & Williams Env. Consultants Inc.
98 County Line Road West
Suite C
Westerville, Ohio 43082

Attn: Ms. Linda Aller

Beth Riley

Authorized for release by:
11/13/2014 3:45:27 PM

Beth Riley, Project Manager II
(714)258-8610
beth.riley@testamericainc.com

Table of Contents

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 320-10305-1

Laboratory: TestAmerica Sacramento

Narrative

Job Narrative
320-10305-1

Comments
No additional comments.

Receipt
The samples were received on 11/7/2014 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.8º C.

GC/MS Semi VOA
Method(s) 8270C SIM: All QC and field samples were diluted 10X prior to analysis. If no additional dilutions were required, all reported results were used from this dilution data.
(LCS 320-57582/2-B), (MB 320-57582/1-B), AA-1 (320-10305-2), AA-2 (320-10305-3), AA-3 (320-10305-7), AA-4 (320-10305-6), AA-5 (320-10305-5), FIELD BLANK (320-10305-8), SS-1 (320-10305-1), SS-5 (320-10305-4)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Lab Admin
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-10305-1

Client Sample ID: SS-1 — **Lab Sample ID: 320-10305-1**

No Detections.

Client Sample ID: AA-1 — **Lab Sample ID: 320-10305-2**

No Detections.

Client Sample ID: AA-2 — **Lab Sample ID: 320-10305-3**

No Detections.

Client Sample ID: SS-5 — **Lab Sample ID: 320-10305-4**

No Detections.

Client Sample ID: AA-5 — **Lab Sample ID: 320-10305-5**

No Detections.

Client Sample ID: AA-4 — **Lab Sample ID: 320-10305-6**

No Detections.

Client Sample ID: AA-3 — **Lab Sample ID: 320-10305-7**

No Detections.

Client Sample ID: FIELD BLANK — **Lab Sample ID: 320-10305-8**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-10305-1

Client Sample ID: SS-1

Lab Sample ID: 320-10305-1

Date Collected: 11/04/14 07:09
Matrix: Air
Date Received: 11/07/14 09:00
Sample Container: Plastic Bag

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0072		ug/L		11/10/14 11:17	11/12/14 11:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*80*		*25 - 150*	*11/10/14 11:17*	*11/12/14 11:45*	*1*

Client Sample ID: AA-1

Lab Sample ID: 320-10305-2

Date Collected: 11/04/14 07:26
Matrix: Air
Date Received: 11/07/14 09:00
Sample Container: Plastic Bag

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0036		ug/L		11/10/14 11:17	11/12/14 12:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*76*		*25 - 150*	*11/10/14 11:17*	*11/12/14 12:22*	*1*

Client Sample ID: AA-2

Lab Sample ID: 320-10305-3

Date Collected: 11/04/14 07:42
Matrix: Air
Date Received: 11/07/14 09:00
Sample Container: Plastic Bag

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0036		ug/L		11/10/14 11:17	11/12/14 12:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*77*		*25 - 150*	*11/10/14 11:17*	*11/12/14 12:59*	*1*

Client Sample ID: SS-5

Lab Sample ID: 320-10305-4

Date Collected: 11/04/14 08:22
Matrix: Air
Date Received: 11/07/14 09:00
Sample Container: Plastic Bag

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0072		ug/L		11/10/14 11:17	11/12/14 13:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*76*		*25 - 150*	*11/10/14 11:17*	*11/12/14 13:35*	*1*

Client Sample ID: AA-5

Lab Sample ID: 320-10305-5

Date Collected: 11/04/14 08:28
Matrix: Air
Date Received: 11/07/14 09:00
Sample Container: Plastic Bag

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0036		ug/L		11/10/14 11:17	11/12/14 14:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*77*		*25 - 150*	*11/10/14 11:17*	*11/12/14 14:12*	*1*

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-10305-1

Client Sample ID: AA-4

Lab Sample ID: 320-10305-6

Date Collected: 11/04/14 08:47
Matrix: Air
Date Received: 11/07/14 09:00
Sample Container: Plastic Bag

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0036		ug/L		11/10/14 11:17	11/12/14 14:49	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*71*		*25 - 150*	*11/10/14 11:17*	*11/12/14 14:49*	*1*

Client Sample ID: AA-3

Lab Sample ID: 320-10305-7

Date Collected: 11/04/14 09:02
Matrix: Air
Date Received: 11/07/14 09:00
Sample Container: Plastic Bag

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0036		ug/L		11/10/14 11:17	11/12/14 15:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*71*		*25 - 150*	*11/10/14 11:17*	*11/12/14 15:25*	*1*

Client Sample ID: FIELD BLANK

Lab Sample ID: 320-10305-8

Date Collected: 11/04/14 10:38
Matrix: Air
Date Received: 11/07/14 09:00
Sample Container: Plastic Bag

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0010		ug/L		11/10/14 11:17	11/12/14 16:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*74*		*25 - 150*	*11/10/14 11:17*	*11/12/14 16:02*	*1*

Isotope Dilution Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-10305-1

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		NPT							
Lab Sample ID	Client Sample ID	(25-150)							
320-10305-1	SS-1	80							
320-10305-2	AA-1	76							
320-10305-3	AA-2	77							
320-10305-4	SS-5	76							
320-10305-5	AA-5	77							
320-10305-6	AA-4	71							
320-10305-7	AA-3	71							
320-10305-8	FIELD BLANK	74							
LCS 320-57582/2-B	Lab Control Sample	82							
MB 320-57582/1-B	Method Blank	76							

Surrogate Legend

NPT = Naphthalene-d8

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-10305-1

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Lab Sample ID: MB 320-57582/1-B
Matrix: Air
Analysis Batch: 57813

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 57585

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.0010		ug/L		11/10/14 11:17	11/12/14 10:32	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Naphthalene-d8	*76*		*25 - 150*	*11/10/14 11:17*	*11/12/14 10:32*	*1*

Lab Sample ID: LCS 320-57582/2-B
Matrix: Air
Analysis Batch: 57813

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 57585

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Naphthalene			0.00200	0.00156		ug/L		78	60 - 120		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Naphthalene-d8	*82*		*25 - 150*

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-10305-1

GC/MS Semi VOA

Pre Prep Batch: 57582

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-10305-1	SS-1	Total/NA	Air	PUF to Air	
320-10305-2	AA-1	Total/NA	Air	PUF to Air	
320-10305-3	AA-2	Total/NA	Air	PUF to Air	
320-10305-4	SS-5	Total/NA	Air	PUF to Air	
320-10305-5	AA-5	Total/NA	Air	PUF to Air	
320-10305-6	AA-4	Total/NA	Air	PUF to Air	
320-10305-7	AA-3	Total/NA	Air	PUF to Air	
320-10305-8	FIELD BLANK	Total/NA	Air	PUF to Air	
LCS 320-57582/2-B	Lab Control Sample	Total/NA	Air	PUF to Air	
MB 320-57582/1-B	Method Blank	Total/NA	Air	PUF to Air	

Prep Batch: 57585

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-10305-1	SS-1	Total/NA	Air	TO-13A	57582
320-10305-2	AA-1	Total/NA	Air	TO-13A	57582
320-10305-3	AA-2	Total/NA	Air	TO-13A	57582
320-10305-4	SS-5	Total/NA	Air	TO-13A	57582
320-10305-5	AA-5	Total/NA	Air	TO-13A	57582
320-10305-6	AA-4	Total/NA	Air	TO-13A	57582
320-10305-7	AA-3	Total/NA	Air	TO-13A	57582
320-10305-8	FIELD BLANK	Total/NA	Air	TO-13A	57582
LCS 320-57582/2-B	Lab Control Sample	Total/NA	Air	TO-13A	57582
MB 320-57582/1-B	Method Blank	Total/NA	Air	TO-13A	57582

Analysis Batch: 57813

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-10305-1	SS-1	Total/NA	Air	8270C SIM	57585
320-10305-2	AA-1	Total/NA	Air	8270C SIM	57585
320-10305-3	AA-2	Total/NA	Air	8270C SIM	57585
320-10305-4	SS-5	Total/NA	Air	8270C SIM	57585
320-10305-5	AA-5	Total/NA	Air	8270C SIM	57585
320-10305-6	AA-4	Total/NA	Air	8270C SIM	57585
320-10305-7	AA-3	Total/NA	Air	8270C SIM	57585
320-10305-8	FIELD BLANK	Total/NA	Air	8270C SIM	57585
LCS 320-57582/2-B	Lab Control Sample	Total/NA	Air	8270C SIM	57585
MB 320-57582/1-B	Method Blank	Total/NA	Air	8270C SIM	57585

Lab Chronicle

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-10305-1

Client Sample ID: SS-1

Lab Sample ID: 320-10305-1

Date Collected: 11/04/14 07:09

Matrix: Air

Date Received: 11/07/14 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					57582	11/10/14 11:12	CFR	TAL SAC
Total/NA	Prep	TO-13A			138 L	0.5 mL	57585	11/10/14 11:17	CFR	TAL SAC
Total/NA	Analysis	8270C SIM		1	138 L	0.5 mL	57813	11/12/14 11:45	YPH	TAL SAC

Client Sample ID: AA-1

Lab Sample ID: 320-10305-2

Date Collected: 11/04/14 07:26

Matrix: Air

Date Received: 11/07/14 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					57582	11/10/14 11:12	CFR	TAL SAC
Total/NA	Prep	TO-13A			276 L	0.5 mL	57585	11/10/14 11:17	CFR	TAL SAC
Total/NA	Analysis	8270C SIM		1	276 L	0.5 mL	57813	11/12/14 12:22	YPH	TAL SAC

Client Sample ID: AA-2

Lab Sample ID: 320-10305-3

Date Collected: 11/04/14 07:42

Matrix: Air

Date Received: 11/07/14 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					57582	11/10/14 11:12	CFR	TAL SAC
Total/NA	Prep	TO-13A			276 L	0.5 mL	57585	11/10/14 11:17	CFR	TAL SAC
Total/NA	Analysis	8270C SIM		1	276 L	0.5 mL	57813	11/12/14 12:59	YPH	TAL SAC

Client Sample ID: SS-5

Lab Sample ID: 320-10305-4

Date Collected: 11/04/14 08:22

Matrix: Air

Date Received: 11/07/14 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					57582	11/10/14 11:12	CFR	TAL SAC
Total/NA	Prep	TO-13A			138 L	0.5 mL	57585	11/10/14 11:17	CFR	TAL SAC
Total/NA	Analysis	8270C SIM		1	138 L	0.5 mL	57813	11/12/14 13:35	YPH	TAL SAC

Client Sample ID: AA-5

Lab Sample ID: 320-10305-5

Date Collected: 11/04/14 08:28

Matrix: Air

Date Received: 11/07/14 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					57582	11/10/14 11:12	CFR	TAL SAC
Total/NA	Prep	TO-13A			276 L	0.5 mL	57585	11/10/14 11:17	CFR	TAL SAC
Total/NA	Analysis	8270C SIM		1	276 L	0.5 mL	57813	11/12/14 14:12	YPH	TAL SAC

Lab Chronicle

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-10305-1

Client Sample ID: AA-4

Lab Sample ID: 320-10305-6

Date Collected: 11/04/14 08:47

Matrix: Air

Date Received: 11/07/14 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					57582	11/10/14 11:12	CFR	TAL SAC
Total/NA	Prep	TO-13A			276 L	0.5 mL	57585	11/10/14 11:17	CFR	TAL SAC
Total/NA	Analysis	8270C SIM		1	276 L	0.5 mL	57813	11/12/14 14:49	YPH	TAL SAC

Client Sample ID: AA-3

Lab Sample ID: 320-10305-7

Date Collected: 11/04/14 09:02

Matrix: Air

Date Received: 11/07/14 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					57582	11/10/14 11:12	CFR	TAL SAC
Total/NA	Prep	TO-13A			276 L	0.5 mL	57585	11/10/14 11:17	CFR	TAL SAC
Total/NA	Analysis	8270C SIM		1	276 L	0.5 mL	57813	11/12/14 15:25	YPH	TAL SAC

Client Sample ID: FIELD BLANK

Lab Sample ID: 320-10305-8

Date Collected: 11/04/14 10:38

Matrix: Air

Date Received: 11/07/14 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	PUF to Air					57582	11/10/14 11:12	CFR	TAL SAC
Total/NA	Prep	TO-13A			1 meter3	0.5 mL	57585	11/10/14 11:17	CFR	TAL SAC
Total/NA	Analysis	8270C SIM		1	1 meter3	0.5 mL	57813	11/12/14 16:02	YPH	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Certification Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-10305-1

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Oregon	NELAP	10	CA200005	01-29-15

Method Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-10305-1

Method	Method Description	Protocol	Laboratory
8270C SIM	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	TAL SAC

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Bennett & Williams Env. Consultants Inc.
Project/Site: Fairfield Co

TestAmerica Job ID: 320-10305-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-10305-1	SS-1	Air	11/04/14 07:09	11/07/14 09:00
320-10305-2	AA-1	Air	11/04/14 07:26	11/07/14 09:00
320-10305-3	AA-2	Air	11/04/14 07:42	11/07/14 09:00
320-10305-4	SS-5	Air	11/04/14 08:22	11/07/14 09:00
320-10305-5	AA-5	Air	11/04/14 08:28	11/07/14 09:00
320-10305-6	AA-4	Air	11/04/14 08:47	11/07/14 09:00
320-10305-7	AA-3	Air	11/04/14 09:02	11/07/14 09:00
320-10305-8	FIELD BLANK	Air	11/04/14 10:38	11/07/14 09:00

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.; Phoenix Laboratory - 4625 E. Cotton Center Blvd., Suite 189, Phoenix, AZ 85040 602.437.3340 Fax 602.454.9303
www.testamericainc.com or Call 1.866.772.5227

Lab Number:

Company: Bennett & Williams		Page 1 of 1	
Contact Name: LINDA ALLER		Sampler Name and Phone Number: M. Swartz, N. Gogle, L. Aller (614) 361-0153	
E-Mail Address: laller@bennettandwilliams.com	Phone: 614-361-0153	Project Name: Fairfield Co. - Phase II	
Address: 98 County Line Rd. West, Suite C		Project Number: 14-04	
City, State, Zip: Westerville, Ohio 43035		P.O. Number:	Data Package:
Send Report To: LINDA ALLER	Phone: (614) 361-0153	Hardcopy Results: Y (N)	Standard Level II:
E-Mail Address: laller@bennettandwilliams.com		E-Mail Results: (Y) N	Level III:
Send Invoice To: LINDA ALLER	Phone (614) 361-0153	EDD: Y N	Level IV:
E-Mail Address: laller@bennettandwilliams.com			

Sample Receipt

Temperature 0.8°C °C

Sample Seals Intact Yes_____ No_____

Sample Seals Intact Yes_____ No_____

Total # of Samples _____

Turn Around Request

_____ Same Day _____ 3 Business Days

_____ 1 Business Day _____ 4 Business Days

_____ 2 Business Days _____ 5 Business Days (Standard)

Rushes are subject to availability (Surcharges apply)

Analysis Method(s)/Analyte(s)

TO-13 SIM

Sample Information

Lab Sample Identification	Matrix (Filter, Passive Badge, Tube, Wipe)	Pump ID Number	Flow Rate (Liters/minute)	Sample Identification Name/Number	Collection Date	Start Time	Stop Time	Total Minutes Sampled (Badge Only)	Total Volume (Liters)	Area Wiped in cm2	Sampling Temperature (°C)	Sampling Pressure (mmHg)	
BWELC072114-15	Tube	B20584B	0.2	SS-1	11/4/14	7:09A	6:39P	690	138				X
BWELC072114-16	Tube	B20064B	0.460	AA-1	11/4/14	7:26A	5:26P	600	276				X
BWELC072114-17	Tube	B19863B	0.460	AA-2	11/4/14	7:42A	5:42P	600	276				X
BWELC072114-18	Tube	B19878B	0.2	SS-5	11/4/14	8:22A	7:52P	690	138				X
BWELC03014-22	Tube	B20257B	0.460	AA-5	11/4/14	8:28A	6:28P	600	276				X
BWELC072114-19	Tube	B20063B	0.460	AA-4	11/4/14	8:47A	6:47P	600	276				X
BWELC072114-20	Tube	B19877B	0.460	AA-3	11/4/14	9:02A	7:02P	600	276				X
BWELC03014-23	Tube	—	—	Field Blank	11/4/14	10:38A	—	—	—				X

Columbus 240507

320-10305 Chain of Custody

Instructions / Special Requirements

Relinquished by	Time	Received by
11/5/14	2:10P	Linda Aller
11/5/14	3:24P	Nancy M Gogle
11/6/14	10:15	Linda Rivera
		Nancy M Gogle Fed Ex
		Kim Nelson 11/7/14 900

Login Sample Receipt Checklist

Client: Bennett & Williams Env. Consultants Inc.

Job Number: 320-10305-1

Login Number: 10305

List Source: TestAmerica Sacramento

List Number: 1

Creator: Nelson, Kym D

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	247434
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	